# Why not to speak like the neighbours: Linguistic variation as social marker


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# 1 Introduction

## 1.1 Preamble

It is obvious to speakers of any language that language changes. The schoolchildren who think Shakespeare wrote in 'Old English' are more likely to be dismayed by the difficulty of reading Early Modern English than surprised that Hamlet, or even Bottom, does not speak as they do. Similarly, their parents would probably be taken aback if they found their offspring's speech and vocabulary to be exact replicas of their own. Why languages change is a matter of less certainty. In a sense, of course, that statement is not quite accurate. A short browse of comments on the website of the BBC's *Voices*[1] project reveals that while modern *linguists* may disagree about the reasons for language change, many non-linguists are quite certain they know why: laziness and sloppiness, encouraged in Britain by the corrupting influence of American and Australian television. It would seem that to most people, linguistic change is far from being a positive thing - an attitude that is even preserved in such words as *etymology*, from Greek *ετυμος* 'true'. As McMahon (1999: 315-6) and Labov (2001: 10-11) note, the notion of linguistic change as primarily a process of decay was prevalent among nineteenth-century linguists. Labov (2001: 4) even uses rather negative language himself (though apparently more out of sympathy for the emotional responses of his subjects than for the classicism of his distant predecessors), dramatically describing the effects of language change as ranging 'from petty inconveniences to crushing disabilities that can consume years of our lives with unrewarding struggle against hopeless odds.' He notes that where changes are observed, the reaction is 'uniformly negative' and that this, significantly, is in contrast to the attitude of those older people who welcome such innovations as new technologies and music; their applause is never extended to new ways of speaking (6).

Just as the first chapter of most introductory textbooks on syntax stresses the difference between what most people think grammar is (prescriptive) and what linguists mean by it (descriptive), there is a tendency for books that introduce the fundamentals of sociolinguistics or language change to comment on the attitudinal divide described above. What is less often noted, though not unrecognised, is the possibility that this very attitude provides a clue to why language changes. More precisely, there are good reasons for believing that language change is closely connected to social factors such as

[1] At www.bbc.co.uk/voices/yourvoice

identity and status. In the desire of the young to distance themselves from their parents, or that of a particular clique, profession, or nation to distinguish itself from another, there is a stimulus to innovation. In the desire to talk like one's peers, or 'betters' (or even, in some cases, one's 'inferiors'), there is reason for innovations to be propagated. Of course, if the imitation is not perfect – in cases of hypercorrection, for example - there may even be further innovation, followed by further propagation and so on (see 3.3.2 below). In any case, the issue of group membership highlights the relevance of negative attitudes to change. If individual speech patterns are a marker of both membership and non-membership, then they can be threatening, for where they differ from the speaker's own modes of expression, they imply his exclusion from something. The experience of being excluded by a younger generation of one's own compatriots is particularly unpleasant – 'It's fine for Americans to speak like that; I know I'm not part of that group and I don't want to be! But when my own children start speaking like them, well….'

There is another side to this. After the 7 July terrorist bombings in London, one of the most disturbing aspects of the situation for many commentators seems to have been the fact that the bombers were British; most tellingly, several commented explicitly on the fact that the bombers and their supporters *spoke with Yorkshire accents*[2]. It seems relevant to quote Bennett and Royle's (1999: 40) definition of 'uncanny' as 'those situations when the homely becomes unhomely, when the familiar becomes unfamiliar or the unfamiliar becomes strangely familiar.' Speech patterns are clearly of the greatest importance in telling outsider from fellow, and where this is undermined, the listener is disturbed.

This all raises a further question: why should it be so important to identify individuals as belonging or not belonging to a group; or indeed to assert one's own membership? It would seem that this serves an evolutionary purpose. As the size of hominin social groups increased beyond the point that individuals could immediately recognise other members of their own group, populations became increasingly at risk from cheats, or free-riders – infiltrators who take advantage of a group's resources before disappearing without making any contribution to the group themselves. They may even cause sabotage. Identification of such free-riders is crucial, therefore. Occasionally,

[2] See e.g. Freedland, Jonathan 'The identity vacuum' in *The Guardian* 3 August 2005;
' Do you feel safer one year after 7/7?' at *The Daily Telegraph Speakers Corner*, July 2006 (www.telegraph.co.uk);
Parsons, Tony 'You can't be British if you hate this country' in *The Mirror* 18 July 2005.

physical appearance may provide a clue: a black infiltrator of the Ku Klux Klan is likely to stand out more than a white one. However, such advantages are rare and, when your near neighbours (who very possibly look very much like you) are the greatest threat, subtler cues become imperative. Some Russians claim to be able to spot a foreigner on the metro by the shoes he wears, but clothes are easy to change. To learn to speak a foreign language - or even another dialect - like a native takes rather more skill.

## 1.2 Problems of explanation

### 1.2. 1 *Explanation*

This work is concerned with exploring and evaluating an explanation for why language changes. Explanation, however, is a troublesome concept. The question of what constitutes it is, according to Heine (1994: 255) 'one of the most controversial issues in linguistics'. Put simply, there are different kinds of explanation and different things can be explained in different ways; although not all explananda are explicable by the same means. As Lass (1997: 329) argues, 'the strong [deductive-nomological] type [of explanation] seems to be irrelevant in language change; history is a contingent domain, and there are no "laws" of the requisite power, if there are any kind at all.' This is not as bleak as it sounds. Indeed, it is only bleak if we insist on a certain kind of predictive certainty in our explanation: as Lass (ibid.: 332) admits, however, even physics and chemistry must deal with 'non-computable and chaotic systems'. To take a more historical example: to state that the Russian Revolution could not have been deduced from a set of premises (and, in spite of Marx, this would appear to be the case) is not to say that the Russian Revolution, and political change in general, cannot be usefully 'explained'. The question is in the level or kind of explanation that is possible. Lass (1997) contrasts Postal's 'counsel of despair' that language change is as explicable as the addition or removal of tail fins by automobile manufacturers (326) with Jakobson's optimism that change, in a teleological framework, 'can be fully comprehended' (1961: 1, quoted ibid.). There are problems with each of these views. Teleological arguments for long-term instances of language change seem to assume impressive cooperation across several generations of speaker (what Lass 1974 calls a conspiracy); even for the kind of change that can occur in one generation, the motivation involved is mysterious: why

should a speaker feel the need to change linguistic systems that other speakers in the same and other languages tolerate happily? (cf. Croft 2000: 66-71) Postal's statement may also be misleading. He claims that 'the "causes" of sound change without language contact lie in the general tendency of human cultural products to undergo "non-functional" stylistic change' (1968: 283). This may be true, and the comparison of linguistic change with other cultural change is enlightening, but this does not mean, as Lass (1997: 326) interprets his position, that 'there's nothing to explain'. After all, if linguistic change is akin to other non-functional stylistic change, there is still the glaring question of why anything undergoes such a change.

Before we go any further down this road, it would be useful to state what an explanation is. The simplest answer is that it is an answer to a why-question. Lass (1997: 326) states that 'Loosely, some phenomenon *X* is explained when our puzzlement about it is diminished, in some way and to some degree consonant with our expectations' (although it is not clear why an explanation should not completely surprise us). Heine (1994) notes that the interpretation of the term varies from writer to writer and that 'What one author calls an explanation is a descriptive statement or an insight for another' (255). Nevertheless, he seems to approve of a division of explanations into *internal* - where phenomena are explained with reference only to their own domain - and *external* - where phenomena are explained through 'independently motivated principles' (ibid.). He also identifies three interrelated goals in the literature, the attainment of any of which satisfies him as qualifying for the term 'explanation' (258):

a. to describe a phenomenon as an example of a more general phenomenon (Fischer-Jørgensen 1975: 387),
b. to view facts in a wider context or in a larger pattern (Givón 1989: 301)
c. to impart organised knowledge, i.e., knowledge of the relations between various facts ( Scriven 1962).

These can be compared with Lass's 'basic and canonical conceptual types' (1997: 327):

1) *Causal explanations: X* is explained if we know the 'laws of nature' (in a strong sense) or the empirical connections (in a weak sense) that bring it about. We have explained *X* in the strongest sense iff we can predict it […]
2) *Functional Explanations. X* is explained if we know the purpose it serves in some system […]

3) *Genetic or historical explanations.* *X* is explained if we know (some crucial subset of the chain of) the temporally prior states that led (contingently or lawfully) to *X* […]
4) *Rational explanations* [perhaps a subset of 2]. *X* is explained if we know the reasons that some rational agent might have for doing *X* (assuming that *X* can be intelligibly construed as an 'act' of one kind or another).

Both writers refer to the relative *strength* of explanations, which Lass (1997: 328) sees as dependent on the certainty derived from them. Heine (258), in contrast, sees the matter as one of scope. A weak explanation to him is one that is essentially internal, while a strong one reaches outside the domain in question. This view was anticipated by Labov (1963: 275), who is sceptical of the 'value of … explain[ing] linguistic events only by other linguistic events', and echoed by Nettle (1999c: 13), who asserts: 'It does not follow that linguistic structure is to be explained without reference to external factors.'

The explanation for language change explored in this paper relies on just such external factors. In Heine's, Fischer-Jørgensen's and Givón's terms, it describes the phenomenon of language change as an example of a more general need to identify oneself as a member of a particular group and to distinguish other members from those who do not belong: this is the wider context or larger pattern. In Lass's terms, it is a functional explanation inasmuch as this would seem to be adaptive (see Chapter 4). There are evolutionary reasons, therefore, why rational agents may let, or make, their language change.

### 1.2.1 *Explananda*

Having discussed explanation, it is important to clarify the explanandum, as there are several candidates: for instance, one may attempt to explain particular linguistic changes (e.g. IE */p/ > Germanic /f/), particular types of linguistic change (e.g. grammaticalisation, lenition), or the very fact that language changes at all. Lass (1997: 326) states (somewhat ambiguously[3]) that most work has traditionally been on the first two. In a sense this is merely scratching the surface: to explain why /o/ became /e/ in

[3] 'The usual focus in the literature has however been not on why change (in general) occurs, but on explaining particular changes or change-types, under larger rubrics with some supposed theoretical warrant.' (Lass 1997:326). Later in the same chapter, however, he states that 'Attempts at explanation in historical linguistics have tended to focus on the problem of change itself: why should a specific change (or any at all) happen? (ibid.: 371)

some words in the history of one language is interesting and *may* help the development of explanations of other incidences of sound change; if it turns out, however, that every word or phoneme has its own history, then such explanations do not promise to take linguistics very far. This point recalls the vexed question of whether sound change is phonologically or lexically abrupt, of whether one can in fact formulate such a thing as a sound law. Yet sound laws themselves are little more than descriptions of a situation - statements of what happened at one time in one dialect or language, with no inherent explanatory power. Just because */p/ became /f/ in the development of the Germanic languages does not mean that at some point our descendents will necessarily be eating 'forridge' in the morning or taking 'fork fies' to their 'ficnics'.

All the same, linguistic change is certainly not entirely random: not only do similar changes recur across different languages, but certain aspects of language structure seem more prone to change than others. This means that some predictions can in fact be made, if tentatively. It is more likely (but not inevitable) that our descendents will be going on 'ficnics' than that they will be picking up their 'pood' with 'porks'. Across languages, stops turn into fricatives more often than the other way round, and the question of why that happens has rather broader scope than the question of why Proto-Indo-European */p/ in particular turned into /f/ in some of its descendents. Of course, it should not be forgotten that such tendencies *in themselves* do not possess much explanatory power. Campbell (1998:239-40) gives numerous examples of the pathways that grammaticalisation tends to take: auxiliary < main verb; preposition < verb; case suffixes < postpositions, and so on. Whatever one's reaction to charges of reification, that grammaticalisation 'has no independent status of its own' (ibid.: 241), one is forced to accept that it is not a rigid principle, that it has exceptions, and that like other such processes or tendencies in historical linguistics, it is itself in need of further explanation. It is like explaining things to a child, where each 'because' prompts a fresh 'why'. In fact, the more likely question in issues of language change is rather 'why *not*?' A person who notices the development of /t/ to /s/ in some dialect may gain some satisfaction from knowing that the change is reasonably common in world languages – there is predictive power in knowing that if /t/ is going to change into anything, /s/ (probably via /ts/) is not an unlikely result. Nevertheless, the fact that /d/ is also not unlikely, and that even unlikely changes do occur, tends to detract somewhat from the satisfaction. Not only does the question remain of *why* /t/ > /ts/ > /s/ is more common than the reverse, or why sometimes the result is not /s/, one is also left with the especially nagging issue of

why it should ever change in the first place. To rephrase the question: if /t/ > /ts/ is so 'natural' and occurred in language A, why not in language B? This is the 'actuation riddle', where one is left with 'the opposite problem – of explaining why language fails to change' (Weinreich et al. 1968: 112; see also Milroy 1992: 10-13; Croft 2000: 4).

The above may give the impression that explaining language change essentially involves explaining three things: individual changes, tendencies of change and change in general. This division is not necessarily the most useful. It is questionable, for one thing, whether individual changes can really be separated from change in general. To claim 'language change in general' as one's explanandum looks like reification and implies a belief in some holy grail that will explain all change. While not impossible *a priori*, this is highly unlikely. All the same, there is a context in which 'change in general' may make better sense. The hypothesis explored in this paper claims that language frequently changes for its own sake – more accurately, *it is changed* for the sake of change: the purpose[4] of an innovation may lie in the very fact that it is different. In this sense then, it may be meaningful to speak of 'linguistic change in general', since the nature of the change becomes of secondary importance. It should nevertheless be noted that this conception of 'change in general' is not usefully distinguished from individual changes: they are merely solitary instances of the same thing. A more useful division of explananda is that of Labov (1963):

> The problem of explaining language change seems to resolve itself into three separate problems: the origin of linguistic variations; the spread and propagation of linguistic changes; and the regularity of linguistic change. (273)

This paper concentrates on the first two: where variation comes from and how it spreads. As Croft (2000: 4) writes:

> a theory of language change must distinguish the two processes of change … INNOVATION or actuation … of novel forms and PROPAGATION or diffusion (or, conversely, loss) of those forms in the language.[5]

[4] This word is meant here in the broadest possible sense: it should not be taken as necessarily implying a teleological viewpoint. On the other hand, the present hypothesis claims that innovation and the propagation of innovation are not merely 'things that happen', but that they serve a practical purpose for speakers, whether or not they are aware of this.

[5] There are other alternative terms: Labov (2001) seems to prefer actuation and transmission, while McMahon (1999: 47) uses 'implementation' and 'transmission' for 'propagation',. The different terms are not necessarily identical in scope: McMahon notes that 'transmission can be interpreted as actuation for

Although the two processes are distinct, they are both necessarily present in all cases of language change. Innovation without propagation is merely idiolectal change and propagation without innovation is merely learning. The next chapters will discuss the circumstances in which they occur.

previously unaffected speakers' (ibid.); the term 'innovation', however, seems less ambiguous and restricted in reference to those changes that are actually new. 'Propagation', moreover, seems to imply a more active human role in the processes of language change, which accords with the spirit of the present hypothesis. For this reason I follow Croft (2000) in preferring these terms.

# 2 Why changes spread

## *Social selection in the propagation of linguistic variants*

## 2.1 Speech communities

### 2.1.1 *Structured heterogeneity*

It is one of the fundamentals of sociolinguistics that any speech community can be divided into sub-communities and that these sub-communities can themselves be divided further. Indeed, there are differences between the idiolects of any two members of a given group and much variation within them. This is in contrast to the Chomskyan (1965: 3) idealisation of 'a completely homogeneous speech-community' – what Croft (2000: 90) calls the 'naïve view'. The patterns of group-membership are in fact highly complex. One can think of simple examples, in which an individual might speak more like her family than the family's neighbours, more like her neighbours than the people on the other side of town and so on. Yet a little thought raises complicating issues. Much depends on who *feels* closer: this hypothetical individual might in fact speak more like her friends than her family, a pattern that often varies with age. To complicate matters further, she may attempt to emulate the speech patterns of a group to which she does not belong, but to which she aspires – and this is far from being the preserve of the young. Yet this too is simplistic. More accurately, and more troubling for believers in homogeneous speech-communities, such variability is a feature not only of speech communities, but of individual speakers: all of us who speak speak differently to different people and in different circumstances: at work, at play, at home, at prayer…. We all, after all, belong to multiple communities, based on a more or less endless list of factors such as class, gender, religion, hobbies etc. (cf. Milroy 1980: 109) This being the case, every person 'speaks multiple codes … called his or her REPERTOIRE', and every repertoire is different (Croft 2000: 92). Indeed:

> nativelike command of heterogeneous structures is … part of unilingual linguistic competence … [I]n a language serving a complex (i.e., real) community, it is *absence* of structured heterogeneity that would be dysfunctional. (Weinreich et al. 1968: 101. Italics original.)

The fact that variation exists is no accident. With regard to lexis, it can be a matter of shared expertise. Any specialist will know words for technical processes and techniques that outsiders will not, and we do not expect engineers to speak to laypeople in quite the same language as they use with their colleagues. Similarly, where two communities occupy different geographical spaces, their surroundings may encourage lexical or semantic variation: American robins are different birds from European robins, while other speech communities have no need of a word for either. In these relatively trivial cases, differences in speech patterns are the result of external environmental pressures, and their role in allowing one group to be distinguished from another, or in allowing a speaker to be identified as belonging to a particular group, is more or less accidental. Such pressures fail to account for most change in language; there is no clear reason, beyond such whimsical notions as air quality governing the predominance of fricatives, why a particular external environment should provoke a particular sound change.

### 2.1.2 *Social networks*

The crucial aspect of the hypothesis discussed in this paper is that a linguistic variant can be innovated and propagated for its own sake, not with the coincidental result of distinguishing members of one group from those of another, but with that very purpose. There are several reasons why this may be useful. First, it identifies in cases of uncertainty who is and who is not a member of a particular group, though this is really of importance only in larger groups; in smaller ones, members may reasonably be expected to recognise other members by sight. Second (and this is relevant whatever the size of the group), a distinctive speech pattern can strengthen bonds between those who use it, giving an almost tangible reality to the sense that members of a group share something. The speech pattern in question may, indeed, be the only thing shared – in which case, it defines the group (all native English speakers form one such community); alternatively, a group that is already defined by some other variable, such as religion, may stress its 'apartness' by adopting, or exaggerating, particular ways of saying things. Third, the specific speech patterns of a group actively exclude non-members. If being accepted as a full member of the community means speaking like other members, then joining it becomes a long process; this 'training period' has the further advantage of allowing the group time to evaluate a new member's worthiness to join. One must be careful of

words like 'group'. As implied by the opening paragraph, human social structures are highly complex. Partly for this reason, Lesley and James Milroy prefer to write of 'social networks' (see e.g. Milroy 1980; Milroy and Milroy 1991: 57-9; Milroy 1992: 84-87 *passim*). These can be described as closed or open: speakers who interact within a defined territory may form a well-defined community whose members all know each other; in an open network, on the other hand, an individual's contacts may have their own contacts who do not know the first individual. In less absolute terms, a network can be of higher or lower density; moreover, a tie between two people can be *multiplex*, in which 'each individual [may be] linked to others in more than one capacity – as a co-employee, a kinsman or a friend, for example' (Milroy 1980; 21). Ties can also vary in strength, depending on the relationship of the individuals involved, and it is in this concept of varying strength that, it is argued, we find what can be called a speech community (Milroy 1992: 86). The advantage of such a concept is that 'we do not need to accept any prior assumption about how society at large is organized or structured' (Milroy 1992: 84). Other researchers (e.g. Labov 1966) have tended to work more with more predefined concepts as social class. This also has the disadvantage of being less universally applicable. Nevertheless, many cultures clearly do have some concept of class, and groupings based on such social variables as gender can hardly be rejected; moreover, the Labovian approach allows comparatively straightforward quantification of sociolinguistic data, which is far more difficult with the more individualist social-network approach. The term 'group', therefore, is useful shorthand, but it should be borne in mind that it is likely to hide a more complex reality, which may be reflected in patterns of linguistic variation.

## 2.2 Propagation of variants

### 2.2.1 *Variation and change*

The association of synchronic sociolinguistic variation with diachronic change is in fact rather obvious, but modern recognition of it has been slower than might have been expected, in large part because structuralist and generativist idealisations of homogeneity, as noted above, have led to a neglect of linguistic variation in general, relegating it as 'a peripheral performance factor' (McMahon 1999: 226; see also Milroy 1992: 2-4; Dunbar

2003: 219; on the impact of this attitude to studies of dialogue see Pickering and Garrod 2004: 170). Diachronic change too has been difficult to reconcile with such models; as Weinreich et al. (1968) write: 'the more linguists became impressed with the existence of structure of language … the more mysterious became the transition of a language from state to state'. All the same, the relationship between variation and change has not gone unnoticed. Indeed, the two phenomena have not always been easy to disentangle: Le Page (1997: 16) states that the early sociolinguists 'thought [they] were doing … such long-practiced disciplines as historical and comparative philology, descriptive linguistics, dialect geography.' The association of change with variation has tended to be viewed from a particular perspective, however. Le Page refers to Max Müller's assertion of the scientific nature of linguistics, in which language change is governed by laws and 'dialectal variation … reflect stages in the operation of those "laws."' (ibid.) Müller's view, like that of his contemporaries, was that diachronic change causes synchronic variation and that variation is merely unfinished change. The teleological implications of this are problematic (see 1.2.1 above), but the order of events is not unreasonable: where the present state is more varied than a previous one, then *of course* change precedes variation. However, in attempting to explain why language changes in the first place, this conception relies on the application of abstract laws that act upon language from time to time (or, according to the glottochronologists[6], at a constant and predictable rate) for no immediately discernible reason. Again, aspects of this are perfectly reasonable: there are, if not laws, certainly trends and tendencies in language change upon which the reconstruction of unattested languages relies. However, there seems little reason to see these as anything more than constraints, or conduits along which change tends to occur; it is, as Kurylowicz (1949: 37) wrote: 'comme de l'eau de pluie qui doit prendre un chemin prévu (gouttières, égouts, conduits) *une fois qu'il pleut.* Mais la pluie n'est pas une nécessité.'[7] The particular direction a change takes, then, is not an explanation for *why* change occurs. Granted, the first may follow from the second – some principle of minimum effort, for example, is more likely to lead to reduction than to epenthesis, which is more associated with a drive towards maximum clarity. To understand the *origin* of the changes themselves, however, there is something to be gained by turning Müller's

[6] See 3.3.1 below. For a fuller discussion of glottochronology and references, see McMahon and McMahon 2005.

[7] 'like rainwater that must take a route provided (gutters, drains, ducts) *once it rains.* But rain is not a necessity.' (Italics original; all translations, unless otherwise stated, are my own.) Strictly speaking, rain is a necessity in the sense that, in most countries at least, we know it will come at some point. On a given day, however, it may well not.

conception on its head: a drive for synchronic variation results in diachronic change. This changes the explananda. The 'laws' and tendencies of linguistic change remain of significant interest but become of less importance to the question of why change occurs; the more important issue is now: 'Why would people want to speak differently from their neighbours?'[8]

### 2.2.2 *Social selection*

The first detailed statement of the role of sociolinguistic variation in diachronic change came in Weinreich et al. (1968), though the basic ideas of it were prefigured in the classic (and even foundational) work of Labov in the early 1960s (e.g. 1963, 1966). In Labov's 1963 study of socially conditioned sound change in Martha's Vineyard, he stresses that 'one cannot understand the development of a language change apart from the social life of the community in which it occurs' (275). His study shows that the use of the centralised diphthongs [əɪ] and [əʊ] (among other features) served to mark the speaker as a 'Vineyarder'. More accurately: 'the meaning of centralization … is *positive orientation towards Martha's Vineyard*.' (306; italics original) and, importantly, this appeared to be a response by natives to the invasion of outsiders from the American mainland. Labov's study is a classic illustration of the use of linguistic items as social markers – in evolutionary terms, of their social selection (on this and related concepts cf. Le Page 1968; Dunbar 1996: 168-70 Nettle 1999a, 1999c: 29-30 *passim*; Croft 2000; see Chambers 1995, Chapter 2 for related studies to that of Labov). Moreover, it offers an explanation for the maintenance of certain features against a background of innovation and for the propagation of innovatory features.

This is only half the story (see 1.2.2 above). Labov's Martha's Vineyard study essentially shows propagation in action, but does not attempt to detail the origin of the propagated feature. In Aitchison's (1987: 12) words, it provides the immediate trigger to a particular change that is 'restricted in time and place', yet does not explain the linguistic basis of the change (cf. McMahon 1999: 248). Although she does not use the terms, she is essentially making a distinction between propagation and innovation. Since the processes are distinct, it is not important to the process of propagation whether or not

[8] 'Neighbour' is meant here in a very broad sense, more on the level of the community than the individual. Modern transport and communication networks also mean that one's neighbours may live a very long way away by the standards of previous epochs.

the linguistic feature in question is, strictly speaking, an innovation. The important point is that when two or more rival features exist, speakers are forced, in producing utterances, to choose between them. The word 'art', for example, forces all English speakers (or at least those who have heard the two variants) to choose between rhotic [ɑ:rt] or non-rhotic [ɑ:t]. The most interesting case is where a speaker has one variant, but comes to adopt another, for whatever reason. It is far from unknown for parents to encourage their children to speak differently from themselves, if this has some perceived advantage. In the late nineteenth and early twentieth centuries many South-Wales mining families brought their children up in English, since a command of that language opened up rather more employment opportunities than Welsh (see Bourhis and Giles 1977 on the sociolinguistic background to this). Similarly, the public schools of England have long provided children with the 'right' accent – Received Pronunciation – even if the parents who send them there have something very different. Labov takes as his theme Sturtevant's argument that 'Before a phoneme can spread from word to word … it is necessary that one of the two rivals shall acquire some sort of prestige' (cited in Labov 1963: 275)[9]. The phrase 'some sort of' is important here, since prestige in this context is open to many interpretations. RP is the classic prestige accent in Britain and a change in that direction is, from a social point of view, upwards. Or so it would seem. The fact that even the Queen can be accused of falling short of her own English suggests that RP is now neither up nor down. Similarly, the much derided recent growth of 'Estuary English', if the phenomenon is in fact more than mere reification[10], often involves individuals apparently accommodating downwards; furthermore, it is hard to see how the spread of centralised diphthongs in Martha's Vineyard is especially upward. To account for this Labov (1966) and Trudgill (1972) allow for the existence of so-called 'covert prestige', in which a lower-class, rather than higher-class, variant is propagated. A social-network-based approach (see 2.1.2 above) allows a more complex notion of prestige again. Fundamentally, if Sturtevant's claim is to stand prestige must be taken loosely – one of the two rival phonemes (or whatever linguistic item is involved) must have associations that are in some way positive to the adopting speaker. This being so rarely a

[9] Cf. Croft's (2000) First Law of Propagation, whereby 'there seems to be a natural human tendency to increase the conventionality of one variant of a lingueme in a community at the expense of another' (176).

[10] J. C. Wells maintains a useful resource on the Estuary English debate, as well as issues related to the 'Queen's English' at http://www.phon.ucl.ac.uk/home/estuary/home.htm (accessed 31 July 2006).

utilitarian matter[11], the reasons for adopting one variant over another must go beyond the linguistic item in question and be somehow connected with its bearer. Importantly, dissociation is also involved (cf. Nettle 1999c: 30). By asserting their association with the island, Vineyarders were also dissociating themselves from the United States mainland. An even more striking case of dissociation was observed in an experiment in which twenty subjects from South Wales (all Welsh-learners) were questioned by a tape-recording of an RP-speaker who aggressively questioned the usefulness and future of the Welsh language. Those subjects with a positive attitude towards Welsh (who were learning Welsh in their own time) were observed to broaden their Welsh accents in response to this, and even to start speaking Welsh (Bourhis and Giles 1977).

### 2.2.3 *Difficulties in interpretation*

One must be cautious. Labov himself is uncertain of the applicability of his 1963 study to other cases of language change:

> The Martha's Vineyard study … is frequently cited as a demonstration of the importance of the concept of local identity in the motivation of linguistic change. However, we do not often find correlations between degrees of local identification and the progress of sound change. (Labov 2001: 191)

Elsewhere he writes that:

> It does not seem likely that the linkage between linguistic and social structure involves the association of forms and frequencies with particular groups and calculations of the consequences of adopting their speech forms … [T]he simpler and more mechanical view [is] that social structure affects linguistic output through changes in the frequency of interaction. (ibid.: 506)

There is always a danger in confusing a case with a law, in assuming that the explanation for a particular occurrence can explain all similar phenomena; it would be a mistake, moreover, to assume that such an all-embracing explanation even exists, particularly for

[11] Cf. Milroy 1992: xi on how sound change in particular is rarely an 'improvement' in any obvious way.

such a phenomenon as language change. The point is that the Martha's Vineyard study concerned a very specific and relatively unusual island community with a particular history. In circumstances such as these, issues of identification with a *locality* play an almost unique role, while other social variables can be expected to have an influence elsewhere. Milroy (1980: 109) notes that 'The list of such variables which can be seen to influence a speaker's language is very large' and gives a speaker's class, sex, age, regional origin and group identity as only the most salient. As she stresses (114), the last of these includes all that precede it. Labov is no doubt correct that speakers do not normally calculate the consequences of adopting the speech forms of other groups. This seems the wrong way round: it is more reasonable to suppose that individuals come to emulate individuals with whom they identify, with no real calculation involved. It is, however, difficult to distinguish between frequency of interaction and 'acts of identity' (Le Page and Tabouret-Keller 1985). Individuals are likely to interact more with people with whom they identify; conversely, they are also likely to identify more with people with whom they spend more time (cf. Croft 2000: 169). With this in mind, one is tempted to feel that Labov's statement above misses the point: that the role of *dissociation* in language change is being neglected. It is no accident that I asked above 'Why speak differently from your neighbour?' If the only drive is to speak *like* one's neighbours, then human language should surely not be quite as diverse as it is. It cannot be purely the result of spatial distance: the Slovene language is conventionally sorted into eight major geographical groups, over an area of approximately 20,000 square kilometres (Herrity 2000: 1); Russian, on the other hand, spoken over the whole extent of the largest country in the world, can be divided into about three main dialect areas (Offord 2000: 15). Language does not change at the same rate or in the same way in all places. I have discussed why variants might spread differently in different places; in the next chapter, I shall discuss where these variants might come from in the first place.

# 3 Why changes start

## *Innovation of linguistic variants*

## 3.1 Introduction

The tendency in much of twentieth-century linguistics has been to discuss propagation at the expense of innovation. Surprisingly, Weinreich et al. (1968: 129) call the distinction between the two 'untenable' and see it as the origin of the 'claim that sound change in progress cannot be observed'. Similarly, Labov (1972: 277) argues that the origin of a variant is unimportant, since it 'becomes part of the language only when it is adopted by others'. This is true – innovation alone is not change – but it is hard not to feel that to sidestep the issue in this way is too easy: besides, propagation alone is not, strictly speaking, change either. Moreover, even if an innovation remains entirely idiolectal, it is worth enquiring why a speaker would innovate in this way. After all, innovation seems on first sight to contradict the present hypothesis. If speakers adopt variant forms for reasons of prestige – to sound, in other words, like someone else – why innovate and sound like no one else? Why, in other words, be different?

## 3.2 Child- and adult-based theories

### 3.2.1 *Child-based innovation*

Certain theories have attempted to escape the 'why change'-problem (as well as the question of whether adult grammars can change at all) by putting acquisition in centre stage: in such child-based theories, children acquire forms of language different from those of their parents (or whoever they acquire language from). This has been the chief explanation for change within a generativist framework (see e.g. Halle 1962; Lightfoot 1979, 1981, 1991 etc.): change occurs when children form a grammar based on the utterances of their environment that differs from the grammars that produced those utterances; both grammars should be able to account for these same utterances. Selection is a result of the death of speakers, mainly older ones. Croft (2000: 45-6) notes that such a theory predicts the following:

1) That the changes children make to adult systems in first language acquisition should be of the kind that occur in language change;
2) That these changes will be maintained into adulthood;
3) That language change should be relatively abrupt;
4) That a speaker will either have the 'old' grammar or the 'new' one.

As he states: 'All four predictions are false' (46). He (46-7) and Aitchison (1992: 168-73) give several examples of innovations that are common among children and rare in adults, or features common in adult language, but rare as childhood innovations (e.g. vowel harmony; see Drachman 1978). Similarly, while lenition appears to be far more common in diachronic change than fortition, the reverse is true of child language (ibid.; Aitchison 1992: 172-3). Nor do children tend to retain their innovations into adulthood (Croft 2000: 48). The issue of abruptness in diachronic linguistics is rather problematic. Textual evidence can be misleading: the spelling of *knight* is a poor guide to its twenty-first century pronunciation (at least in most parts of the Anglophone world). Croft (49-50) lists various studies suggesting that change is more gradual than predicted by the generativist theory; the strongest superficial evidence against abruptness, however, is the existence of considerable modern variation. Lightfoot (1991) gets around this by arguing that what appears to be gradual change is in fact a change in the proportions of speakers with a particular variant: change is abrupt on the individual level, but gradual on the level of community. As Croft (50) stresses, however, this fails to explain directionality in change: in the absence of some mechanism of selection, the majority of changes should cancel each other out. In fact, this is not entirely accurate: Nettle (1999c: 45) shows through computer simulation that small amounts of random noise (in continuous, not discrete variables) 'can lead to significant local differences in small, totally isolated groups'. However, the necessary circumstances are rare and even very small amounts of inter-group migration cancel the effect: diversity based purely on imperfect learning is far from robust (ibid.: 48). Furthermore, the apparent selection of linguistic features by adults seriously contradicts the child-based theory, as does the 'structured homogeneity' (Weinreich et al. 1968: 101) of speakers' language. As Croft (52) argues, if each variant in an individual's repertoire requires a separate grammar, then grammars will very soon multiply out of control.

### 3.2.2 *Adult-based innovation*

This leads to the question of whether children are in fact the source of linguistic innovation at all. Labov (2001: 417) notes that while children reinterpret alternations in vocabulary, they do not do the same with sociolinguistic variables, but instead match their parents' variation. Indeed, as sources of innovation and reinterpretation, it has been argued cogently that adults are at least equally likely candidates as children – a concept that is easier to accept once the assumption of homogeneity has been dropped. Traugott (2003) argues, citing Slobin (1994), that the complexity of inference involved in many cases of grammaticalisation makes adult innovation *more* likely. Croft (2000: 48) cites Ravid's (1995: 170) stronger claim that 'young children do not cause Language Change' while, in a similar vein, Aitchison (1992:173) states that 'children have little of importance to contribute to language change'. She does not, however, distinguish between propagation and innovation, claiming that 'Changes begin within social groups, when group members unconsciously imitate those around them' (ibid.). Aitchison's point is important, however: if social selection is an important means of propagation, it is hard to imagine that adults tend to select variants originated by young children, particularly considering the tendency of children to conform more, not less, to the speech-patterns of older speakers as they mature (see Croft 2000: 51, who cites Chambers 1995 and Macaulay 1997 on glottal stops in middle-class Glasgow English; Milroy 1980 highlights the ambiguous role of age as a variable in language change). In further support of adult-centred innovation, Croft (2000: 56-7) and Aitchison (1989: 84-9; 1991: 167-8) argue that the concept of a critical period for language acquisition has been overstated. There is a possibility that the 'sudden cutoff' (Croft 2000: 57) in adolescence has a social, not biological reason, since this is the point when a speaker becomes a member of the social group she has been emulating, rather than merely an emulator. This is somewhat questionable. Although the emphasis no doubt shifts, it is not clear that speakers ever stop emulating other speakers: this, after all, is the basis of social selection in propagation. It is also possible to overstate the importance of a critical period to the argument. Nobody can claim realistically that adult speakers are incapable of producing sounds not present in their native languages, nor that a speaker's language use remains identical from adolescence to death. Whether or not a change in external utterances really reflects a change in internal grammar is, at least in the present context, a

distinction without a difference: if such a change occurs (and there seems no reason to doubt that it does) then it can be propagated.

## 3.3 Mechanisms of innovation

### 3.3.1 *Random innovation*

Of course, if innovation is adult-based, it may still be random. After all, in light of the facts of Darwinism, one can hardly dismiss random variation out of hand. In Darwinian terms, language acquisition is replication and innovation altered replication, where the copy is 'not completely identical with the structure of the parent' (Croft 2000: 242). This creates a variant form that can then be propagated. So far, the kind of propagation I have described involves selection. Importantly, however, selection is not chiefly based on some advantage inherent to the linguistic feature[12]; rather, social selection is by association. It is beneficial to the linguistic feature to be in the mouth of a prestigious speaker and beneficial to other individuals to sound like that speaker. However, one can also conceive of propagation without selection, on an analogy with genetic drift, whereby 'changes [occur] in relative [gene] frequencies that are not due to any environmental interactions' (Hull 1988: 443, cited in Croft 2000: 24; see also Gould and Lewontin 1979: 590-1). The application of this concept to linguistic change makes no strong distinction between propagation and innovation: both processes, in the absence of selection, are supposed to be random. There being no evidence whatsoever for any particular human community to be less or more adept than others at acquiring language or hitting phonetic targets (variation in levels of alcohol consumption notwithstanding), change in this context should occur at a constant rate. This realisation, coupled with the successes of genetic dating, led to the invention of glottochronology. The failure of this endeavour[13] highlighted what was already known to many students of mediaeval literature. The poems of Dafydd ap Gwilym are considerably more comprehensible to modern Welsh

[12] This is not to say that selection cannot be functional (cf. Nettle 1999c: 30-5 *passim*): vowel systems, for example, tend to give the impression of having organised themselves for maximum clarity (de Boer 2001) ; similarly, some forms are likely to be so dysfunctional with regard to parsing or learnability that they tend not to be selected. Nevertheless, a great many linguistic changes appear to have no such functional explanation.

[13] For example, the formula involved calculates a split date of AD 1586 for Italian and French, but dates the origins of Tok Pisin to before Christ! (McMahon and McMahon 2005: 182-3).

speakers than the works of Chaucer (his contemporary) are to speakers of twenty-first century English who, moreover, have a great deal more trouble with *Beowulf* than modern Icelandic speakers have reading their sagas. Language, in fact, does not change at a constant rate. Clearly either innovation or propagation, or both, are not always random. The concept of social selection of variants provides a mechanism for non-random propagation. Does this mean that a coupling of random innovation with selectional (though no doubt occasionally random) propagation is an adequate explanation for language change? It is dangerous, at any rate, to assume it is the only one. As Croft (2000) writes:

> Normal replication [i.e. without innovation] is simply conformity to linguistic convention. Altered replication is the result of not conforming to linguistic convention. However*, a wide range of mechanisms* may lead to a speaker not conforming to linguistic convention (31; italics mine).

### 3.3.2 *Unintentional directed innovation*

The first issue that leads one to suspect the presence of non-random mechanisms is the regularity of much change: some kinds of change are more common than others and there would seem to exist certain constraining conditions that give direction to linguistic innovation. An example of this would be analogy: the timing may be random, but the direction of change is not (one is reminded of Kuryłowicz's rainwater – see 2.2.1 above). Of course, it is also possible to conceive of such principles as acting on propagation, rather than innovation, in which certain kinds of random variant are more likely to be selected than others. Sapir's (1970) concept of drift allows innovation to be random, but sees unconscious selection in propagation leading cumulatively in a particular direction: 'Language moves down time in a current of its own making' (150, cited in McMahon 1999: 138). As McMahon writes, this 'rather mystical concept' (ibid.) seems to have a parallel in the evolutionary metaphor of the blind watchmaker. She also mentions Aitchison's (1987, 1989) view of linguistic evolution as 'the invention of solutions to problems [where] any solution selected may reduce the options speakers have at the next stage' (ibid.), for example, 'the closing of one vowel might be regarded as "causing" the closing of another' (Aitchison 1987: 12). This conception avoids the clairvoyant abilities apparently involved in more teleological explanations; moreover, it seems a good approach to understanding such apparent tendencies or 'drifts' as grammaticalisation or

chains-shifts. Principles of economy or minimum effort fit in here. There is doubtless some small amount of energy saved in making words and phrases shorter; this can even fulfil a social, or interactional, function, allowing more time for other interactional goals (Croft 2000: 75). Moreover, 'erosion of form is highly correlated with frequency of occurrence in language use' (ibid.), something that tends to be specific to a particular community. Conversely, a word or structure can be altered and even made longer to avoid ambiguity: 'Je n'aime pas', for example, is somewhat more clearly negative than 'je n'aime'. Yet there is still the question of why this came to be perceived as a problem at the time it did, particularly when other languages, like Russian, make do with similarly small negative markers. Perhaps French speakers just happened to have a variant available that Russian speakers did not, but this brings us back to square one. Moreover, very many innovations do not seem to solve any obvious problem: what *is* the advantage of [a] over [o]? Their propagation may be at least partly explained by social selection, but the question of why they should arise remains problematic, not to mention the fearful question of 'why the change was not actuated sooner, or why it was not simultaneously actuated wherever identical functional conditions prevailed' (Weinreich et al. 1968: 112). I have discussed theories that rely on imperfect acquisition in children. Theories of change based on random variation, or errors, in adult speech have a long history: Paul (1978: 8) stated that 'even the most practised marksman misses his mark sometimes', yet it is not explained how deviations by this route come to replace the target itself; they are, moreover, bound to cancel each other out (cf. Sapir 1970; 149-50; McMahon 1999: 21; Nettle 1999c: 21-5; Dunbar 2003: 230; see also the critique of Paul's reasoning in Weinreich et al. 1968 and Croft 2000: 76). Furthermore, the kind of errors common in the speech of adults is different from the kind of changes that occur in language (Aitchison 1991: 174-8). There exist related ideas that are more plausible. Labov (1994: 221) suggests that speakers tend to 'overshoot' long vowels and 'undershoot' short ones, resulting in a lowering of the latter and the raising of the former. A shift of focus from speaker to listener is also valuable. Ohala (e.g. 1981, 1993; see also discussions in McMahon 1999: 16-17; Croft 2000: 77) has developed a theory of listener-based sound change, in which:

> variation in perception, caused by the confusion of acoustically similar (but sometimes articulatorily different) speech sounds … is potentially … [a]t least a 'mini sound change' (1993: 243)

This, if propagated, can then become a 'maxi sound change'. Changes such as assimilation can occur as a result of hypocorrection, whereby a phonetic feature is

reinterpreted as phonological. Conversely, in hypercorrection, a listener may assume that a sequence of similar sounds is the result of accidental assimilation and actively remedy this supposed error through dissimilation. In this case, innovation is the result of faulty propagation and it applies not only to first language acquisition: propagation of variants is not restricted to infants; spelling pronunciations are a related phenomenon.

### 3.3.3 *Intentional innovation*

There remains the possibility of intentional innovation. Clearly there is an intentional element in any innovation based on economy or clarity; hypo- and hypercorrection are also the result of processes of propagation that are (or may be) intentional. I have discussed these above. However, there is also the question of innovation for the sake of innovation. This is not a new idea. Jakobson (1960) and Keller (1994) have proposed functions and maxims of language use that can lead to change. The former's 'poetic function' corresponds very broadly to the latter's maxims to 'talk in such a way that you are noticed' or 'not recognisable as a member of the group' (101). Again, I do not propose that intentional non-conformity is the sole mechanism of innovation: there is no *a priori* reason to think that there are not very many reasons for all aspects of change in language, both listener- and speaker-based. Nor, however, is there reason for the phenomenon of dissimilation, as discussed above, to be restricted to propagation. Its role in innovation should, granted, not be overestimated: except in certain rather restricted contexts (e.g. lexical choice), a *conscious* effort to say something in an entirely new way is likely to be unusual even in this case (cf. Nettle 1999c: 30). Instead, Nettle (ibid.) suggests that subconscious random innovation might occur in the absence of suitable variants to adopt. This seems plausible and, as he points out, would help explain the speed at which new dialects arise. In a similar vein, an effort to *emphasise* one's selection of a particular variant over another would clearly enhance the opportunity for accidental exaggeration and hypercorrection. Perhaps most importantly, the social pressure to correct oneself 'back into line' would be weaker. This is, like Ohala's listener-based approach, innovation through propagation, but unlike Ohala's approach, it is only partly accidental: the result of an attempt to sound at once like one group, but defiantly *unlike* another.

All this still leaves open the question of why sounding different can be a good thing. I shall attempt to answer this in the next chapter.

# 4 Why sound different?

## *Evolutionary reasons for linguistic social markers*

## 4.1 Introduction

As an answer to the question posed in the preceding chapters ('Why would people want to speak differently from their neighbours?'), the evolutionary answer is perhaps on first sight the most epistemologically satisfying. It deals with such fundamental human issues as protecting assets, repelling intruders and telling friend from foe. One even feels – with some, if not full, justification – that the whys stop here. After all, the question, 'Why is it useful to tell people who will help you from people who will hurt you?' is answerable by a child. The deep problem is the speculative nature of evolutionary explanations: the danger of producing nothing more than plausible, but untestable (and thus essentially useless), just-so stories; the inherent lack of fossil evidence of prehistoric linguistic behaviour means that evolutionary linguistics tends to rely on a somewhat abstract level of evidence. All the same, as Hurford (2003: 38) points out, the goal of language evolution research is not to find answers to questions such as 'Did *Homo erectus* use syntactic language?' but to explain the present. This offers some hope to the present hypothesis, which concerns a phenomenon (linguistic variation) that is clearly highly active in practically all human populations studied. It is to be hoped, therefore, that its very ubiquity justifies a certain confidence in attributing to it an evolutionary explanation. This is not without danger, all the same: Campbell (in press) discusses the question of how much modern languages can tell us about the forms and structures of the earliest, and concludes that we can hope at most for broad guidelines as to what may qualify as human language. In a discussion of grammaticality judgements, Wray and Grace (in press) counsel caution 'when using modern literate societies as the yardstick for determining what is truly fundamental to human language in its full range of cultural contexts'. The caveat applies not only to language and not only to post-industrial societies: Kurtz (2001: 134) discusses the difficulties and dangers of extrapolating human political evolution from modern ethnographic records; he quotes Eric Wolf (1982:76) that 'the societies studied by anthropologists are … not the pristine precipitates of past evolutionary stages'. All this is true, but should not be taken too far: after all, if the contemporary world is entirely rejected as evidence for the past states that brought it about, then most science and all history are made bunk. Bearing this in mind, I shall

state the (pre)historical assumptions upon which the present hypothesis rests and attempt, as far as is possible, to justify them. Chapter 5 will discuss attempts to the theory.

## 4.2 Social groups

The hypothesis discussed here, in its evolutionary context, relies first on the assumption that our ancestors came to belong to social networks – 'groups based on cooperative exchange' in Nettle and Dunbar's words (1997: 93); second, it claims that these networks were complex enough to make identification of free-riders (see 4.2.2 below) a necessity; third, it proposes that linguistic cues came to be used for this purpose. I have discussed the sociolinguistic sense of 'social network' in 2.1.2; its greatest advantage, particularly in questions of evolutionary anthropology, is that it is intentionally ambiguous. In the present context, one is perhaps first drawn to think of clans, tribes and nations: anyone who doubts the historical importance of telling fellow tribe-members from non-members need look no further than the Hebrew Bible, specifically Judges 12. Famously, this particular issue was resolved through reliance on distinctive speech patterns: the pronunciation of the first phoneme of *shibboleth*. There is also the significant issue of trading networks, where the speedy identification of trusted outsiders is of the greatest importance. Such conceptions of human social networks are simplistic, however. Fried (1967) discusses at length the difficulties in defining 'tribe', noting the example of the Siuai, who 'do not act together in land use, are fuzzy about boundaries, intermarry with people speaking another language, and, as a matter of fact, are bilingual' (155). Are these to be considered a tribe? Questions of this sort are a serious issue in both anthropology and law; yet they need not detain us here. All that is important to the present hypothesis is that our ancestors came to have to trust other individuals. This requires a division of the world into those that can probably be trusted and those that likely cannot. It is wise to be suspicious of strangers, and individuals who have invested time, energy (and perhaps more – see below) in gaining trust, in 'becoming part of the group' in some sense, are less likely to be out for all they can get. A 'group' or 'network' in this context is thus merely a collection of individuals who share some degree of trust. Crucially, it may be of a size such that one member cannot recognise all the others on sight. There are at least two reasons for being able to prove group membership, therefore. First, if

gaining some 'badge' of membership is costly, then its attainment proves a certain commitment to the group and thus (it is to be hoped) a higher degree of trustworthiness. Second, in larger groups, it allows unfamiliar members to identify each other and, importantly, those who are merely pretending to be members (one is irresistibly reminded of the Masonic handshake). Nettle (1999b: 58) notes that although people are often very willing to cooperate with strangers with no obvious reward, this 'often extends only to linguistically identifiable boundaries'. Such a badge as this might also confirm the rights of an individual over a territory, or indeed distance them from these rights ('I can tell by the way you speak – you're not from around here'). Modern passports and visas are a more concrete means of establishing the same rights.

### 4.2.1 *Evolutionary mechanisms for group-based altruism*

This does not quite answer the question of why we should want to belong to such a group the first place – why, in other words, trust anyone? The very fact that social groups exist indicates that there is something to be gained from being a member of one (cf. Dawkins 1989: 166), although the simplistic view that 'group members can help each other out' needs considerable refinement. Moreover, the fact that some animals do not live in such groups indicates that there is something to be lost. The issue of what is to be lost and gained is closely bound up with questions of cooperation and altruism. Certain tasks, such as defence, hunting and food-gathering, may be better achieved by several individuals working together; some, indeed, may be impossible or prohibitively dangerous for an individual working alone. On the other hand, there are also disadvantages to group-living: most obviously, if a goal is achieved through cooperation, every individual involved is likely to expect a share of the reward. More dangerously, individuals may attempt to claim *more* than their fair share. There are serious evolutionary issues at stake here. There is nothing to be gained evolutionarily by helping unrelated individuals pass on their genes. As Dawkins (ibid.: 202) puts it: 'niceness dies a Darwinian death'. As he goes on to state, however, there are circumstances in which niceness (or apparent altruism) can be beneficial to both parties.

#### 4.2.1.1 Kin selection

Most obviously, there are occasions when the receiving party is in fact related, in which case such behaviour is only to be expected: it is hardly altruistic, from the genetic point of view, for an organism to contribute to the survival of its own offspring. The conditions for such kin-selection/kin-altruism have traditionally been specified by Hamilton's Rule (Hamilton 1964; anticipated by Haldane 1932), where *c* is cost, *b* is benefit in offspring to the recipient of the behaviour and *r* relatedness (the proportion of shared genes). :

$$rb > c$$

In other words, the more closely related two individuals are, the more likely they are to share a given gene and the more worthwhile it is for one to help the other. As Dawkins states, 'A gene for suicidally saving five cousins would not become more numerous in a population, but a gene for saving five brothers or ten first cousins would' (1989: 93). Dunbar (1996: 164-5) describes an experiment in which subjects were asked to maintain an increasingly painful posture, having been offered 75 pence for each 20 seconds. On most occasions, the money was to be given not to the subject but to family members of different degrees of relatedness, as well as close friends of the same sex and a children's charity. The subjects turned out to work much harder for close relatives. All this sis convincing; it should be noted, however, that Hamilton's rule has been shown to be lacking in certain respects, particularly with regard to social insects (Wilson 2005). It is at least far from being the only proposed mechanism for the evolution of cooperative behaviour.

#### 4.2.1.2 Reciprocal altruism

One of the most obvious alternatives is reciprocal altruism, summed up in the expression (as Dawkins 1989 notes) 'You scratch my back and I'll scratch yours.' This relies on the beneficiary paying back the favour at a later date. Of course, it need not necessarily be at a later date: sharing the rewards of a cooperative venture can be seen as a form of reciprocal altruism. In practice, however, payback 'is characteristically delayed and

indirect' (Nettle and Dunbar 1997: 93), a fact that necessitates a good memory, which may explain why such behaviour is more or less restricted to humans (ibid.). There are also significant differences between reciprocal altruism and kin-altruism. Most obviously, there is no future reward (except – which is an interesting issue in itself – in certain religious beliefs) to be gained in giving up one's life for a non-relative. Granted, it is possible to imagine situations where the beneficiary of the sacrifice would repay the debt to the offspring of the deceased, but the benefits of this would have to be considerable; besides, this would really be a special case of kin-altruism. The kind of altruistic behaviour involved, therefore, may be different in both cases. The second issue is the danger of defection. What if the beneficiary of the altruistic act never reciprocates? Or runs off with all the rewards of a cooperative effort? The obvious answer is that that individual would soon become ostracised as others refused to offer help, there being little to gain from doing so. In some cases, harsher punishment may even be meted out.

#### 4.2.1.3 Group selection

Group selection is a related, and somewhat problematic, issue; despite its long acceptance in the popular imagination (Dawkins 1989: 7-10) it has long been criticised, with Maynard Smith (1964) cautiously arguing that it may be possible in 'severe conditions'. Dawkins (1989; 1999) is highly dismissive of 'the misconception … that living creatures evolve to do things "for the good of the species" or "for the good of the group"' (1989: 7). The main difficulty with the concept of group selection is that a population of altruistic individuals all prepared to sacrifice themselves for the good of the group is very easily invaded, and over-run, by selfish individuals. It is, furthermore, not clear how such a population would arise in the first place, for if an individual contributes to the reproduction of its group at its own reproductive expense, then the other non-altruistic members should transmit their genes more successfully. Nevertheless, this gene-centric view has recently been challenged by theories of multilevel selection (see Wilson and Sober 1994; Thompson 1998; Wilson and Sober 1998), a redevelopment of group-selection theory. The essence of the argument is that:

> since the evolvability of any trait is determined not by its consequences to the proportion in the groups of which the population is composed, but by its consequences to the

> proportion of the trait in the population overall … altruism can be favorably selected in a population divided into groups even if it is decreasing in relative frequency in *every* group in the population.
>
> (Thompson 1998: 305; italics original)

Wilson and Sober (1998) make an analogy with the graduate admission policies of the University of California in the 1970s. It was discovered that the percentage of women applicants admitted was less than the percentage of men, but that in no individual department were women admitted less often than men. The answer to the paradox was that women tended to apply to departments with low acceptance rates. Multilevel selection theory raises the question of whether a vehicle can exist above the level of the individual: group selection is thus a question of whether 'groups can be like individuals in the harmony and cooperation of their parts' (Dennett 1994). All the same, Dawkins remains critical of this view, arguing that 'I coined the vehicle not to praise it but to bury it … You should not feel entitled to ask: "What is *the* vehicle in this situation?"' (Dawkins 1994) Dennett (1994) is more ambiguous, arguing that group-selection effects are indeed possible, but that this itself relies on the 'gene's eye perspective' and that one must not forget the difference between components that are genetically related (as in an organism) or unrelated (as in a group). Wilson (2005) turns this somewhat on its head by arguing that in the case of social insects, colony evolution appears to rely on 'natural selection at the level of the colony' (163) and that the close genetic relatedness of members of the colony is not the driving force in the origin of the colony, but a result of their belonging to it.

### 4.2.2 *Free-riders*

The important point for the present hypothesis is that all the above-described forms of altruism rely to an extent on communal living. Kin-selected altruism relies on the ability to identify one's kin, which is most practical where members of the same family have grown up together. Where this is not the case, a possible solution is so-called 'Green Beard altruism', where a distinctive external marker allows a gene to '"recognise" copies of itself in another individual' – the marker being linked genetically to the social behaviour in question (Dawkins 1989: 89; 1999: 154; cf. Hamilton 1964). As Dawkins indicates, this is somewhat improbable, but remains a theoretical possibility and, in point

of fact, likely examples have emerged (Keller and Ross 1998; Queller et al. 2003). It remains rare, all the same. Alternatively, in less mobile, more 'viscous', populations, a weaker form of kin selection may operate based on the increased likelihood that a higher proportion of genes are shared by all members of the group.

In the case of reciprocal altruism, one must feel confident that the individual one is helping will be present to repay the favour or to be punished for not doing so. There is very little to be gained from helping an unrelated individual that one may never see again. As communities grow, however, and social networks become more complex, it becomes less easy for members to identify other members. This gives opportunities to the free-rider. While there is little to be gained from helping a non-group member, there is much to be gained from being that non-group-member – as long as you can persuade the group for long enough that you do belong. This 'stranger in our midst' is the free-rider (Enquist and Leimar 1993) and fear of this figure has played a role in pogroms and racist riots; it is still current in fiction too: the recent US fantasy drama *Lost* concerns a group of plane-crash survivors on a desert island; the first season includes a mysterious character who turns out not to have been on the plane; he then kidnaps a pregnant group member. The circumstances of the group – loose-knit and in a dangerous setting – along with the threat not only to a vulnerable member, but also to her (and, by extension, the group's) reproductive chances, makes this a clear manifestation of the fear of the free-rider.

### 4.2.3 *Group size and structure*

The hypothesis discussed in this paper assumes a certain level complexity in the prehistoric social structure of *Homo*. The issue of 'natural' social structure in human beings, however, is problematic: first, there is considerable cross-cultural variety in the modern world; second, we know relatively little about the social organisation of our more distant ancestors. Put bluntly, there is no direct evidence of hominin social organisation until very recent prehistory; Dunbar (1996: 110), for example, notes that we have evidence of permanent campsites only from the last 100,000 years. Moreover, human-like structures are not the norm biologically; as Nettle and Dunbar (1997: 93) state: 'We neither observe them [groups based on cooperative exchange] in our nearest animal relatives nor particularly expect them on the basis of natural selection'. A certain amount

can be inferred from fossil remains: Beck Kehoe (1998: 77) points out that apart from comparisons with other primate species, which tend overwhelmingly to be gregarious (orangutans are an exception), the evidence from fossilised remains of young *Homo* indicates a prolonged juvenile period which, as in modern humans, would have necessitated a level of adult care difficult to achieve without some kind of social group. With regard to the structure or size of such groups, other inferences can be made. The human tendency to mate for life (or at least for considerable periods of time) would certainly appear to be a response to the long period of juvenile helplessness peculiar to our species (the length of this period is not shared by our closest relatives). In the absence of an oestrus cycle, monogamy provides a means by which a father can be more secure that he is protecting his own young. Arsuaga and Martínez (2006: 166) state that current consensus points, inconclusively, towards modern human social biology being an innovation of *Homo*. They also lend support to arguments for the importance of social intelligence – a requirement of dealing with the complexities of group-living – in explaining human brain-size (169-70). Aiello and Dunbar used correlations of primate brain size with the average size of social groups to predict an average group size of 150 for human beings (Aiello and Dunbar 1993; Dunbar 1993, 1996: 55-79 *passim).* Dunbar (1996) provides convincing evidence that this figure reflects cross-cultural reality.

## 4.3 Markers of identity

Whether or not inconclusivity in such judgements is in fact a problem to the current hypothesis depends in any case on our interpretation. Whatever our conception of prehistory, human beings certainly live in complex, social networks today; and they have done so throughout recorded history. Therefore, even assuming that at some point in our evolutionary history our ancestors lived in groups small enough for free-riders to pose no threat, one must still accept that at some time between that point and the present, this situation changed, bringing with it certain challenges. A possible difficulty arises if we assume that the tendency to make use of linguistic markers to solve these challenges is innate and arose as a response to this increase in group size. In this case, timing becomes more important. If large social networks are a recent, cultural phenomenon, then the likelihood of such an innate tendency evolving in a small

timeframe is small[14]. All the same, the fact that we have evolved impressive social abilities with regard to deceit, manipulation and theory of mind (cf. Tomasello 1999) suggests strongly that the shift to something resembling modern human social patterns was long enough ago to encourage the evolution of mechanisms to tell fellow from outsider, even prior to the evolution of full human language.

If we take this more parsimonious interpretation that the phenomenon is not restricted to language, the issue of innateness can in fact be reversed somewhat. From this point of view, we make use of all possible behavioural cues – cultural (and perhaps literal) green beards – to identify ourselves and others as belonging or not belonging to a particular group; language, then, is simply a particularly salient feature. This is highly probable: an afternoon spent on a high street or mall in most cities of the world will confirm how people use clothes and hairstyles to express identity. These are cheap signals and relatively easy to change. Rather more costly markers exist as well: piercings take time to heal; rituals take time to learn; tattoos (in the absence of lasers) are permanent. Bodily mutilation is an especially costly marker. It is not for nothing that circumcision is normally performed on the very young: in Biblical commandments to go forth and multiply, in the Catholic prohibition of contraception, or even in the former mayor of Aberystwyth's instruction to Welsh speakers to preserve the language by having more babies[15], there are echoes of Monty Python's mantra that 'every sperm is sacred'. In stark evolutionary terms, if genes are not reproduced, they disappear, and a man does not wound his penis lightly.

A learnt speech pattern, then, has advantages beyond other markers:

1) To learn a dialect is costly in terms of time, but poses no reproductive disadvantages or health risks;

2) It is by far best learnt by the very young;

3) Adults tend only to be able to learn it perfectly (if at all) after spending long periods of contact with native speakers (as, of course, do infants);

[14] Such questions of timeframe are, admittedly, somewhat disputed. Tomasello (1999: 3) rejects a strong form of linguistic nativism on these grounds. In contrast, Pinker (1994: 349-50) argues that the time allowed is adequate, particularly allowing that already-extant non-linguistic brain circuits can be 'revamped'.

[15] See http://news.bbc.co.uk/1/hi/wales/mid/5025150.stm (accessed 23 August 2006).

4) It is highly salient; refusal to use language is itself suspicious – and far more so than a refusal to strip naked to reveal tattoos and other physical alterations;

5) It can be changed relatively easily.

This perspective turns the question of innateness from a 'why' to a 'why not'. The issue is no longer why language changes, but why it must be learnt: why it is *not* all innate. Pinker and Bloom (1990) propose that this would require too much space to be encoded in the genotype – and would in any case be unnecessary, particularly as a partially learnt language would be more developmentally flexible. However, as Nettle and Dunbar (1997: 94) note, it may be misleading to think of divergence purely as an accidental result of genetic underspecification; with linguistic diversity apparently providing a selective advantage, it would seem that, to some extent, language must be learnt *in order that it can change* (cf. Dunbar 2003: 230). And change it must. For reasons of size (see 4.2.3 above), conflict and geography (see 5.2.1 below), groups continually reshape themselves and split and reform; if the speech patterns of their members are to have any success as group markers, then they must change too. Moreover, they must not be too easy to acquire. This is an ideal setting for a symmetric intraspecific 'arms race' (Dawkins and Krebs 1979; Dawkins 1999: 55-80). On the one hand, speech patterns must be sufficiently difficult to learn that acquiring them is costly (this is constrained by the fact that infants have to learn the speech patterns of their community accurately). On the other, it is advantageous for speakers to be able to acquire non-native speech patterns as easily as possible. There is evidence to suggest (Wray and Grace in press) that this exercises an influence on the shape not only of language as a whole, but of specific languages. Languages primarily used for intra-group communication appear to be more complex than languages used between groups (English being an obvious example), where the burden of marking group membership can be expected to shift to more subtle variation in dialects. However easy it is for non-natives to learn English, it remains difficult to sound convincingly native. One is reminded of the line from *My Fair Lady*: 'Her English is too good … I can tell that she was born Hungarian!'

# 5 Testing the Hypothesis

## 5.1 Predictions

The hypothesis so far explored in this paper states that linguistic variants can be propagated and innovated through social mechanisms external to language[16] (see Chapters 2 and 3). It states further that human beings have evolved to use variation in speech patterns to identify outsiders and potential free-riders (see Chapter 4).

This makes a number of predictions.

1) Language should change at a different rate in different circumstances. Specifically, it should change faster where pressures for social marking are greater. This contradicts the basic assumption of glottochronology, as well as theories of change based on isolation and drift (although this should not be ruled out entirely: see 3.3 above).

2) There should be a tension between a high ability to adapt to the speech pattern of one's social group (or desired group) and a tendency for aspects of dialects to be difficult to learn.

3) For this reason, language change should not necessarily be in the direction of simplicity. As Bright (1997: 84) points out, we might expect English to lose its 'strong' past tenses and replace them with 'weak' ones (i.e. *swimmed* instead of *swam*). While strong verbs do indeed sometimes become weak by analogy, the reverse also occurs (e.g. *sneak*/*snuck*).

4) There should be a difference between language used for cooperative purposes (where speakers are required to trust each other) and language used competitively (where no trust need be involved).

[16] I stress again that these are unlikely to be the only means by which language changes and, indeed, that we should not expect there to be a single explanation for the phenomenon.

## 5.2 Empirical work

### 5.2.1 *The macroscopic approach*

Broadly speaking, this hypothesis lends itself to testing both on a large- or a small-scale. Sociolinguistic studies on propagation (see Chapter 2) can be considered as falling under the latter heading. Nettle (e.g. 1996, 1998, 1999a, 1999b, 1999c) has been responsible for much 'macroscopic' (1999c: 22) work in this area. His computer simulations suggest convincingly that social selection (possibly coupled with functional selection) is far more robust than mere isolation and random noise in producing diversity (ibid.: 37-56; 1999a), while his and Dunbar's (1997) simulation suggests that 'producing distinctive codes may be a way that reciprocal exchange in large groups can be made more stable' (98). Nettle's simulations further suggest that small speech communities behave rather differently from larger ones – in speed of change, rate of borrowing and proportion of marked structures (1999b; cf. Wray and Grace in press). The fact that rate of change proves greater in smaller populations (1999b) is relevant to the first prediction stated above. On first sight, however, it seems problematic: one might expect language to change more rapidly in larger populations more prone to splitting. Aiello and Dunbar, for example, predict 150 as the average human group size, after which groups are likely to split (see 4.2.3 above). This contradiction is a result of a simplification in Nettle's simulation, in which 'a community … enlarges *without fragmenting*' (1999b: 124; my italics).

Nettle's other work in this area has concentrated on statistical measurements of linguistic diversity correlated with sociocultural and economic patterns. His 'ecological risk hypothesis' (1996, 1998, 1999c) states that the greater the ecological risk, the fewer languages there will be in a country of a given size or population (Nettle 1999c: 83). This is based on the observation that the less reliable food sources are, the wider the social networks that must be formed to ensure survival and thus the greater the size of ethnolinguistic group (ibid.: 79-81; 1996: 413-4). His results prompt him to assert that:

> ecological risk has been … probably the most important single factor at a global level … in the development of people's strategies of group formation and communication (1999c: 94)

This would seem to be overstated: numerous other factors (in particular political and religious) would be expected to play a significant role. Campbell (2002) is highly critical of the determinist tone of Nettle's conclusion and points out that wide social networks do not necessarily entail linguistically homogeneous groups and that the same 'economic ends can be served as well through multilingualism, lingua francas, and trading pidgins' (ibid.). Moreover, the existence of small and large languages in the same area poses problems. According to Nettle's hypothesis, areas of high risk should produce languages that are equally large (ibid.). In reality, this too may be overstated: other factors, related to geographical boundaries, historical events and patterns of cultural dominance are likely to complicate the picture considerably; nevertheless, it should be borne in mind that Nettle's confident result relies on a highly simplified interpretation.

### 5.2.2 *Prosodic variation and change*

The second prediction raises interesting questions. There is no *a priori* reason to assume that any particular aspect of language should be more or less prone to variation or more or less involved in the detection of free-riders than any other. Languages change lexically, syntactically, phonologically and semantically and any such variation would seem to be relevant in identifying 'foreignness': the phrase 'She's got a funny accent' covers a multitude of sins. There may, however, be reason to suppose that prosody occupies a special position. Intuitively, it would seem relatively easy to swap one lexical item for another and start pronouncing [r] where previously you did not (although see 3.3.2 and 3.3.3 on hypercorrection above), while mastering non-native prosody would appear to require more prolonged contact (though it should not be forgotten that the same is true of many aspects of discourse and phonetic detail). Ramírez Verdugo (2002), while lamenting the lack of research in this area, stresses 'the difficulty that non-native speakers of English have to acquire the intonation system' (116), particularly over longer utterances (129-30). Moreover, Vieru-Dimulescu and Boula de Mareüil (2005) found evidence to suggest that prosodic cues outweighed segmental cues in perceptions of foreignness in Spanish-accented Italian and Italian-accented Spanish. Tantalisingly, Cruttenden (1986: 169) writes that:

> There are certain areas which are particularly susceptible to idiosyncratic uses of tones: Greetings, farewells and social formulas are one such area: the conventional way of intoning the equivalent of *Good morning* will vary from language to language; moreover variation within one language in such areas will be sensitive to very subtle social conventions.

As there is an obvious advantage to identifying an outsider as soon as possible, this is significant, particularly when seen in the context of greeting rituals in general, which vary cross-culturally (see also 4.3 above). It has also been argued that prosody is likely to be evolutionarily older than other aspects of language, such as segmental phonology (McMahon in press). As successful detection of free-riders was clearly of evolutionary benefit before the development of full human language, the most ancient features of language are likely to be of particular importance with regard to this question. Unfortunately, relatively little work has been done on dialectal variation in prosody (Cruttenden *pc* ; cf. Cruttenden 1986: 137), although this situation has begun to change over the last decade (see e.g. Grabe et al. 2000; Grabe et al. 2001; Grabe and Post 2002; Grabe in press; Arvaniti and Garding in press). There has been very little work on diachronic prosodic change, with work on High Rise Tone in Australia and New Zealand being the main exception (Guy et al. 1996; Britain 1992; Britain and Newman 1992).

### 5.2.3 *Relative linguistic complexity*

With regard to the third prediction, Wray and Grace (in press) argue convincingly that languages aimed at esoteric (intra-group) communication tend to have more 'complex' features, making acquisition by adults more difficult. This means that outsiders are very easily recognisable. Where a language has to be learnt, or at least understood to a reasonable degree, by adults, it is likely to become both more transparent and regular and, as it spreads beyond its original territorial boundaries, to broaden its vocabulary and flexibility: put simply, one would expect there to be more ways of saying the same thing. This is the fate of languages imposed by empires, of lingua francas and of trading languages; Kay (1997: 24) finds that 'World languages provide the means for more precise and explicit … communication at whatever level of abstraction is desired by the addressor'. The hypothesis of relative complexity remains to be tested fully, although Nettle's (1999b) simulation suggests that the likelihood of encountering marked

structures in languages is greater in smaller populations. With regard to real-world data, the continuing spread of literacy complicates the picture considerably; nevertheless, Everett's (2005) study of Pirahã is strongly suggestive.

### 5.2.4 *Dialogue*

Twentieth-century linguistics, for reasons both theoretical and practical, has tended to concentrate very much on the kind of language encountered in monologue; nevertheless, there are good reasons, both theoretical and intuitive, to suppose that this approach is likely to skew one's view of language considerably; above all, it ignores many of the realities of language as encountered in dialogue (cf. Pickering and Garrod: 2004).

Recent work has made some progress towards redressing the balance. Dunbar (1996: 123) has measured the amount of conversation time devoted to different topics and found that social topics take up on average two-thirds. Psycholinguistic studies have shown that the speech patterns of conversational partners tends to converge lexically, syntactically and phonetically (Garrod and Anderson 1987; Garrod and Doherty 1994; Pickering and Garrod 2004; Garrod and Pickering 2004; Pardo 2006). This appears to be based on 'a largely unconscious process of "interactive alignment"' (Garrod and Pickering 2004: 9; Pickering and Garrod 2004 *passim*), which allows speakers to establish common ground and gives greater certainty of being understood. Much of the experimental work in this area has been specifically on cooperative dialogue, such as in map tasks.

## 5.3 Pilot study

The hypothesis outlined in this paper states that human beings have evolved to use language to distinguish between individuals that they can trust and those that they cannot. As trust plays a far greater role in cooperative than in competitive activity, it seems likely that speech patterns should differ between these two conditions. In early July 2006, I undertook a pilot study with the aim of comparing speech patterns in cooperative and competitive dialogue.

### 5.3.1 *Subjects*

The experiment involved eight pairs of subjects. All of the pairs were native English speakers and were paired according to accent (in half the pairs, participants had similar accents, while in the other half they did not; this was based mainly on self-identification: see Appendix I). In half the pairs, the participants had known each other for at least six months; in the other half, they were complete strangers. To avoid issues of dominance, all pairs were same-sex and all participants were between the ages of 20 and 35 and all were university students or graduates. Table 5.1 gives the exact details of the pairings.

| | Accent | Sex | Strangers? | Game order |
|---|---|---|---|---|
| Pair 1 | Scottish<br>Scottish | Female | Yes | Competitive first |
| Pair 2 | Irish<br>Midlands/mixed English | Male | Yes | Cooperative first |
| Pair 3 | Mixed British Canadian | Male | Yes | Competitive first |
| Pair 4 | Northern English<br>Northern English | Male | Yes | Cooperative first |
| Pair 5 | Southern English<br>Southern English | Female | No | Competitive first |
| Pair 6 | Scottish<br>US | Male | No | Cooperative first |
| Pair 7 | US<br>South African | Female | No | Competitive first |
| Pair 8 | US<br>US | Female | No | Cooperative first |

TABLE 5.1. Subjects who took part in the study.

### 5.3.2 *Outline*

The experiment involved eight pairs of subjects. At the start of a session, each subject was asked to describe a picture[17] alone (the other member of the pair was asked to wait in a different room) and was recorded. After both subjects had done this, they were positioned on either side of an opaque screen in the recording studio and each given written instructions for two games (see Appendix II). Figure 5.1 shows the layout of the room.

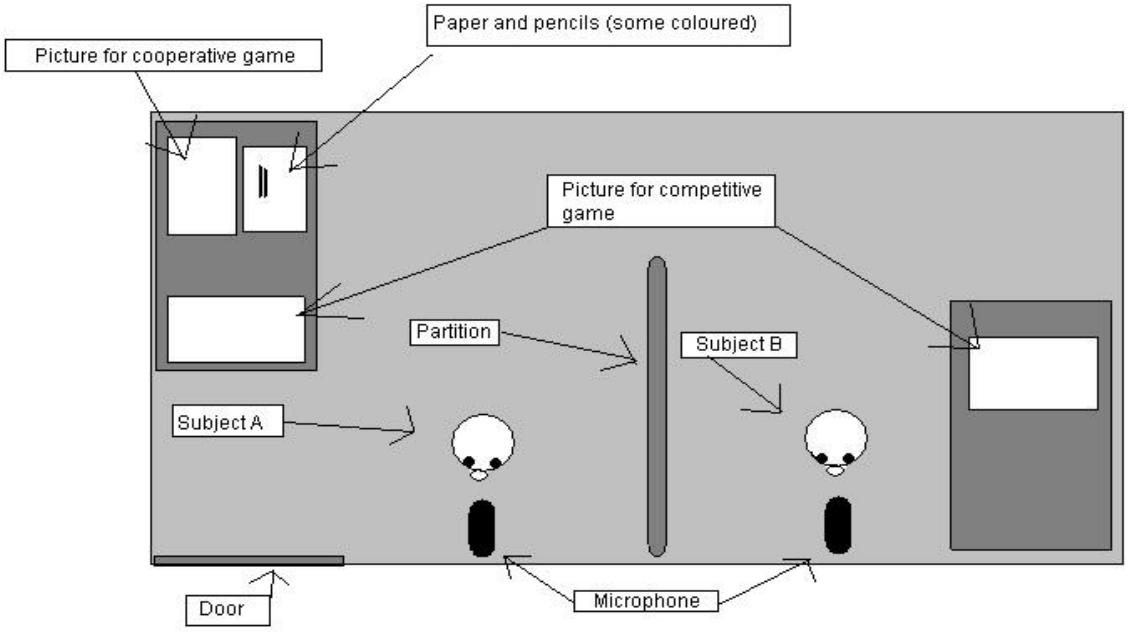


FIGURE 5.1. Layout of experiment.

### 5.3.3 *The games*

Both the games involved making statements and answering questions about pictures, while being recorded. Half the pairs played the cooperative game first, and half played the competitive game first. There was no significant break between games.

[17] See Appendix II for all pictures used in the experiment.

**Cooperative game:** Participants were provided with drawing materials and a photograph of a bathroom in the Balmoral Hotel in Edinburgh (inside an envelope). One participant was to describe the picture and the other was to draw it based on the description. Participants were instructed to choose between themselves who would take which role, since this decision-making process would be cooperative behaviour in itself. The instructions for this game were intended to encourage participants to feel comfortable with each other ('greet each other … you can chat for a minute or two if you want.') and to approach the game cooperatively ('This game is all about using language to share information'). They were also instructed to concentrate on having 'as many details present as possible' in the drawing; this was to encourage them to focus more on the task than their style of language. It was important that this game should involve one picture only (rather than each participant describing a different picture for the other to draw), since this would heighten the sense of there being a single shared goal. The danger of this was that the two participants would use different kinds of language (that the drawer would only ask questions and the describer only make statements). Therefore, the drawer was encouraged to let the describer know what was in the drawing and the describer encouraged to ask about the drawing 'to check the DRAWER is getting things right'.

**Competitive game:** Participants were provided with a picture each, inside an envelope. Each had to give an item of true, but unhelpful information about their own picture and then ask a yes/no question about their opponent's picture. This combination of statement and question was intended to produce a wider variety of language. The object was to guess what was in the opponent's picture. In this game, words like 'opponent', 'player' and 'winner' in the instructions were intended to encourage a sense of competition. For the same reason, it was important that there should be two pictures in this game and that each participant be performing the same task. A note with the picture said which participant started, in order to avoid as much non-competitive communication as possible.

### 5.3.4 *Results*

The aim of this pilot, as noted above, was to investigate whether there was a significant difference between the two conditions and whether either differed significantly from speech patterns in monologue. The most salient difference was in formality of style; particularly noticeably, British subjects seemed far more apt to pronounce the phoneme /t/ as a glottal stop in the cooperative condition. I therefore counted the number of glottal stops in each condition for eight British subjects[18] (see Table 5.2) and produced percentages (see Appendix I). As can be seen, the percentage was generally greater in the cooperative condition. For comparison, I also counted the number of words in which /l/ was vocalised for four English subjects (Northern English Males 1 and 2, Southern English Females 1 and 2). The results were similar for the speakers of Southern English (where l-vocalisation is an especially salient feature), but there did not seem to be significant variation between conditions for speakers if Northern English (see Appendix I).

An analysis of variance (one-way repeated-measures ANOVA) was performed on the glottal-stop data. The results show that the percentage of glottal stops was significantly affected by the kind of interaction, $F(2, 14) = 14.73$, $p < .05$; Mauchly's test indicated that the assumption of sphericity had been met ($\chi^2(2) = 4.64$, $p > .05$). Specifically, there was a significant difference between the second (competitive) and third (cooperative) levels ($F(1, 7) = 30.67$, $p < .05$), though not between the first (alone) and second (competitive) levels ($F(1, 7) = 1.16$, $p > .05$).

[18] One British subject was excluded (see 5.3.5)

| | Percentage glottal stops when alone | Percentage glottal stops in competitive game | Percentage glottal stops in cooperative game |
|---|---|---|---|
| Scottish Female 1 | 34.78 | 40 | 88.31 |
| Scottish Female 2 | 68.97 | 50 | 56.8 |
| Scottish Male | 48.65 | 46.67 | 65.26 |
| Midlands/mixed English Male | 22.73 | 25 | 68 |
| Northern English Male 1 | 17.65 | 50 | 85.94 |
| Northern English Male 2 | 51.52 | 62.5 | 81.33 |
| Southern English Female 1 | 33.33 | 53.66 | 73.35 |
| Southern English Female 2 | 55.17 | 52.38 | 82.17 |
| Mean | 46.8 | 47.53 | 75.15 |

TABLE 5.2. Percentages of glottal stops for /t/ in three conditions for eight subjects with British speech-patterns.

| | Percentage glottal stops when alone | Percentage glottal stops in competitive game | Percentage glottal stops in cooperative game |
|---|---|---|---|
| Mixed-accent British male | 56.25 | 57.14 | 43.1 |

TABLE 5.3. Results for British male who was cooperative in competitive game.

### 5.3.5 *Discussion*

These results imply that in competitive dialogue, speakers increase the 'standardness' of their speech pattern and reduce it in cooperative dialogue, presumably as a marker of closeness. An obvious development from this study would be to compare cooperative/competitive dialogue between strangers with the same subjects' speech patterns when conversing with friends.

It should be noted that the results above, although suggestive, require caution. Most obviously, they relate to a very small sample of subjects, and the counting of glottal stops was impressionistic. It should be added that a significant difficulty in any such experiment is that subjects will feel in many ways that they are cooperating with each other against (or to the benefit of) the experimenter. To reduce this effect, it was necessary to restrict data collection in the competitive game to those utterances that were a part of the game and not *about* the game (such as 'now I ask a question, right?'). This meant that the number of tokens for this condition was extremely small in comparison with the number for the cooperative game, particularly for some subjects (see Appendix I). To complicate matters further, one subject appeared to misunderstand the principle behind the competitive game and gave his opponent extremely *helpful* information about his picture (e.g. 'My picture shows a statue of a famous historical Scotsman'). Since this can hardly be considered a good example of language in competitive dialogue, he was excluded from the statistical analysis. However, it is notable that he shows a very similar percentage of glottal stops across all levels (see Table 5.3), lending support to the claim that the difference shown by other subjects was in fact related to the competitive versus cooperative nature of the games rather than any other difference between them. It is possible that he was accommodating in both conditions to the (glottal-stop-free) speech of his Canadian partner in the dialogues.

The difficulties described in this section are not insurmountable and it is hoped that a somewhat altered version of this study, with a greater sample size, would produce a more reliable result.

# 6 Conclusion

In this paper I have argued that there are likely to be many reasons for linguistic change, but that social selection stands out among them as a mechanism for the propagation of linguistic variants and even, though doubtless less prominently, for their innovation. There are, furthermore, good reasons for supposing that this use of speech patterns to establish identity serves an evolutionary purpose. In addition, I have presented the results of my own pilot study, which suggest that speech patterns may differ between cooperative and competitive dialogue. It is to be hoped that a more refined version of the study, with a greater sample size, will confirm this result.

Given the space, much more could have been said. There was no space, for instance, for a cross-species comparison of communicative variation; birdsong in particular is highly interesting in this regard (see e.g. Nottebohm 1972; Date and Lemon 1993; Beecher et al. 1994; Nettle 1999c: 29, 34-5; Slater 2003), and recent news reports would have us believe the same is true of cows[19]. Above all, the role of intonation in the hypothesis seems deserving of a great deal more attention: the study of phonological change has been very much biased towards the segment. The recent work on prosodic variation (see 5.2. 2) is very much to be welcomed.

The question of why language changes is a very old one and, I believe, one that is relevant to a deeper understanding of language in general and of our own nature. The answer I have given here suggests that linguistic change plays a fundamental role in establishing and expressing identity: language changes because we change in our ideas of who we are and where we belong. This notion, that language is no more or less constant than the minds of men, is as old as Adam:

> La lingua ch'io parlai fu tutta spenta
> innanzi che all'ovra inconsummabile
> fosse la gente di Nembròt attenta:
> ché nullo effetto mai razionabile,
> per lo piacer uman che rinovella
> seguendo il cielo, sempre fu durabile.
> Opera naturale è ch'uom favella,

[19] See: http://news.bbc.co.uk/1/hi/uk/5277090.stm (accessed 23 August 2006).

ma, così o così, natura lascia,

poi fare a voi, secondo che v'abbella.[20]

[20] The language I did use
Was worn away, or ever Nimrod's race
Their unaccomplishable work began.
For naught, that man inclines to, ere was lasting,
Left by his reason free, and variable,
As is the sky that sways him. That he speaks,
Is nature's prompting: whether thus or thus,
She leaves to you, as ye do most affect it.
(Dante's Paradise XXVI; translator Rev. H. F. Cary; available at http://www.gutenberg.org/files/8799/8799-h/8799-h.htm)

**APPENDIX I**

# Data on subjects in pilot study

## Scottish Female 1

Self-assessment of accent: Falkirk, Strathyre.

Game order: competitive, cooperative.

Paired with: Scottish Female 2 (unfamiliar)

| | [ʔ] | [t] |
|---|---|---|
| bottom | 1 | 1 |
| bright | 1 | |
| can't | | 1 |
| city | | 1 |
| great | 1 | 1 |
| it | | 1 |
| lettering | | 1 |
| light | 1 | 2 |
| lights | | 2 |
| lit | | 1 |
| lots | 1 | 2 |
| right (all senses) | 1 | |
| street | | 1 |
| that | | 1 |
| what | 1 | |
| white | 1 | |
| total | 8 | 15 |
| percentage | 34.78% | 65.22% |

Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| built | | 1 |
| don't | | 1 |
| it | 1 | 3 |
| portrait | 1 | |
| right (all senses) | 1 | 1 |
| what's | 1 | |
| total | 4 | 6 |
| percentage | 40% | 60% |

Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| about | 5 | |
| almost | 1 | |
| art | 1 | |
| at | | 1 |
| bit | 1 | |
| bottle | 1 | |
| bottom | | 2 |
| don't | 1 | |
| front | 1 | |
| got | 4 | 1 |
| (Tony) Hart | 1 | |
| height | 1 | |
| hot | | 1 |
| it | 22 | 1 |
| it's | 5 | |
| just | 6 | |
| jut | 1 | |
| left | | 2 |
| metal | | 2 |
| not | 1 | |
| out | 3 | |
| point | 1 | |
| right (all senses) | 60 | 7 |
| toilet | 1 | |
| that | 10 | |
| that's | 3 | 1 |
| wasn't | 1 | |
| what | 3 | |
| what's | 1 | |
| wouldn't | 1 | |
| total | 136 | 18 |
| percentage | 88.31% | 11.69% |

Number of glottal stops in cooperative game

## Scottish Female 2

Self-assessment of accent: Standard Scottish English (Livingston, University of Glasgow)

Game order: competitive, cooperative.

Paired with: Scottish Female 1 (unfamiliar)

| | [ʔ] | [t] |
|---|---|---|
| about | | 1 |
| almost | | 1 |
| bit | 1 | |
| bottom | | 1 |
| but | 2 | |
| can't | 1 | |
| got | 1 | |
| it | 2 | |
| left | | 1 |
| let's | 2 | |
| light(s) | 2 | |
| lit | 2 | 1 |
| might | 1 | |
| monument | | 1 |
| night | | 1 |
| not | 1 | |
| right (all senses) | 1 | |
| Scott | 1 | |
| sort (of) | 2 | |
| street | 1 | |
| that | | 1 |
| white | | 1 |
| total | 20 | 9 |
| percentage | 68.97% | 31.03% |

### Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| but | | 1 |
| it | 1 | |
| total | 1 | 1 |
| percentage | 50% | 50% |

### Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| about | 7 | 1 |
| bit | 2 | 2 |

| | | |
|---|---|---|
| bottle | 2 | 1 |
| bottom | | 2 |
| but | 1 | |
| can't | 3 | |
| cut | 1 | 1 |
| doesn't | 1 | |
| Ent | | 2 |
| foot | 3 | 1 |
| front | 1 | 2 |
| got | 5 | 1 |
| hitting | 1 | |
| indent | | 5 |
| it | 6 | 2 |
| it's | 10 | 1 |
| just | 1 | 3 |
| juts | | 4 |
| left | | 3 |
| let | | 3 |
| let's | | 1 |
| light | 1 | |
| little | 2 | |
| mat | 1 | |
| metal | 1 | 2 |
| might | | 2 |
| not | 6 | |
| out | 10 | 1 |
| patterns | 1 | |
| quarters | | 2 |
| quite | | 2 |
| right (all senses) | 6 | |
| seat | | 1 |
| shirt | 1 | |
| slightly | 3 | 1 |
| sort (of) | | 3 |
| spout | 1 | 2 |
| start | 1 | |
| that | 11 | |
| tilt(s) | 2 | 4 |
| toilet | 3 | |
| unit | 1 | 9 |
| vanity | | 7 |
| want | 1 | |
| waters | | 1 |
| Total | 96 | 73 |
| Percentage | 56.8% | 43.2% |

Number of glottal stops in cooperative game

## Scottish Male

Self-assessment of accent: Edinburgh influenced English

Game order: cooperative, competitive

Paired with: US Male (familiar)

| | [ʔ] | [t] |
|---|---|---|
| at | | 1 |
| bottom | 1 | 1 |
| city | | 1 |
| department | 1 | |
| detail | | 1 |
| front | 1 | |
| it | | 1 |
| left | 1 | 2 |
| light | | 2 |
| lights | | 1 |
| lit | | 1 |
| lot (of) | 1 | |
| monument | | 1 |
| next | | 2 |
| night | | 1 |
| not | 3 | |
| part | | 1 |
| right (all senses) | 2 | 1 |
| Scott | 1 | |
| skating | | 1 |
| sort (of) | 3 | |
| street | 3 | |
| that | 1 | |
| white | | 1 |
| total | 18 | 19 |
| percentage | 48.65% | 51.35% |

Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| at | 2 | 1 |
| but | 1 | 1 |
| don't | 1 | |
| fortified | 1 | |
| it | 1 | 2 |
| it's | 1 | 1 |
| let's | | 1 |
| metal | | 1 |
| not | | 3 |
| part | | 1 |
| pretty | 1 | |
| right (all senses) | 1 | 1 |
| Scotland | 1 | |
| sort | | 1 |
| sort (of) | 1 | |
| that | 1 | |
| that's | 1 | |
| what | 1 | |
| white | | 2 |
| wouldn't | | 1 |
| total | 14 | 16 |
| percentage | 46.67% | 53.33% |

Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| about | 1 | |
| art | 1 | |
| at | 2 | 1 |
| bottom | | 1 |
| curtain | | 1 |
| doubt | | 1 |
| details | | 1 |
| foot (length) | 2 | |
| geometrical | | 1 |
| got | 5 | |
| haven't | 1 | |
| it | 11 | 4 |
| it's | 3 | 2 |
| itself | 1 | |
| just | 1 | |
| left | | 1 |
| might | 1 | |
| not | 7 | 3 |
| pretty | 1 | |
| put | 2 | |
| right (all senses) | 6 | 7 |
| sort (of) | 2 | |
| that | 7 | 2 |
| that's | 2 | 3 |
| toilet | | 2 |
| what | 6 | 1 |
| white | | 1 |
| yet | | 1 |
| total | 62 | 33 |
| percentage | 65.26% | 34.74% |

Number of glottal stops in cooperative game

## Midlands/mixed English Male

Self-assessment of accent: 'Quite a mixture' (originally Stoke-on-Trent; University of East Sussex)

Game order: cooperative, competitive

Paired with: Irish Male (unfamiliar)

| | [ʔ] | [t] |
|---|---|---|
| at | | 1 |
| bright | | 1 |
| decent | | 1 |
| it's | | 1 |
| light | | 1 |
| lots | | 5 |
| most | | 1 |
| night | | 1 |
| quite | 3 | 1 |
| sort | 1 | 3 |
| that | 1 | |
| white | | 1 |
| total | 5 | 17 |
| percentage | 22.73% | 77.27% |

Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| don't | 2 | |
| flats | | 1 |
| it's | | 1 |
| night | | 1 |
| lot | | 1 |
| sort | | 1 |
| street | | 1 |
| total | 2 | 6 |
| percentage | 25% | 75% |

Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| bit | 1 | |
| bottom | 1 | 2 |
| but | 1 | |
| flat | | 3 |
| got | 2 | |
| it | 8 | |
| it's | 1 | 1 |
| just | 1 | 1 |
| left | | 2 |
| literally | | 1 |
| not | 1 | |
| quarter | | 1 |
| right (all senses) | 5 | 2 |
| seat | | 2 |
| slightly | 1 | |
| that | 3 | |
| toilet | 4 | |
| wait | | 1 |
| what | 5 | |
| total | 34 | 16 |
| percentage | 68% | 32% |

Number of glottal stops in cooperative game

## Northern English Male 1

Self-assessment of accent: RP, with some west-Yorkshire traits.

Game order: cooperative, competitive

Paired with: Northern English Male 2 (unfamiliar)

| | [ʔ] | [t] |
|---|---|---|
| front | | 2 |
| just | | 1 |
| lit | | 2 |
| lots | 1 | |
| light(3) | | 3 |
| night | | 2 |
| objects | | 1 |
| right (all senses) | 1 | 2 |
| street | | 1 |
| white | 1 | |
| total | 3 | 14 |
| percentage | 17.65% | 82.35% |

Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| don't | 1 | |
| monument | | 1 |
| night | | 1 |
| not | 1 | |
| right (all senses) | 5 | 1 |
| Scotland | 1 | |
| set | | 4 |
| street | | 2 |
| that | 1 | |
| total | 9 | 9 |
| percentage | 50% | 50% |

Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| about | 5 | |
| almost | | 1 |
| at | 1 | |
| bit | 4 | |
| bottle | 1 | |
| bottom | 1 | |
| but | 1 | |
| centimetre | | 5 |
| coat | 2 | |
| cut | 1 | 1 |
| don't | 1 | |
| difficult | 1 | |
| fitted | | 2 |
| got | 6 | |
| gotta | 1 | |
| it | 8 | 2 |
| it's | 26 | 1 |
| just | 2 | |
| left | 1 | 1 |
| let's | 1 | |
| little | 1 | |
| not | 2 | |
| plate | | 1 |
| pretty | 1 | |
| right (all senses) | 27 | 3 |
| set | 3 | |
| sit | 1 | |
| start | 1 | |
| straight | 1 | |
| that | 4 | |
| toilet | 4 | |
| water | | 1 |
| yet | 2 | |
| total | 110 | 18 |
| percentage | 85.94% | 14.06% |

Number of glottal stops in cooperative game

| | /l/ vocalised | [l] |
|---|---|---|
| all | 1 | 1 |
| building | | 1 |
| colourful | 2 | |
| people | 1 | |
| wheel | | 1 |
| total | 4 | 3 |
| percentage | 57.14% | 42.86% |

L-vocalisation when alone

| | /l/ vocalised | [l] |
|---|---|---|
| castle | 1 | |
| shield | 1 | |
| total | 2 | 0 |
| percentage | 100% | 0% |

L-vocalisation in competitive game

| | /l/ vocalised | [l] |
|---|---|---|
| actual | 1 | |
| alcove | 5 | |
| almost | | 1 |
| bottles | | 1 |
| cool | 4 | |
| difficult | 1 | |
| I'll | | 1 |
| little | 1 | 1 |
| middle | | 2 |
| shell | 1 | |
| shield | | 1 |
| still | | 1 |
| symmetrical | 1 | |
| towel | 3 | 1 |
| wall | 4 | 9 |
| well | 2 | 3 |
| total | 23 | 21 |
| percentage | 52.27% | 47.73% |

L-vocalisation in cooperative game

## Northern English Male 2

Self-assessment of accent: Generic Northern English (Cumbria; father from Yorkshire, mother from Inverness)

Game order: cooperative, competitive

Paired with: Northern English Male 1 (unfamiliar)

| | [ʔ] | [t] |
|---|---|---|
| bright | 1 | 2 |
| city | | 1 |
| got | 1 | |
| hotel | | 1 |
| it | 1 | |
| lights | 1 | 3 |
| lit | | 2 |
| lots | 2 | 2 |
| market | 1 | |
| monument | 1 | 2 |
| pretty | | 1 |
| right (all senses) | 1 | |
| Scott | 1 | |
| skaters | 1 | |
| sort | 1 | |
| street | 2 | |
| that | 1 | |
| that's | 1 | |
| what | 1 | |
| white | | 2 |
| total | 17 | 16 |
| percentage | 51.52% | 48.48% |

Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| bit | 1 | |
| but | 1 | |
| concrete | 1 | |
| it | 3 | |
| it's | 1 | |
| lampposts | | 1 |
| lights | | 1 |
| not | 1 | |
| outside | 1 | |
| pavement | 1 | |
| right (all senses) | 2 | 3 |
| Scotland | 1 | |
| sort | 1 | 1 |
| statue | 1 | |
| tartan | | 2 |
| that | | 1 |
| total | 15 | 9 |
| percentage | 62.5% | 37.5% |

Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| bit | 1 | |
| built | | 1 |
| don't | 1 | |
| first | | 1 |
| get | 2 | |
| got | 6 | |
| it | 3 | |
| it's | 2 | 2 |
| left | | 1 |
| portrait | 1 | |
| respect | 1 | |
| rest | | 1 |
| right (all senses) | 34 | 6 |
| set | 1 | |
| sort | 3 | |
| start | 1 | 1 |
| that | 4 | |
| what's | 1 | 1 |
| total | 61 | 14 |
| percentage | 81.33% | 18.67% |

Number of glottal stops in cooperative game

| | vocalised | [l] |
|---|---|---|
| all | 1 | 1 |
| also | | 1 |
| carousel | | 1 |
| hotel | | 1 |
| I'll | | 1 |
| stalls | 1 | |
| wheel | 1 | |
| total | 3 | 5 |
| percentage | 37.5% | 62.5% |

L-vocalisation when alone

| | /l/ vocalised | [l] |
|---|---|---|
| helpful | | 1 |
| several | | 1 |
| small | | 1 |
| vehicle | | 1 |
| well | | 2 |
| total | 0 | 6 |
| percentage | 0% | 100% |

L-vocalisation in competitive game

| | /l/ vocalised | [l] |
|---|---|---|
| alcove | | 1 |
| all | 1 | 1 |
| angle | | 1 |
| built | | 1 |
| bulbous | | 1 |
| cool | 1 | |
| cubicle | | 2 |
| details | | 1 |
| I'll | 2 | 1 |
| little | | 2 |
| people | | 1 |
| profile | | 1 |
| rectangle | 1 | |
| still | | 2 |
| tell | | 2 |
| towel | 1 | |
| wall | 3 | 3 |
| well | 1 | 1 |
| total | 10 | 21 |
| percentage | 32.26% | 67.74% |

L-vocalisation in cooperative game

## Southern English Female 1

Self-assessment of accent: Home Counties RP (Essex influence from Father).

Game order: competitive, cooperative

Paired with: Southern English Female 2 (familiar)

| | [ʔ] | [t] |
|---|---|---|
| bit | 1 | |
| can't | 1 | |
| front | | 1 |
| it | 1 | |
| it's | | 5 |
| left | | 1 |
| lights | | 4 |
| lots | | 5 |
| not | 1 | |
| skating | | 1 |
| street | 2 | |
| that | | 1 |
| what | 4 | |
| white | | 2 |
| total | 10 | 20 |
| percentage | 33.33% | 66.67% |

Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| apart | | 1 |
| but | 1 | |
| can't | 4 | |
| getting | 1 | |
| gotta | 1 | |
| it | 9 | 6 |
| important | | 1 |
| just | 1 | 1 |
| lampposts | | 1 |
| letter | | 1 |
| light | | 2 |
| not | 1 | |
| particular | | 2 |
| right (all senses) | 2 | 1 |
| start | 1 | |
| street | | 2 |
| that | 1 | |
| that's | | 1 |
| total | 22 | 19 |
| percentage | 53.66% | 46.34% |

Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| about | 8 | |
| against | | 2 |
| at | 2 | |
| bit | 4 | 1 |
| better | | 1 |
| bottle | | 1 |
| bottom | | 7 |
| but | 8 | |
| can't | 12 | |
| centimetre | | 1 |
| cut | | 1 |
| don't | 3 | |
| first | | 1 |
| flat | 1 | |
| got | 11 | |
| important | | 1 |
| it | 26 | 4 |
| it's | 31 | 15 |
| just | 7 | 4 |
| last | 1 | |
| left | 2 | 10 |

| | | |
|---|---|---|
| light | 1 | |
| lit | | 1 |
| little | 10 | 4 |
| matter | 1 | |
| might | 2 | |
| most | 2 | 1 |
| next | 5 | 4 |
| not | 13 | 3 |
| out | 7 | 2 |
| photo | | 1 |
| prominent | 1 | |
| quite | 14 | |
| right (both senses) | 15 | 5 |
| set | 2 | |
| shorter | | 2 |
| slight | 1 | |
| slightly | 7 | |
| shut | 1 | |
| sort (of) | 4 | 1 |
| start | 2 | 1 |
| straight | 1 | 1 |
| that | 7 | |
| that's | 10 | 4 |
| tilt | | 1 |
| toilet | 1 | |
| unit | 3 | 5 |
| what | 6 | |
| water | 1 | |
| white | 1 | |
| total | 234 | 85 |
| percentage | 73.35% | 26.65% |

Number of glottal stops in cooperative game

| | /l/ vocalised | /l/ not vocalised |
|---|---|---|
| all | | 1 |
| also | 1 | |
| ball | 1 | |
| else | 2 | 1 |
| people | 2 | 1 |
| stalls | 1 | |
| still | 1 | |
| wheel | 1 | |
| wheel's | 1 | |
| total | 10 | 3 |
| percentage | 76.92% | 23.08% |

L-vocalisation when alone

| | /l/ vocalised | [l] |
|---|---|---|
| animal | 1 | 1 |
| building | | 1 |
| normal | 1 | 1 |
| people | | 1 |
| recognisable | 1 | 1 |
| total | 3 | 5 |
| percentage | 37.5% | 62.5% |

L-vocalisation in competitive game

| | /l/ vocalised | [l] |
|---|---|---|
| angle | 2 | 2 |
| at all | | 1 |
| alcove | 1 | |
| bottle | 1 | 1 |
| bowl | 1 | 3 |
| call | 2 | 2 |
| detail | | 1 |
| difficult | 1 | |
| else | 1 | |
| folded | 1 | 1 |
| handle | 1 | |
| help | 1 | |
| hexagonal | | 1 |
| hole | 1 | |
| level | 1 | |
| little | 4 | 12 |
| marble | 2 | 2 |
| normal | 2 | |
| noticeable | 2 | |
| panel | 4 | 1 |
| panelled | 1 | 1 |
| panels | 2 | 1 |
| plughole | 1 | |
| rectangle | 1 | 1 |
| shelf | 3 | |
| shelves | 4 | |
| small | 2 | |
| still | 1 | 1 |
| tall | 1 | |
| tilt | 1 | |
| towels | 4 | |
| wall | 12 | 3 |
| wall's | 2 | |
| well | 3 | 3 |
| whole | | 4 |
| total | 66 | 41 |
| percentage | 61.68% | 38.32% |

L-vocalisation in cooperative game

## Southern English Female 2

Self-assessment of accent: Typical South East England (slight New Zealand influence from travel).

Game order: competitive, cooperative

Paired with: Southern English Female 1 (familiar)

| | [ʔ] | [t] |
|---|---|---|
| at | 1 | |
| but | 1 | |
| bit | 1 | |
| detail | | 1 |
| front | | 1 |
| hotel | | 1 |
| it | 1 | |
| it's | 3 | 1 |
| just | 3 | 1 |
| lights | | 3 |
| lit | | 1 |
| lots | 2 | 1 |
| movement | 1 | |
| next | | 1 |
| nighttime | | 1 |
| pretty | | 1 |
| sort (of) | 1 | |
| that's | 1 | |
| what | 1 | |
| total | 16 | 13 |
| percentage | 55.17% | 44.83% |

Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| chart | 1 | |
| don't | | 1 |
| difficult | 1 | |
| it | 3 | 4 |
| it's | | 1 |
| just | 1 | |
| letter | | 1 |
| right (all senses) | | 2 |
| start | 1 | |
| street | 3 | |
| that | 1 | |
| what | | 1 |
| total | 11 | 10 |
| percentage | 52.38% | 47.62% |

Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| about | 1 | |
| against | 1 | |
| almost | | 1 |
| aren't | 1 | |
| at | 1 | |
| better | 1 | |
| bit | 4 | |
| bits | 1 | 2 |
| bottom | | 6 |
| but | 2 | |
| centimetre | | 1 |
| can't | 1 | |
| cut | 1 | |
| don't | | |
| difficult | | |
| first | 1 | 1 |
| get | 1 | |
| got | 8 | 1 |
| gotta | 2 | |
| guesstimates | | 1 |
| isn't | 1 | |
| it | 19 | 1 |
| it's | 4 | 1 |
| just | 4 | 1 |
| left | | 3 |
| little | 3 | 1 |
| next | 1 | |

| | | |
|---|---|---|
| ninety | | 1 |
| not | 4 | 1 |
| out | 9 | |
| photo | | 1 |
| prominent | 1 | |
| quite | 6 | |
| right (both senses) | 27 | 2 |
| sheet | | 1 |
| slightly | 1 | 1 |
| sort (of) | 3 | |
| start | 1 | |
| that's | 4 | |
| tilty | | 1 |
| that | 5 | |
| unit | 4 | |
| what | 5 | |
| yet | 1 | |
| total | 129 | 28 |
| percentage | 82.17% | 17.83% |

Number of glottal stops in cooperative game

| | /l/ vocalised | [l] |
|---|---|---|
| all | 1 | |
| Balmoral | | 1 |
| detail | | 1 |
| hotel | | 1 |
| it'll | 1 | |
| middle | 1 | |
| people | 2 | |
| wheel | | 4 |
| total | 5 | 7 |
| percentage | 41.67% | 58.33% |

L-vocalisation when alone

| | /l/ vocalised | [l] |
|---|---|---|
| animal | | 1 |
| difficult | 1 | |
| castle | | 1 |
| national | | 1 |
| old | 1 | |
| pole | | 1 |
| royalty | | 1 |
| total | 2 | 5 |
| percentage | 28.57% | 71.43% |

L-vocalisation in competitive game

| | /l/ vocalised | [l] |
|---|---|---|
| all | | 2 |
| all right | 1 | |
| almost | 1 | |
| angle | | 1 |
| angle's | 1 | |
| as well | 1 | |
| at all | 1 | |
| central | | 1 |
| cool | 6 | |
| else | 1 | |
| fall | 1 | |
| handle | 1 | |
| help | 1 | |
| little | 1 | 5 |
| middle | 1 | |
| panel | 2 | |
| panels | | 4 |
| rectangle | 1 | |
| shelves | 2 | 1 |
| still | | 1 |
| tilty | 1 | |
| towels | 2 | |
| typical | 1 | |
| wall | 1 | 1 |
| well | 1 | |
| total | 28 | 16 |
| percentage | 63.64% | 36.36% |

L-vocalisation in cooperative game

## Mixed-accent British Male

Self-assessment of accent: Lincoln/Edinburgh

Game order: competitive, cooperative.

Paired with: Canadian Male (unfamiliar)

| | [ʔ] | [t] |
|---|---|---|
| about | 1 | 2 |
| at | 1 | |
| bright | 1 | 1 |
| cartwheel | 2 | 1 |
| hotel | | 2 |
| it | 1 | |
| light | | 2 |
| lit | | 1 |
| lots | 1 | 1 |
| monument | | 2 |
| photo | | 1 |
| right (both senses) | 1 | |
| Scott | 2 | |
| street | 3 | 1 |
| that | 1 | |
| that's | 3 | |
| what | 1 | |
| total | 18 | 14 |
| percentage | 56.25% | 43.75% |

Number of glottal stops when alone

| | [ʔ] | [t] |
|---|---|---|
| about | | 1 |
| it | 1 | 2 |
| outside | 1 | |
| Scotsman | 2 | |
| total | 4 | 3 |
| percentage | 57.14% | 42.86% |

Number of glottal stops in competitive game

| | [ʔ] | [t] |
|---|---|---|
| about | | 1 |
| art | | 1 |
| artist | | 1 |
| at | 1 | |
| details | | 1 |
| get | 1 | |
| height | | 1 |
| it's | 1 | |
| itself | 1 | |
| just | 1 | |
| left | | 1 |
| let | | 1 |
| let's | 1 | |
| meant | | 1 |
| next | | 1 |
| outside | | 1 |
| quite | | 1 |
| right (both senses) | 16 | 18 |
| sort (of) | | 1 |
| that's | 1 | 1 |
| what | 2 | |
| what's | | 1 |
| white | | 1 |
| total | 25 | 33 |
| percentage | 43.1% | 56.9% |

Number of glottal stops in cooperative game

## Irish Male

Self-assessment of accent: Standard South Dublin

Game order: cooperative, competitive

Paired with: Midlands/mixed English (unfamiliar)

## Canadian Male

Self-assessment of accent: Standard Canadian (possible Polish influence from parents)

Game order: competitive, cooperative.

Paired with: Mixed-accent British Male (unfamiliar)

## US Male

Self-assessment of accent: Generic American English (very occasional Tennessee influence)

Game order: cooperative, competitive

Paired with: Scottish Male (familiar)

## US Female 1

Self-assessment of accent: West Coast English

Game order: competitive, cooperative

Paired with: South African Female (familiar)

## US Female 2

Self-assessment of accent: Average Midwestern

Game order: cooperative, competitive

Paired with: US Female 3 (familiar)

## US Female 3:

Self-assessment of accent: Generic American English

Game order: cooperative, competitive

Paired with: US Female 2

**APPENDIX II**

## Materials for pilot study

Instructions for competitive and cooperative game (where competitive game is played first)

# START HERE!

***Before you open your picture or say anything to your opponent, please read the following instructions (as far as the bottom of this page). When you've finished, introduce yourself to your opponent and begin…***

# Game 1

This game is about using language to keep information from another person.

It involves asking your opponent questions about their picture and answering their questions about yours. The WINNER is the person who guesses what's in the other's picture first.

When you're ready, open the envelope marked PICTURE 1, but DON'T SAY ANYTHING ABOUT IT YET.

***There will be a note with the picture to say who starts.***

*Play as follows:*

1) Make some statement about your picture to your opponent. It should be TRUE, and NEW INFORMATION, but as UNHELPFUL as possible. For example: 'My picture has something blue in it'. Obviously don't make every statement about colour!
2) Then ask your opponent a question about their picture. They can answer YES, NO, or DON'T KNOW.

***Then the other player does the same for their picture, and so on…***

***YOU CAN GUESS WHAT YOUR OPPONENT'S PICTURE SHOWS ONLY AT THE START OF YOUR TURN (BEFORE YOU MAKE A STATEMENT ABOUT YOURS)***

***When you've finished, take a deep breath and move on to game 2 (described on the other side of this sheet)***

---

# Game 2

This game is all about using language to share information. It involves one of you describing a picture and the other person drawing it.

**DON'T OPEN THE PICTURE ENVELOPE YET!**

Before you start, decide between you who wants to describe and who wants to draw. **The drawing does *not* have to be very good** – it just has to have as many of the details present as possible
When you're ready, the DESCRIBER should open the envelope marked PICTURE 1.

*Play as follows:*

The DESCRIBER should make statements about what's in the picture and the DRAWER should draw the picture. The OBJECT is to get as many of the details as possible, though they don't have to be well drawn!

DESCRIBER: Remember to ask questions about the drawing to check the DRAWER is getting things right.

DRAWER: If you're not sure of something in the picture, remember to ask! Also, remember to tell the DESCRIBER every so often what you've got in your drawing.

***Good luck and thank you very much!***

Instructions for competitive and cooperative game (where cooperative game is played first)

# START HERE!

It's important to feel as comfortable and as natural as possible. Unfortunately, you also can't see the person you're talking to! So before you start the first game, greet each other. If you don't know the other person, introduce yourself to them and say a little about yourself so you feel as comfortable as possible working with them. If you happen to know them already, you can chat for a minute or two if you want.

***Then read the instructions for game 1 before beginning…***

# Game 1

This game is all about using language to share information. It involves one of you describing a picture and the other person drawing it.

**DON'T OPEN THE PICTURE ENVELOPE YET!**

Before you start, decide between you who wants to describe and who wants to draw. **The drawing does *not* have to be very good** – it just has to have as many of the details present as possible
When you're ready, the DESCRIBER should open the envelope marked PICTURE 1.

*Play as follows:*

The DESCRIBER should make statements about what's in the picture and the DRAWER should draw the picture. The OBJECT is to get as many of the details as possible, though they don't have to be well drawn!

DESCRIBER: Remember to ask questions about the drawing to check the DRAWER is getting things right.

DRAWER: If you're not sure of something in the picture, remember to ask! Also, remember to tell the DESCRIBER every so often what you've got in your drawing.

***When you've finished, take a deep breath and move on to game 2 (described on the other side of this sheet)***

---

# Game 2

This game is about using language to keep information from another person.

It involves asking your opponent questions about their picture and answering their questions about yours. The WINNER is the person who guesses what's in the other's picture first.

When you're ready, open the envelope marked PICTURE 2, but DON'T SAY ANYTHING ABOUT IT YET.

***There will be a note with the picture to say who starts.***

*Play as follows:*

3) Make some statement about your picture to your opponent. It should be TRUE, and NEW INFORMATION, but as UNHELPFUL as possible. For example: 'My picture has something blue in it'. Obviously don't make every statement about colour!
4) Then ask your opponent a question about their picture. They can answer YES, NO, or DON'T KNOW.

***Then the other player does the same for their picture, and so on…***

***YOU CAN GUESS WHAT YOUR OPPONENT'S PICTURE SHOWS ONLY AT THE START OF YOUR TURN (BEFORE YOU MAKE A STATEMENT ABOUT YOURS)***

***Good luck and thank you very much!***

Picture to describe alone

Picture for cooperative game

Picture a for competitive game (Edinburgh Castle)

Picture b for competitive game (Braveheart Statue in Stirling)

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