Full Title: Re-examining vocalic variation in Scottish English: a Cognitive Grammar approach.

Short title: Re-examining vocalic variation in Scottish English.

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ABSTRACT

The existing literature on vocalic variation in Scottish English has shown that variation tends to pattern according to the age, gender and socio-economic class of the speaker. However, studies which employ these gross social categories are unable to explain the variation that exists within these categories. This article therefore presents an alternative approach. Based on data from 16 adolescents who form a Community of Practice in west Fife, Scotland, this article attempts to consider both social and cognitive motivations for linguistic variation. The theoretical framework of Cognitive Grammar is particularly well suited to incorporating sociolinguistic variation and this article illustrates how an exploration of frequency effects and schematic organisation can lead to a more insightful understanding of the patterning of two vocalic variables in a community. The article also explores the implications of these findings for our understanding of the place of sociolinguistics in cognitive theories of linguistics.

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The description of vocalic variation in Scotland is often presented as a bipolar phonological system ranging from 'Scots' to 'Scottish Standard English' (SSE) (Stuart-Smith 2003). It has been claimed that within this system, there are two main kinds of vowel: those which are invariant across the Scots-SSE continuum, e.g. the vowel in the BET lexical set (Aitken 1984), and those which have alternating variants such as the OUT vowel, where speakers can select either the Scots variant [ʉ] or the SSE variant [ʌʉ] (Stuart-Smith 2003: 117). Aitken notes that alongside those speakers who consistently select variants from the Scots end of the continuum, "there exists also a very large body of Scottish speakers who variously compromise…between the fully vernacular variety of Scots…and SSE" (1984: 94).

The majority of studies that have discussed this 'compromise' (see, for instance, Macaulay & Trevelyn 1973; Macaulay 1991; Macafee 1994; Eremeeva & Stuart-Smith 2003) have tended to describe the variation primarily in terms of the age, sex and social class of the speaker. Eckert (2002) describes these methods as 'first wave' approaches. Studies which employ them tend to view variation as a reflection of membership in broad, pre-determined demographic categories. The results of such studies have continued to develop our understanding of the 'big picture' of linguistic variation and, in Scotland, they have shown that typically older working class males are the heaviest users of variants from the Scots end of the continuum while younger middle class females tend to select variants from the SSE end of the continuum.

However, while first wave approaches can often reveal general patterns in a large data set, they are limited in their ability to explain these patterns of variation. This article argues that in order to reach a more comprehensive understanding of linguistic variation

in a community it is necessary to consider both social and cognitive factors influencing variation. By combining sociolinguistic methods of data collection and Cognitive Linguistic theory, this article attempts to expand the analysis of vocalic variation in Scottish English beyond that provided by other research.

The article begins with an overview of the data to be examined, including the methods used in collecting the corpus and some discussion of previous treatment of the variables in question. I then present an alternative approach (exemplified with the (au) variable), explaining how variation can be modelled in a Cognitive Grammar framework. This section also considers how research on frequency effects can facilitate a clearer understanding of the patterning of these two variables. Finally, I introduce evidence for the social meaning of these variants and propose that this too can be incorporated into the cognitive network.

THE DATA

The data presented here were collected from a group of 16 adolescents who form a Community of Practice (Lave and Wenger 1991; Wenger 2000) in west Fife, Scotland – they play together in a juvenile pipe band[1]. The speakers are between 12-18 years old and there are 12 males and 4 females in the group. With the exception of one informant, Kath (who I have categorised as middle class), the socioeconomic backgrounds of the speakers are fairly homogeneous and are all roughly upper working class. This assumption is based entirely on qualitative observations and no attempt was made to assign these speakers to a social class index[2].

Using the ethnographic technique of long term participant observation (Eckert 2000), I entered the community in June 2004 by attending pipe band practices, competitions and fund raising events while attempting to integrate with the group. These data represent two stages of collection and comprise a corpus of 11.5 hours of speech. The data on phonological variation are from recordings made with the group in January 2005. Evidence of attitudes and the social meaning of the variants were collected in a second batch of recordings in May/June 2005 that were partially transcribed but not analysed for linguistic variation.

I did not question the informants using a structured 'sociolinguistic interview' because, following Moore (2003:43), I was aware that by assuming the role of an adult questioner, I could damage my relationship with the adolescents; instead the informants were recorded chatting with me in small groups of friends.

The phonological variables selected for analysis in this article are (au) and (o). The variants for both of these variables show phonological distinctions between two main variants, one of which represents a local/Scots form and the other a supra-local/standard form[3]. However, despite sharing certain features in common, these variables appear to pattern quite differently in this community. The analysis of these variables is based on auditory transcriptions of the January sample which amounts to 6 hours of recorded speech, roughly 80,000 words[4].

The (au) variable

The [ʉ ~ ʌʉ] variation in the OUT lexical set (Aitken 1984) arose historically as a result of dialect contact between varieties in which the Middle English /uː/ vowel diphthongised in the Great Vowel Shift (such as RP) and those in which it did not (such as Scots) (Stuart-Smith 2003: 117). Modern reflexes of the OUT lexical set are often retained as high monophthongs in Scotland. The quality of the vowel in most present day Scottish varieties is [ʉ], having fronted in a process Johnston terms 'OUT-fronting' (1997:474).

In recent years, the (au) variable has been widely investigated in sociolinguistics (particularly in Glasgow) to the extent that Jones (1997) claims it is "probably one of the most widely commented-upon characteristics of British English phonological phenomena" (1997: 309). Figure i is a summary of each informant's percentage use of the variants of (au).

[INSERT FIGURE I]

The phonetic variants of (au) represented in the graph are:

1. A high rounded monophthong [ʉ] (the 'Scots' variant)
2. A diphthong [ʌʉ] (the 'standard' variant)

A third vowel [ʌ] also exists for these speakers but, based on the evidence from the corpus I collected, it was apparently restricted to variants of the lexeme GROUND when used as a noun (e.g. 'ground' and 'playground'); when used as a verb (e.g. 'grounded'), either the [ʉ] or [ʌʉ] variants were selected[5]. As this form is lexically conditioned, it is not a true variant of the (au) variable and so has been excluded from the analysis. All other lexical items which display variation between [ʉ] and [ʌʉ] have been included in the analysis.

The (o) variable

While several studies have investigated the sociolinguistic patterning of (au), Jones (1997: 304) notes that we still lack a quantitative analysis of the (o) variable in Modern Scots[6], despite the fact that in the grammar guides and pronouncing dictionaries of the 18th and 19th centuries, this was "perhaps the most frequently commented-upon feature of pronunciation considered to be overtly Scottish" (1997: 302).

The vowel in, for example, 'cot' is, in most Scottish dialects, a high mid [o(ː)] (Johnston 1997: 481). This [o(ː)] vowel is historically the result of a merger between the COT and COAT lexical sets. Johnston (2000: 62-3) claims that this merger began in Glasgow, perhaps during the Older Scots period. It then spread to the east of Scotland and diffused throughout the lexicon. Johnston (2000: 58-64) argues that the existing variation between [ɔ ~ o] is the result of a near merger. However, this explanation does not recognise the sociolinguistic status of the variants. Macafee (1994: 229) explains the [ɔ ~ o] variation in modern Scots as the result of dialect contact with SSE. Figure ii displays the variation found in this group[7]

.[INSERT FIGURE II]

This graph charts the variation between the typically Scots variant [o] and the standard variant [ɔ]. While other variants such as [ʌ] in e.g. 'dog' and [a] in e.g. 'want' also exist, these again are lexically specific and so are not true variants of the (o) variable.

The first wave approach

As noted in the above discussion, sociolinguistic studies of variation in Scotland have tended to employ first wave methods, describing the variation primarily in terms of the age, sex and social class of speakers. While it may be possible to explain Kath's consistent use of the 'standard' variant in both variables as a consequence of her social class[8], this cannot explain the variation in the speech patterns of the other members of the group. Similarly, age does not appear to be a motivating factor - Richard and Bobby are the same age, as are Colin and Simon. Of course, there is only a 6 year gap between the youngest and oldest members of the group and so it is impossible to draw any firm conclusions based on the age of the speaker; similarly, with only 4 females in the group, basing any assumptions on gender differences is problematic. It is therefore necessary to expand the analysis beyond that provided by other accounts.

A COGNITIVE GRAMMAR APPROACH

The schematic network

The discussion which follows attempts to provide an innovative account of this variation by interpreting these data in a Cognitive Grammar framework (hereafter CG; Langacker 1987, 1991). CG shares with other Cognitive Linguistic theories the basic assumption that linguistic structures and processes do not emerge from any specific language module of the mind. Consequently, 'linguistic' knowledge is not considered to be an autonomous

cognitive faculty; it is instead regarded as part of a larger system of interlocking networks of knowledge, including social and pragmatic knowledge (Hudson 2007).

The variation in these variables can be represented in CG as an example of a categorisation network. The role of categorisation is especially important in CG because categorisation is regarded as one of the most fundamental cognitive abilities of the human mind. As Lakoff explains, "there is nothing more basic than categorization to our thought, perception, action, and speech…without the ability to categorize, we could not function at all" (2004 [1987]: 139-140). In CG, categorisation is discussed in terms of the network relationships that exist between schemas and instances. Langacker represents this phenomenon graphically as a 'categorisation triangle' (1987: 373), as in figure iii.

[INSERT FIGURE III]

'Schema', in CG, is the term given to the more abstract category representation which is specified in greater detail by an 'instance' (Langacker 1987: 68). Schemas emerge in cognition through abstractions over instances. Speakers abstract over expressions and recognise commonality between different instances. The schema abstracts what is common to the instances and different instances instantiate the schema in different ways. The solid lines in figure iii indicate relationships of instantiation (i.e. more precise specification or elaboration) and the broken lines illustrate relationships of perceived similarity. These relationships form a schematic network of associations in cognition.

The variation in (au) can be represented in CG as an example of the network relationships that exist in cognition between a schema and its instances. This is

diagrammatised in figure iv, where the nature of this relationship is based on the variation apparent in Lucy's data (see figure i).

[INSERT FIGURE IV]

In figure iv, there are two levels of abstraction in the network. The lower schema corresponds to the level of the allophone, the lowest level of abstraction over actual realisations in speech. Although the instances in figure iv share some common phonetic quality (the diphthong contains the same vowel quality as the monophthong), it is important to recognise that speakers who have abstracted this schema are also aware that these instances form a collection of variants that pattern according to various social factors. In other words, the commonality that is contained by the schema is not necessarily simply phonetic; the schema may also contain social information. Social knowledge can therefore be incorporated into the framework, a point to which I will return in greater detail[9].

The higher schema corresponds to the sociolinguistic variable which is the result of further abstraction over allophonic variation. I therefore equate the sociolinguistic variable with the concept of a schema in CG. However, it is important to note that while all sociolinguistic variables can accurately be characterised as schemas (because their existence necessarily implies some recognition of commonality and abstraction between variants on the part of the speaker), it does not necessarily follow that all schemas are analogous to sociolinguistic variables. The schema-instance relationship is much more widely applicable; it is a product of categorisation that is apparent in all areas of the grammar (at both the phonological and semantic poles) and in cognition more generally.

It is also important to highlight the dynamic nature of this network model. The network metaphor implies a static structure but Langacker is aware that thought is a complex neurological event and so explains the network as a dynamic construct which is constantly changing and adapting to the pressures of the usage event: "it is not something a speaker *has*, but rather what he *does*" (1987:382). Each relationship in the network is a cognitive routine, a comparison event assessing one node in relation to another, and the nodes and links of a network are described as having various degrees of entrenchment (Langacker 1987:59). Entrenchment is the result of frequency of use. The occurrence of any cognitive activity leaves behind a neurological trace and the more this type of activity recurs, the more entrenched the trace will become in cognition. Entrenchment can be employed in CG as a probability measurement (Israel and Kemmer 1994:170). The more a particular instance or node is successfully activated, the more entrenched the node will become, which leads to a greater probability that it will be selected in another usage event. Figure i shows that Lucy displays a frequency of 90.2% usage of the monophthong variant. If entrenchment is the cognitive result of frequency of use, the monophthong variant is likely to be more entrenched in cognition than the diphthong variant for Lucy. Entrenchment is represented in the schematic network in figure iv as a heavy line around the node[10].

The account presented in figure iv is a description of the likely organisation of these variants in only a fragment of Lucy's cognitive network and does not include social knowledge in the diagram. Of course, an exact description of the network is an impossible task. This limitation is less problematic than it seems, however: "in the present framework, much less hinges on the specific details of a network than one might

think" (Langacker 1987: 377). This is because our inability to determine the exact nature of the network (for instance, whether the word forms presented in this schema are analysed by the speaker as related lexical items or as variants of the same lexical item) is less important then the recognition that, at some level, speakers perceive similarity between these forms and, hence, abstract commonality to form a schematic network.

The ultimate aim of course is to also explain the existence of such variation. It seems from the patterns in figure iv that some words tend to occur more often with the monophthong variant than others, particularly that the monophthong variant is used more often in words which occur more frequently. Examining the patterning of this variation in the behaviour of an individual speaker can reveal interesting trends but there are too few instances on which to base any strong claims or to perform statistical analyses. It is therefore necessary to examine the variation across the corpus. Figure v charts the relationship between word frequency and the percentage use of the (au): [ʉ] variant in the 13 most frequently occurring words in the corpus.

[INSERT FIGURE V]

Only 28 words in the corpus contained an environment that was capable of displaying the [ʉ ~ ʌʉ] variation (I am of course not claiming that this list is exhaustive, only that these were the words that occurred in my corpus) and of these, 11 words occurred with more than 10 instances or tokens. In other words, there are very few words involved in this alternation and some of these occur much more frequently than others[11]. Although the pattern in the graph becomes more erratic as the number of instances decreases (as is typically the case when normalising over small raw numbers) the general trend seems to be that the monophthong is selected more often in high

frequency words than in low frequency words. In fact, as figure vi shows, this seems to be the pattern for Lucy and for the group.

[INSERT FIGURE VI]

A Spearman's rank correlation was used in order to test the hypothesis that the monophthong is selected more often in high frequency words than in low frequency words. Table i details the results of the correlation across the corpus (excluding words which only occur once because these tend to skew the data).

[INSERT TABLE I]

The correlation is significant at the level of 0.05[12]. Higher frequency words are therefore statistically more likely to occur with the monophthong variant than low frequency words for these speakers. The question is why. Why are the least frequent words in this corpus showing the most influence from the 'standard'? A comparison of studies of (au) in Glasgow (Stuart-Smith 2003) suggests that there may be some evidence that this is a change in progress, and so in order to answer this question, it is necessary to also situate these results against research on frequency effects in the progression of sound change more generally.

Frequency effects in sound change

Recent work on sound change (Bybee 2000; 2001; 2002) provides evidence that it can be both phonetically gradual and lexically gradual, contrary to the classical positions espoused by the Neogrammarians and Lexical Diffusion theory (Labov 1994). Moreover, this research has found word frequency to be a significant motivating factor in

the spread of sound change. Some examples of these include Bybee's (2002) investigation of t/d deletion in American English and [ð] deletion in Spanish; Philips' (1980) examination of the raising of Old English /a/ before nasals and Leslau's (1969) research on assimilation processes in Ethiopian languages. These results seem to support the generalisation that high frequency lexical items undergo change first.

Paradoxically, there is also a small but significant body of literature (see, for instance, Philips 1981; 2001) which claims the opposite to be true: change affects the least frequently used words in the language first. These conflicting sources of evidence have lead Bybee (2000; 2001; 2002) to claim that there are two different types of sound change and that both display frequency effects.

Bybee (2006) refers to changes which affect high frequency words first as a result of the Reduction Effect. The basic assumption of the Reduction Effect is that high frequency words undergo phonetic reduction at a faster rate than low frequency words. Based on the suppositions of Browman and Goldstein (1992), language production is regarded as a highly practiced neuromotor activity and as these neuromotor routines are repeated, their execution becomes more efficient, leading eventually to reduction or assimilation processes. Higher frequency words have more exposure to this reduction and therefore change more rapidly.

Bybee (2006) argues that changes which affect low frequency words first (the Conserving Effect) are related to the morphosyntactic structure of a word. High frequency encourages phonetic change but it "renders items more conservative in the face of grammatical or analogical change" (2001: 12). High frequency words therefore become more entrenched in their morphosyntactic structure and resist change on the basis

of more productive patterns. For instance, among English irregular verbs the low frequency verbs are more likely to regularize (weep, weeped) while the high frequency verbs continue to maintain their irregularity (keep, kept). Bybee (1985; 2001) explains that high frequency of successful use strengthens or entrenches the 'cognitive representations of words or phrases' (which, in CG terms, equates to the instance level of the schematic network) making them easier to access whole and thus less likely to be subject to analogical reformation. Their frequency gives them a high level of 'lexical strength' (Bybee 1985) and so they can become entrenched and maintain their position in the language.

Bybee only invokes the Conserving Effect to explain morphosyntactic change but, based on the evidence presented here for (au), it seems that the same principles can usefully be applied to explain phonological variation in these data. The word forms (or instances) that occur most frequently are heavily entrenched in cognition and so they are capable of retaining the conservative Scots monophthong variant whereas low-frequency words have a weaker representation in cognition and so are more susceptible to influence from general patterns of English. The variation in (au) does not pattern in the same way as the phonetic variation that Bybee describes with the Reduction Effect. Instead, the variation between [ʉ] and [ʌʉ] is comparable to the morphosyntactic variation between [swipt] and [swɛpt] (the Conserving Effect) because it is not motivated by the articulatory overlap of gestures in the oral tract in the way that phonetically gradual processes of change (such as reduction and assimilation) often are. In other words, the variation in (au) is not "a physiologically-induced sound change" (Philips 2001:125); it

involves the "abrupt substitution of one phoneme for another in words that contain that phoneme" (Labov 1994: 542).

I have so far exemplified the relationship between variation and cognitive organisation using evidence only from the (au) variable. While it remains the case that variation in (o) can also be modelled in a similar schematic network, it seems that there are certain differences between the patterning of (au) and (o) that must be explained. For instance, it appears that most speakers show greater variability in their selection of the variants of (o) than (au). Furthermore, the variation in (o) does not appear to be motivated by word frequency, as figure vii and table ii show.

[INSERT FIGURE VII]

[INSERT TABLE II]

How can CG account for the differences in the patterning of these two variables and explain the variation that occurs when different non-standard variants are used to different degrees?

Schema strength

It is possible to interpret these differences by invoking the CG notion of schema strength. According to Taylor (2002: 275), both schemas and instances vary in strength or entrenchment and a schema will become more entrenched in proportion to the number of instances that elaborates it. Taylor explains that "a schema which is elaborated by very many instances will tend to be highly entrenched" (2002:275). This seems to be the case with the (o) variable in this data. 130 words in this corpus contained a variable

environment and 109 of these were fairly low frequency (i.e. they occurred less than 10 times in the corpus[13]). In other words, there were many words in the corpus that showed potential variation for (o) but the vast majority of these occurred fairly infrequently. The result is that each time a lower frequency instance of the (o) schema is activated, the schema itself becomes more entrenched but the instances do not.

Taylor also explains that "a schema which has only a small, fixed number of instances will tend to be weakly entrenched" (2002:275). This is the pattern we find with the (au) variable. Only 28 words in the corpus contained a variable environment for (au) and 11 of these (40% of the total number of words) occurred with a fairly high frequency, more than 10 times in the corpus. While usage of the higher frequency instances is likely to strengthen the entrenchment of these instances, this is unlikely to strengthen the schema because although repeated use of very frequent words will strengthen the entrenchment of these instances, unless the speaker has a large number of instances from which to abstract commonality, the schema will be weakly entrenched. The higher frequency instances of the [ʉ] variant are therefore heavily entrenched in the minds of the speakers who use this variant but the (au) schema is weakly entrenched.

This pattern of schema strength, diagrammatised schematically in figure viii, is again based on Lucy's data and, again, entrenchment is represented with a darker box.

[INSERT FIGURE VIII]

Of course, not all of the variants of (o) are low frequency and, as with (au), there is still a tendency for certain words to occur more often with one variant than another e.g. the word 'got' occurs with the [o] variant in 90% of all instances (243 tokens) while 'cos' occurs with the [ɔ] variant in 96.6% of the instances (112 tokens). Interestingly, these two

words are also the two highest frequency (o) words for these speakers (and are therefore the most entrenched)[14]. In Taylor's account of linking /r/ in English, he explains that certain high frequency word combinations may be stored in cognition and retrieved as whole units (2002:258). Entrenchment can also explain variation in the patterning of the word 'off' in this corpus. The construction 'fuck off' occurred relatively frequently in this corpus and the [ɔ] variant is categorically selected by every speaker but in other less frequent (and so less entrenched) uses of the word 'off', speakers will vary between [ɔ], [o] and [a].

The aim thus far has been to present on overview of the variation in two vocalic variables within the group and to reach a more detailed understanding of the patterning of this variation. Notions of schematic organisation and entrenchment in a cognitive network have proved useful but, as it stands, the analysis cannot yet account for the social meaning of these variants.

SOCIAL MEANING IN A CG FRAMEWORK

As explained in the introduction, the majority of sociolinguistic research on vocalic variation in Scotland has been carried out with 'first wave' methodology which is characterised by the use of pre-determined social constructs such as class, age and gender. Consequently, the approach has been to treat linguistic variation as a marker of such social category membership. This account of social meaning is problematic because it does not consider how linguistic variants acquire the social meaning that is locally relevant to speakers or, as Eckert asks, "how do variables mean?" (2002:4).

One way of attempting to uncover the meaning of linguistic variation within a particular community is simply to ask the speakers involved. When I did this with Colin and Sean, they expressed the opinion that frequent use of the [ʌʉ] variant of (au) is considered 'proper' and the [ʉ] variant is characterised as 'Scottish' or 'slang'.

Extract 1: Sean and Colin.

LC: is hoose slang?

S: aye

C:/nuh hoose is Scottish

S: is it?

C: aye cos abdy says hoose

LC: what aboot folk that say house?

C: they're proper

Simon and Robert feel that the frequent use of the diphthong is 'posh' but they would undoubtedly switch to using it in a job interview (i.e. adopting 'posh' pronunciations is something these speakers do grudgingly).

Extract 2: Simon and Robert.

LC: so what aboot if ye were in a job interview?

S: aye you'd hae tae speak proper then cos you're wantin, ken you're no wantin tae go in an be like 'aye, how ye daen pal'

LC: how no?

S: cos yer wantin tae impress them eh. Ken you're no hink-no wantin them tae hink you've just crawled oot the gutter or nuhin

LC: give me an example eh how ye wid talk…would ye say 'hoose' or 'house'?

S and R: house

***

LC: what dae ye hink eh people that say 'house' instead eh 'hoose' a' the time?

R: posh

Perhaps an even better indicator of the social meaning of linguistic variation can be found in examples of style shifting that can be described as 'performance speech' (Schilling-Estes 1998) such as in extract 3 where the speaker, Lucy, is describing an event that has taken place in her Maths class and adopts the role of various actors in her performance of the event.

Extract 3 Lucy and Kate:

L: ***Right [laughs] an then he came in tae ma class an he wiz like, 'does it take ye ten minutes tae get tae this class?' an he sat **doon [ʉ]**. I went, 'nah, he wiz **ootside [ʉ]** haen a fag' [laughs] an he went, 'shurup' like this an awhing an he wiz total goin 'shut it man' like this an a wiz like, 'nae boer'. An then, an then Laura went, 'aye he wiz haen a pash' like that cos in Dundee that's what they call a fag right cos aw the folk we met at the army they were goin, 'comin for a pash' it means 'comin for a fag' right.

LC: right ok

L: but he thought he said, 'he wiz goin for a pish' right [laughing]. Right an he went, 'Laura. **Out! [ʌʉ]** ' and she's goin, 'nuh a never meant it. A never even swore. What ye talking **aboot? [ʉ]** ' an he's total goin '**Out! [ʌʉ]**' An she wiznae goin **oot [ʉ]**, she's sitting like this an then a wiz total pu'en her back an a wiznae letting her go an a wiz hodin ontae her like under like that an she's, she's trying tae get up an she's goin, 'it's Lucy, she's hodin on tae me' an am goin 'no am no' like this an awhing. She- he's goin, em, an then Amy's sitting goin, sittin shoutin, 'a pash, a pash' like trying tae get sent **oot [ʉ]** tae eh, an a wiz like, 'aw right'. She's a total gimp. It wiz just so funny cos he thought she said pish an she didnae. She got sent **oot [ʉ]** total [laughs]…we iyewiz get sent **oot [ʉ]** me an her fir talking.

Traditionally, sociolinguists have tended to dismiss performance speech because their focus has been on understanding unselfconscious 'natural' speech or 'the vernacular'. However, Schilling-Estes (1998) has argued that valuable insights about language variation can be gained through investigating performance speech. For instance, this extract shows that Lucy has recognised a relationship of similarity between the diphthong variant of this variable and a particular instance of a social type: her maths teacher. In other words, performance speech shows that speakers are aware that certain linguistic variants are used by certain types of speakers in certain social situations or domains. This can easily be incorporated into the CG model if we assume (as CG does) that the processes of categorisation discussed in the linguistic analysis above are not unique to language but that exactly the same principles and processes that govern linguistic

categorisation also govern social categorisation. In CG terms, speakers abstract relationships of similarity between certain types of social and linguistic knowledge in their cognitive network. The repeated co-activation (and, hence, entrenchment) of particular (social and linguistic) nodes and links in the cognitive network enables the speaker to associate social knowledge with particular linguistic variants.

Of course, the association that speakers make between linguistic variation and social knowledge is not simply a tool that that can aid successful categorisation of others; as Hudson (1996: 246) explains, speakers, as agents, can choose to select particular linguistic variants in order to project social meaning. In Lucy's case, although the monophthong variant is heavily entrenched, she nevertheless has the capacity to override this entrenchment, even in the high frequency word 'out' (extract 3), in order to signal social meaning. Again, this is not a problem for Cognitive Linguistic theories which assume that speakers are also capable of some degree of agency (Croft 2007).

THEORETICAL IMPLICATIONS

The implications for this approach to 'cognitive sociolinguistics' are two-fold. Firstly, sociolinguistics is often considered as an empirical subject with a wealth of factual data but which has arguably failed to "formulate any agreed central theory, so that the field seems to grow more complex all the time" (Spolsky 1997:78). The theory deficit is a common criticism of the sociolinguistic enterprise and one that was perhaps articulated most vehemently by Chomsky in earlier work in which he compares the study of sociolinguistic variation[19] with 'butterfly collecting': "If you like butterflies, that's

fine; but such work must not be confounded with research…" (1979: 57). Of course, this criticism is no longer justified; there is a wealth of research literature that argues in favour of a synthesis between sociolinguistic data and accounts of linguistic theory. For instance, various attempts have been made in this direction within a generativist model, including Variable Rules (e.g. Labov 1969, 1972), Optimality Theory (Anttila 1997; Bender 2000; Nagy and Reynolds 1997; Boersma and Haye 2001), Principles and Parameters (Wilson and Henry 1998) and Minimalism (Adger and Smith 2005). However, these approaches all begin with a purely asocial theory of grammar and try to build in accounts of variation. In doing so, they only build in the results of such variation, and do not incorporate the social meaning of the variation in the theoretical framework.

This article has argued, in line with recent research in Cognitive (socio) Linguistics (e.g. Hudson 2007; Geeraerts 2003; Kristiansen 2003) that the basic assumptions of the Cognitive Linguistics movement (and the CG framework in particular) are fundamentally compatible with a description of sociolinguistic variation and that the key to this compatibility lies in the non-modularity of the usage-based approach[20]. Cognitive Linguistic theories recognise that 'linguistic' knowledge is inextricably entwined with 'non-linguistic' knowledge or, as Goldberg states: "knowledge of language is knowledge" (1995:5). If both are linked in cognition then both should be incorporated into the same theoretical model.

Furthermore, any theory of linguistics which aims to be a comprehensive and realistic model of human language must incorporate the social facts of language use. CG recognises the variable nature of language; in fact the model implies that linguistic

variation between speakers is inevitable (Geeraerts 2003:1). Yet, despite this, the theoretical assumptions of CG (and other CL theories) are often not supported with usage evidence: "language variation is still widely absent from cognitive linguistic research, whereas in fact it ought to be at the heart of its research agenda" (Dirven 2004: 21). As Dirven explains, even within the now growing field of 'cognitive sociolinguistics', most of the research has been either concerned with the merging of linguistic theory and ideology (Dirven, Frank & Putz 2003) or with the link between language and culture in the development of Cultural Cognitive Models (CCMs, see Morgan 1997). It therefore seems that the disciplines of Cognitive Linguistics and sociolinguistics could potentially benefit from integration and it is hoped that this article might encourage further investigation into this new research avenue.

ENDNOTES

1. These data form part of the corpus discussed in Clark (2005), a pilot study for a larger PhD project. Also, although I have invoked the Community of Practice as a social framework for analysing this community in both my MSc and PhD research, the focus of this article is on the role of cognitive factors in an analysis of variation. I therefore do not provide an in-depth analysis of the community of practice or its application to the present study. For details of this, see Clark (2005).

2. I have based my judgements on information that was provided during conversation of parents' occupation; on my knowledge of the schools that they attend and on the socioeconomic characteristics of the area –this particular area of west Fife was the least expensive place to buy property in Britain in 2003 (http://www.hbosplc.com/economy/includes/01-01-04scottishwinnersandlosers.doc).

3. I am not suggesting that the distinction between variants of (au) and (o) are phonetically abrupt; indeed there may be a spectrum of variants between the two poles when this variation is examined instrumentally. However, the analysis presented here is an auditory analysis and, as such, represents overlap in phonetic space in a more categorical manner. See Milroy and Gordon (2003: 148-152) for a discussion of the merits and drawbacks of auditory and acoustic analyses of variation.

4. Although this is a relatively small corpus, I did not restrict my analysis to a set number of tokens per speaker (e.g. Smith, Durham and Fortune (2007) use a much larger corpus of 500,000 words in their discussion of the (au) variable but they restrict their analysis of this variable to the first 150 tokens for each speaker). Therefore, I still have over 1000 tokens for each variable.

5. The vowel in the word '*ground'* (and also '*pound'* and '*found'*) was historically a short vowel, OE /u/. Old English homorganic lengthening, which lengthened vowels before homorganic consonant clusters, was variable in Scotland and parts of Northern England. As a result, Johnston (1997:81) explains that in Scots, the vowel in the /_und/ cluster typically did not lengthen and so was not diphthongised in the Great Vowel Shift. Instead it developed to [ʌ] and, unaffected by the Scottish Vowel Length Rule, remained a short [ʌ] vowel in these areas. The use of [ʉ] in 'grounded' must have therefore arisen by analogy as speakers generalised and substituted [ʉ] for 'standard' [ʌʉ].

6. An anonymous reviewer pointed out that Paul Johnston did a quantitative study of (o) in his PhD research but it was only completed for Morningside speakers. He also collected data on (o) in Hawick and Yetholm but never published these results.

7. The figures for (o) in these data are only based on instances where the articulation was clearly either [ɔ] or [o]; instances with low sentence stress or rapid articulation have not been included.

8. Kath is the only member of the group that can clearly be categorised as middle class: she attends a fee-paying school, her father is a doctor and she lives in an affluent area.

9. There is, of course, likely to be perceived similarity among all of the instances in the network. After all, the network model is based on the assumption that every node is ultimately connected to every other node. However, this would have been too difficult to diagrammatise. I have therefore included similarity links only between nodes which are variants of the same lexical item.

10. I have incorporated the percentage use of these variants into the diagram of Lucy's cognitive network. However, this does not mean that the [ʉ] variant is entrenched to a value of 90.2%; it simply means that this variant occurred with a frequency of 90.2% in this particular usage-event. By definition, entrenchment is a relative concept; it is not absolute and so cannot be measured on a scale of 0-100%. Langacker recognises that this gradience poses a problem. However, due to the dynamic nature of cognition, he finds this "both acceptable and realistic" (1987:59).

11. This pattern was also found in Macafee (1988, reported in Stuart-Smith 2003: 122).

12. By making the condition of the statistical test even more robust and excluding words which occur with less than 4 instances, the correlation becomes stronger (correlation coefficient = 0.675) and is now significant at the level of 0.01. In other words, there is less than a 1% chance that a correlation such as this could have occurred by chance.

13. This number was chosen because it seemed to be a natural cut-off point in this corpus; however it must be borne in mind that frequency is a gradient phenomenon. I am therefore not claiming that words which occurred with more that 10 instances are 'high frequency' words, only that they are relatively high frequency in this corpus. Bybee (2002), following Frances and Kučera (1982), uses a frequency of 35 words per million as the cut off point between high and low frequency. I therefore checked my own intuitions against the frequency of these words in the British National Corpus using this figure. I found that my measurement of frequency produced almost identical results – words that I had categorised as high frequency with a cut off point of 10 in my corpus were also typically high frequency words with a cut off point of 35 words per million in a 100 million word corpus.

14. An anonymous reviewer pointed out that ‘cos’ is an aphetic form of ‘because’ and as ‘because’ actually belongs to the LAW lexical set, this may further explain the low levels of variation in ‘cos’.

15. These were ‘out’, ‘about’, ‘now’, ‘down’, ‘our’, ‘round’, ‘house’, ‘sound’, ‘loud’, ‘allowed’, ‘pound’

16. These were ‘out’, ‘about’, now’, ‘down’.

17. These were ‘sorry’, ‘morning’, ‘song’, ‘god’, ‘thought’, ‘dog’, ‘cos’, ‘blonde’, ‘comment(s)’, ‘normal(ly)’, ‘long’, ‘on’, ‘bother’, ‘stop’, ‘hot’, ‘popular’, ‘Jonny’, ‘got’, ‘dot’, ‘o’clock’, ‘sort(ing)’, ‘geography’, ‘constant’, ‘conversation’, ‘job’, ‘modern’, ‘mock(ing)’, ‘short’, ‘shop’, ‘lot’, ‘off’, ‘shock(ed)’, ‘across’, ‘robin’, ‘holidays’, ‘copy’, ‘top’, ‘offie’.

18. The 4 highest frequency words for Lucy were ‘cos’, ‘on’, ‘got’ and ‘sort(ing)’.

19. This comment was made particularly in response to Labov (1972)

20. The core element of a usage-based model is the assumption that the speaker’s linguistic system is grounded in usage events. In other words, language is acquired through encounters with actually occurring expressions.

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TABLES

TABLE I: Result of Spearman's, correlating words with more than one instance

Correlation Coefficient	0.406*
Significance(2 tailed)	0.031 ($p \geq 0.05$)
Number	22

TABLE II: Results of Spearman's correlating word frequency with use of Scots variant in (o)

Correlation Coefficient	0.015
Significance (1 tailed)	0.473 ($p \leq 0.05$)
Number	22

FIGURES

FIGURE I: Percentage use of variants of (au) in the CofP

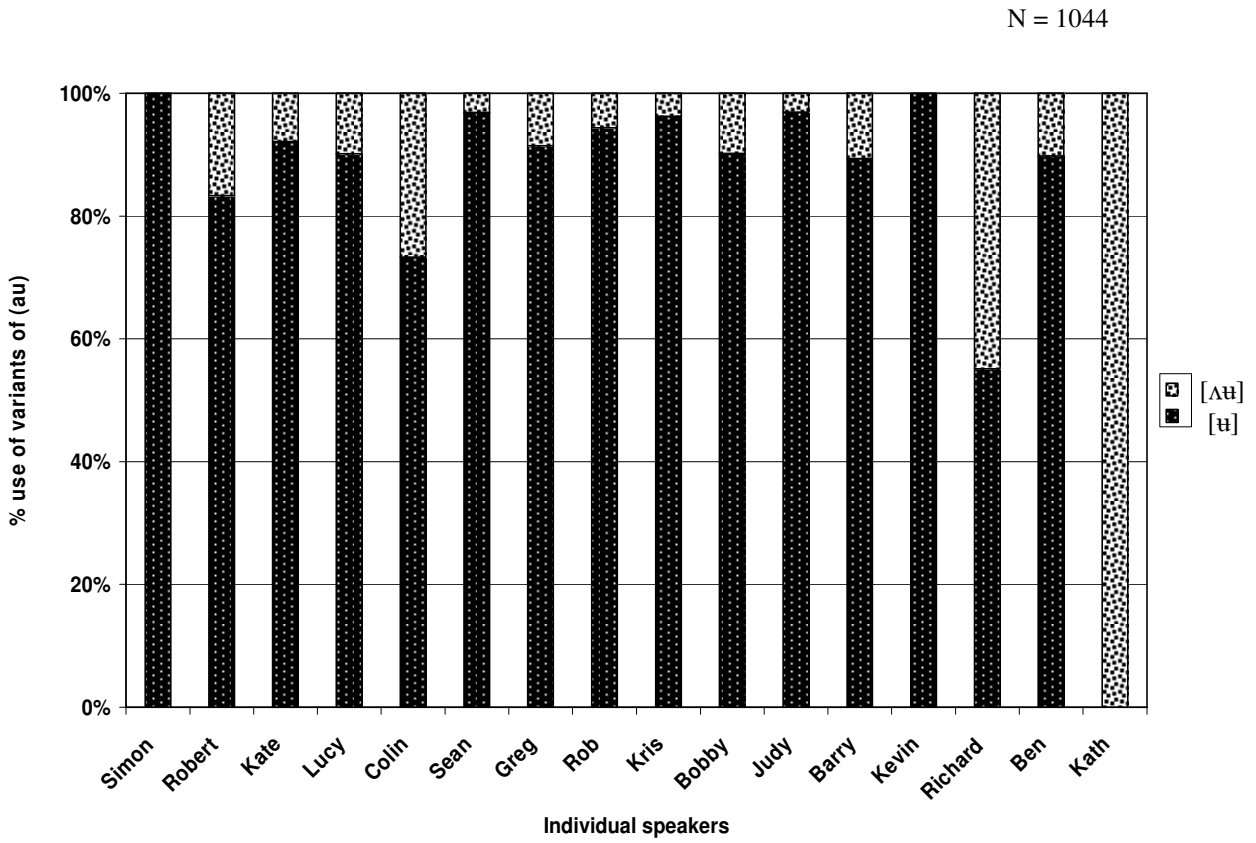


FIGURE II: Percentage use of variants of (o) in the CofP.

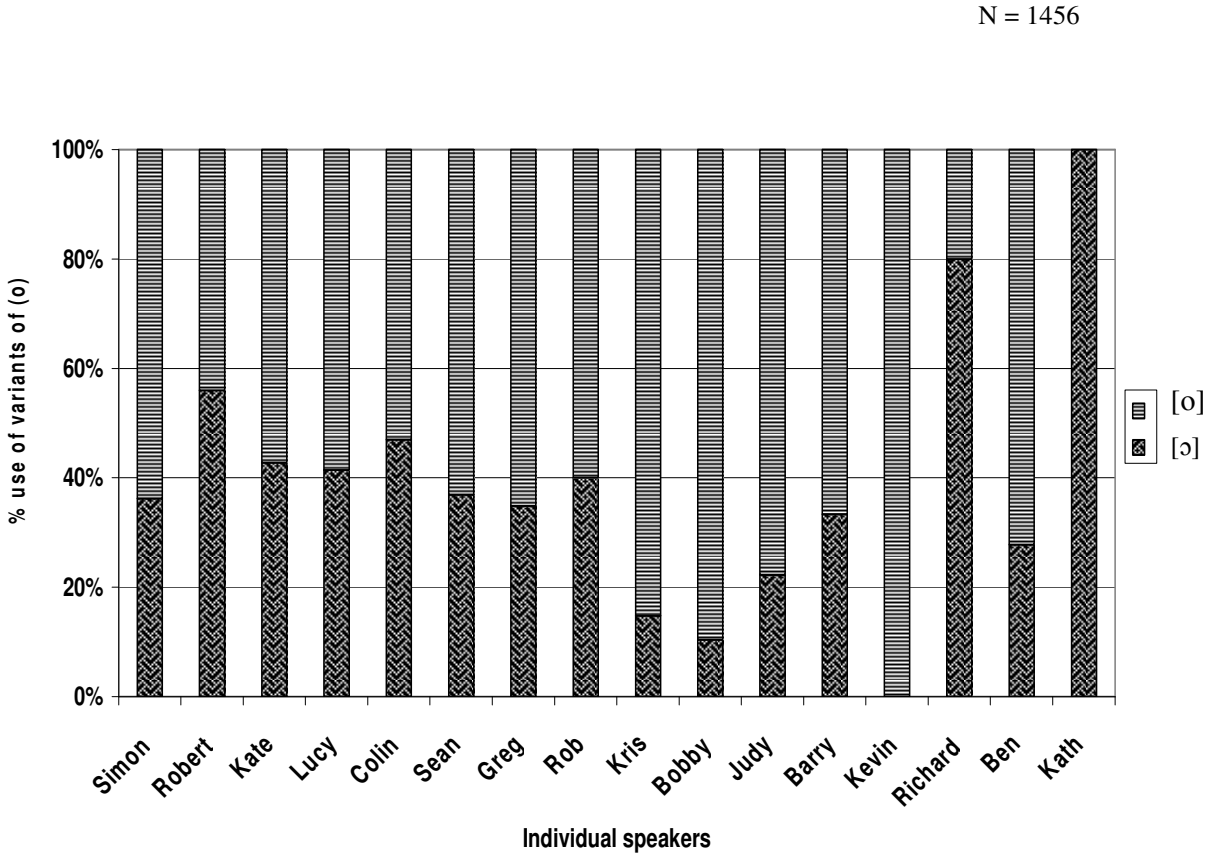


FIGURE III: The Categorisation Triangle

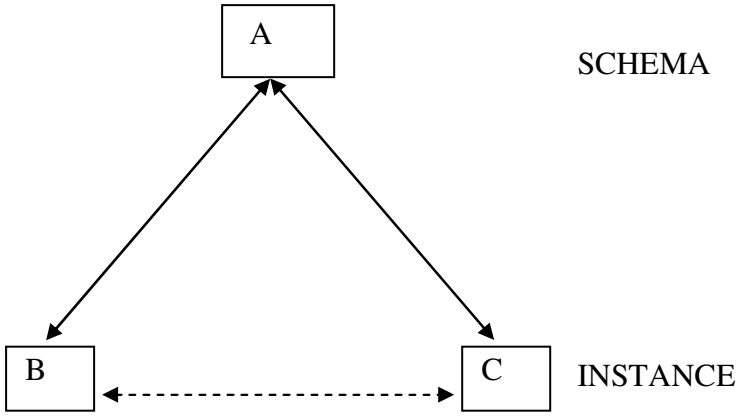


FIGURE IV: Lucy's (partial) schematic network for (au)

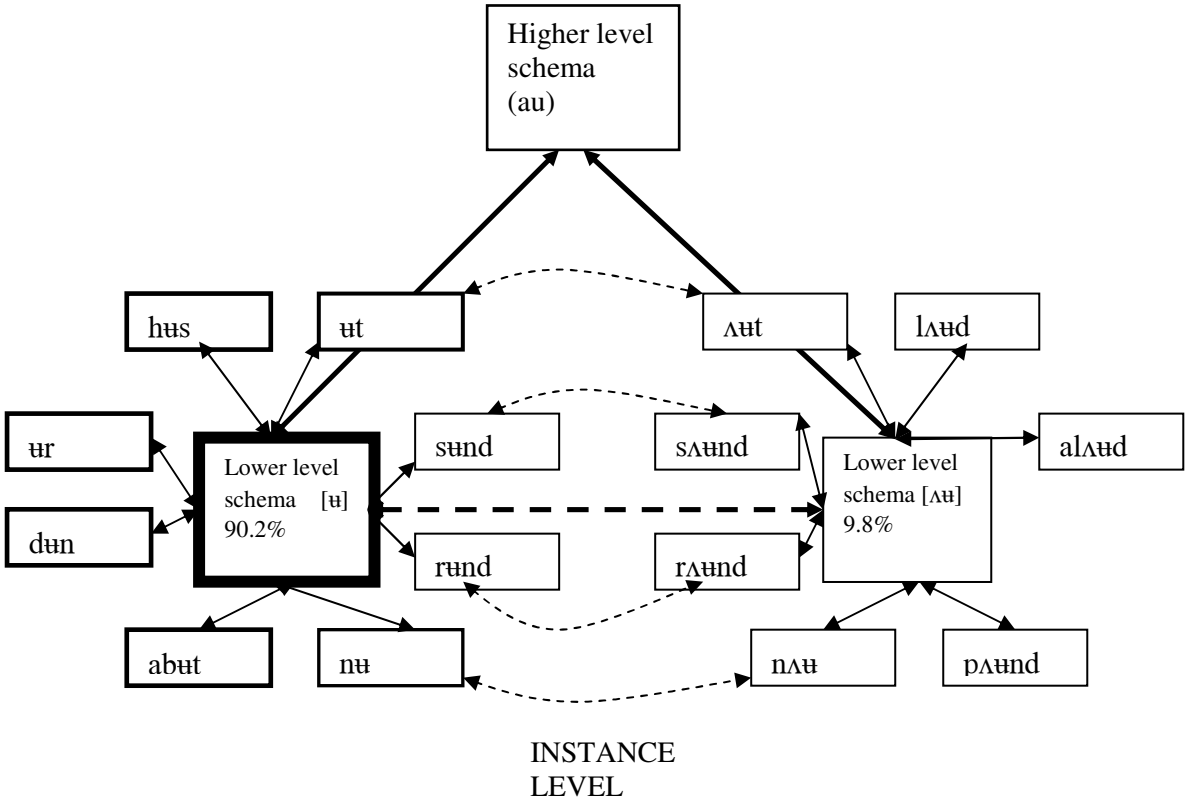


FIGURE V: lexical distribution of (au) across the corpus

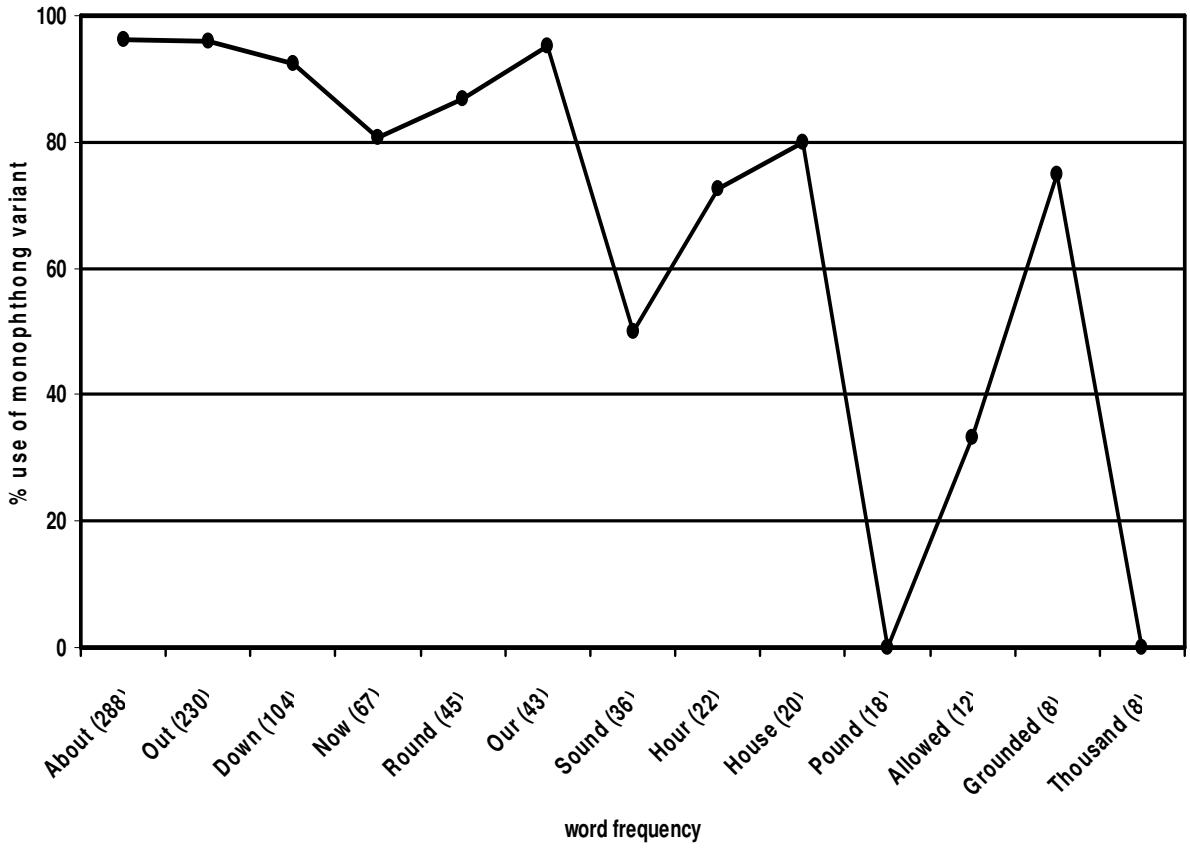


FIGURE VI: Comparison of Lucy's data with the general trend in the corpus

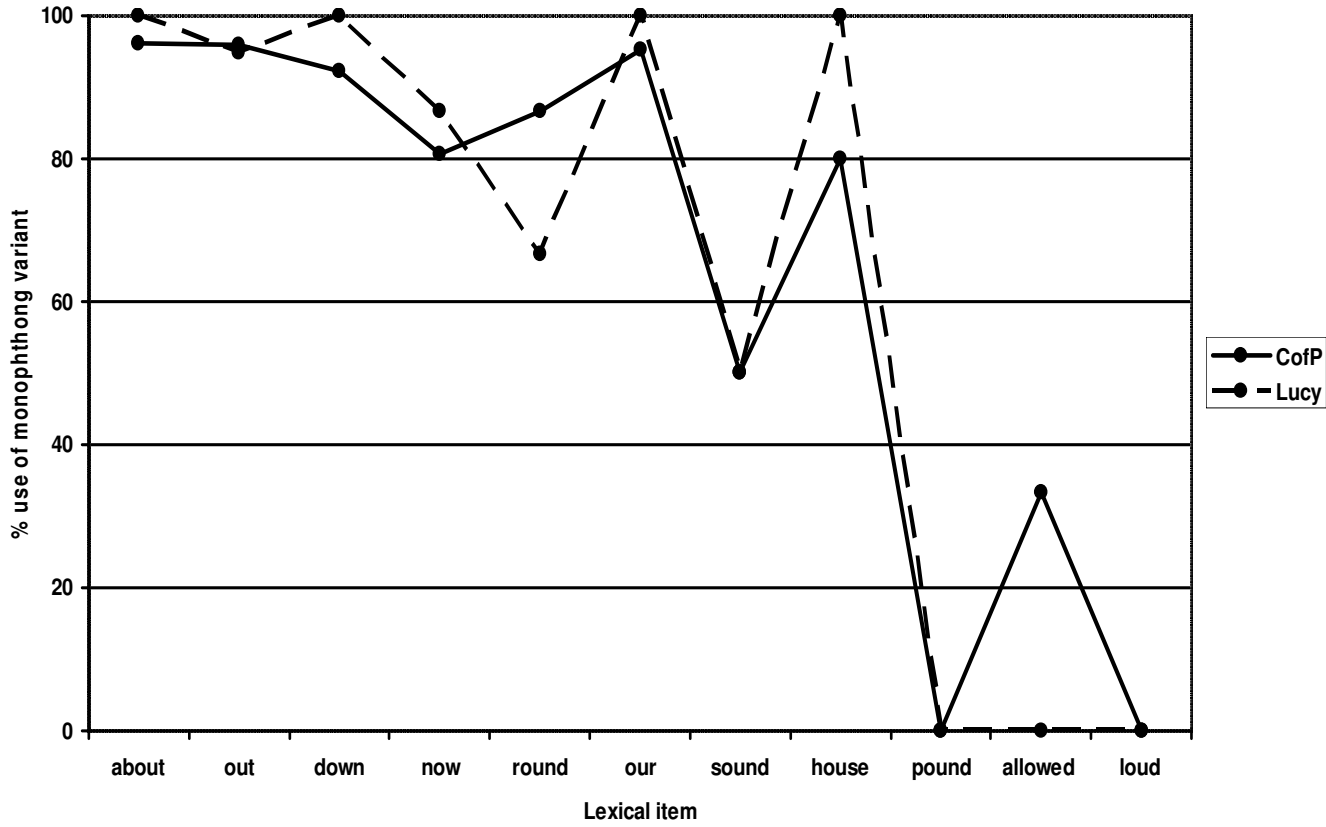


FIGURE VII: lexical distribution of (o) across the corpus

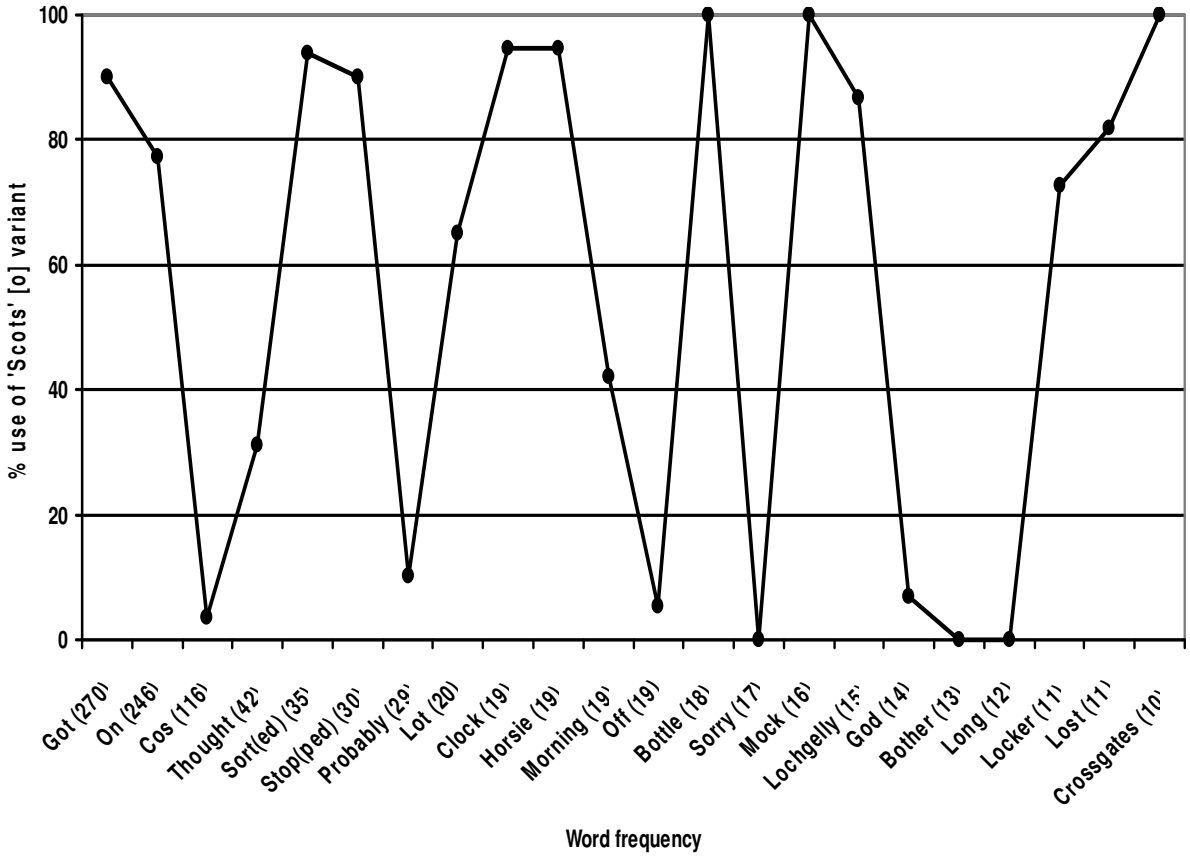
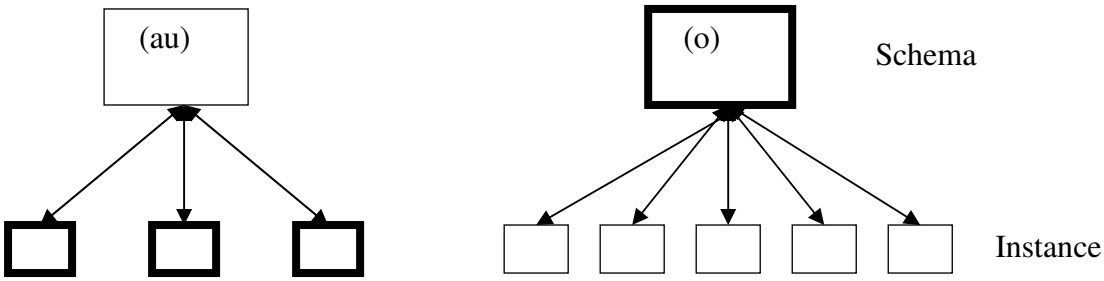


FIGURE VIII: (au) and (o) schema strength in Lucy's data



- 11 words affected[15]
- 4 high frequency[16] (i.e. more than 10 instances)
- Usage is able to strengthen the high frequency instances but is not likely to strengthen the schema

- 38 words affected[17]
- 34 low frequency[18] (i.e. less than 10 instances)
- Schema is strengthened each time an instance is used but most instances are not well entrenched and so are open to more variation.