

# A COGNITIVE APPROACH TO SOCIAL NETWORKS<sup>1</sup>

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GROWING EVIDENCE FROM COGNITIVE SCIENCE suggests that knowledge is represented via a network in cognition (Hudson 2001: 1). This has led to a re-analysis of the modular view of language in the mind (Chomsky 1986). Consequently, many cognitive linguists now propose that linguistic knowledge is organised in the mind in the same way as other, more general aspects of cognition (see e.g. Langacker 1987; Goldberg 1995: 5). This proposal has enormous consequences for linguistics because it blurs many of the distinctions that were traditionally made in linguistic theory. For example, it implies that cognitive linguistic theories no longer recognise a clear dichotomy between linguistic and non-linguistic concepts. Social, cultural and linguistic knowledge are thought to be unavoidably entwined in cognition (Langacker 1994: 31-33). Therefore, theories that come under the cognitive linguistics umbrella<sup>2</sup> claim not to deny the importance of the social aspects of language use; they claim not to treat social influences on language as secondary or less important.

However, cognitive linguists have given little consideration to the ways in which a network model of cognition can incorporate the enormous amounts of research that have been generated in the field of sociolinguistics. Furthermore, sociolinguists have paid little attention to the rapidly expanding theories of cognitive linguistics, despite often facing criticisms that sociolinguistics is a mainly empirical subject that lacks any central theory (e.g. see Spolsky 1997:7-8; Chomsky 1979: 57).

This paper will begin to bridge this gap by highlighting one apparent area of crossover between the disciplines of cognitive linguistics and sociolinguistics: their respective treatment of networks. By exploring the links between a cognitive network model and a social network model, this paper demonstrates that there are, in fact, some remarkable similarities between both frameworks. Moreover, the proposed explanation for these similarities is that social networks may, in fact, exist in the mind of the individual. If this is the case, then social networks must exist as part of the larger cognitive network.

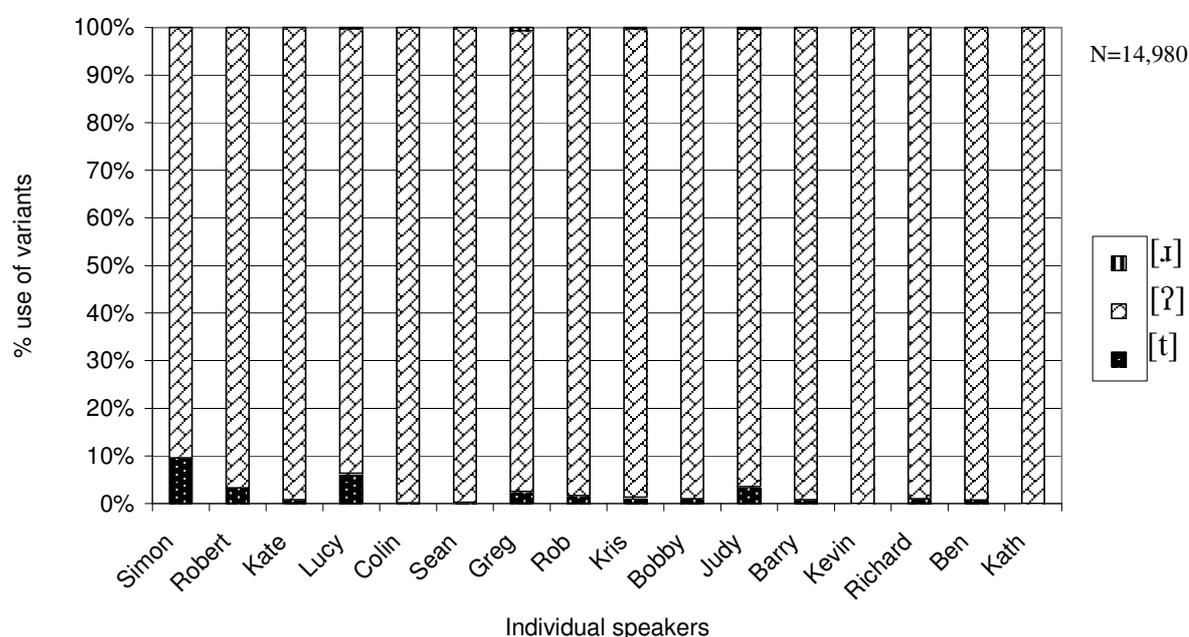
The paper is organised in four parts. Section one exemplifies how variation in sociophonetic data can be represented in a cognitive network model. Section two examines the social network structure of the group of speakers from which the data were obtained and highlights the parallels that exist between the social network model and the cognitive network model. Section three explores the possibility that social networks exist in the mind of the individual and section four is a discussion of the implications of this approach.

1. T-GLOTTALING: DATA AND METHODS. The data that follow were collected over a 12-month period using the ethnographic method of long-term participant observation (Eckert 2000)<sup>3</sup>. The 16 adolescent subjects in this study form a community of practice (Eckert & McConnell-Ginet 1992); they play together in a juvenile pipe band in Fife, Scotland. The subjects range between 12-18 years old and, with the exception of one informant (Kath), who is middle class; the socioeconomic backgrounds of the speakers are roughly upper-working class<sup>4</sup>.

The present discussion concerns the patterning of the (t) variable in the group<sup>5</sup>. T-glottaling, the realization of /t/ with a glottal stop (Wells 1982:261), is now a well-established feature of Modern Scots (Stuart-Smith 2003:125). The actuation of this change is unknown, although its presence was noted in the west of Scotland as early as 1860 (Bell 1860:137). T-glottaling is often considered a stereotype of Glasgow

speech (Stuart-Smith 2003:125). However, there is evidence to suggest that it has also been a characteristic feature of the Fife dialect since the early 20<sup>th</sup> Century: “The glottal catch in place of t between two vowels e.g. in butter, water, is rarely heard in Lothian but is common in Fife” (Wilson 1926:17; cited in Jones 1997:329). The present analysis of t-glottaling is based on auditory transcriptions<sup>6</sup> of six hours of conversation. Following Moore (2003: 43), the speakers were recorded conversing with the researcher (myself) in small, self-selected groups of friends. Although this is a relatively small corpus in terms of recording time, the actual number of instances of the (t) variable is substantial. 14,980 tokens were collected in total from the group, an average of 936 tokens per speaker.

Figure 1 is a summary of each informant’s percentage use of the variants of (t).



**Figure 1.** Percentage use of the variants of (t).

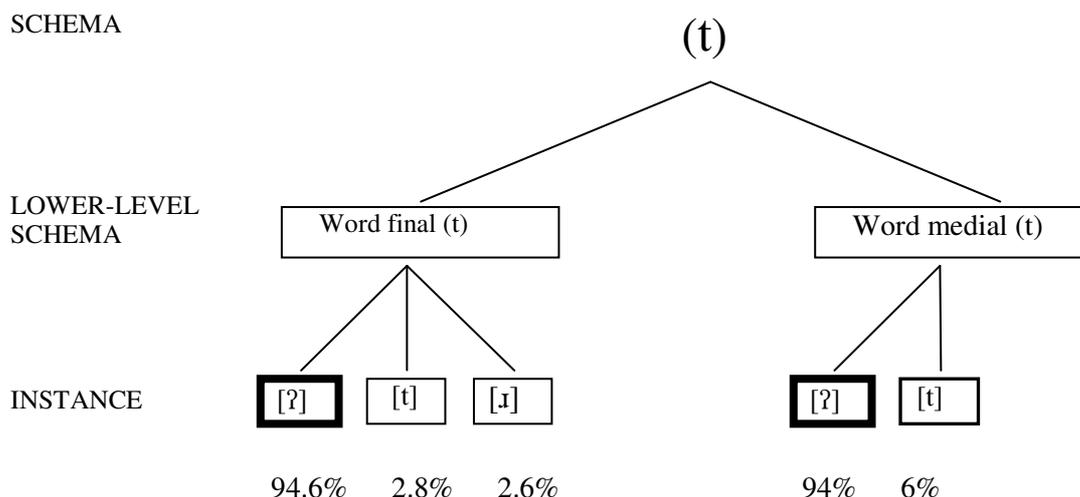
The three phonetic variants of (t) in the data are:

1. a released stop [t]
2. a glottal stop [ʔ]
3. a central approximant<sup>7</sup> [ɾ].

The striking pattern in Figure 1 is the minimal amount of variability. All speakers are using between 90-100% of the glottal variant. In order to explain the variation that does exist in the data, however, it is necessary to examine the patterning of this variable for a single individual in the group. As Schilling-Estes (2002: 376) explains, “we cannot hope to achieve a full understanding of the patterning of variation in language ... if we do not understand its patterning within individuals’ speech.”

1.2. NETWORKS IN COGNITION. The cognitive network model I adopt to explain aspects of this variation is Langacker’s Cognitive Grammar (hereafter CG, Langacker 1987, 1991), although the arguments I make are not specific to CG and are applicable to other cognitive linguistic theories.

In CG, the variation in (t) can be represented in the mind of the individual as a series of categorisation relationships between a schema and its instances. This is diagrammed in Figure 2.



**Figure 2.** Schematic representation of the variation in (t) for Greg.

Figure 2 displays the values of linguistic variation from Greg’s recording as a schematic network. ‘Schema’ is the CG term given to a more abstract representation in cognition which is specified in greater detail by an ‘instance’ (Langacker 1987:68). Schemas emerge in cognition through abstractions over instances (Langacker 1987:69). Speakers create schemas by abstracting over expressions and recognising some commonality between different instances; different instances then elaborate the schema in different ways.

Trousdale (2002:272) examines t-glottaling in eight possible phonetic environments (four word medial environments and four word final environments, which differ, depending on the quality of the following segment in the sequence). However, this speaker did not appear to be influenced, in his selection of variants, by the quality of the following segment, which suggests that he has not abstracted a level of commonality (or a schema) that relates specifically to the immediate phonetic environment of the instance. He did differ slightly in his selection of variants depending on the position of the segment in the word<sup>8</sup>. Therefore, the data in this study have been divided into only two environments (word medial (t) and word final (t)), which are represented in the network as lower-level schemas, i.e. more fleshed-out characterisations of the higher-level, more general (t) schema.

In each utterance, the speaker has a *choice* between three different variants in the schema. One factor that influences this choice is the degree of **entrenchment** of the variant in the speaker’s cognitive network. In CG, the nodes of a network are described as having various degrees of entrenchment (Langacker 1987: 59). The occurrence of any type of mental activity will leave behind a neurological trace. If this event (or, more accurately, event type) recurs, it becomes more and more entrenched in the mind of the speaker through repetition. Event types achieve **unit**

**status** in CG when **automization** occurs and the speaker can activate the structure largely automatically (Langacker 1987: 60). The more a particular node is successfully activated, the more entrenched the node becomes, which in turn leads to a greater probability that the node will be selected in another usage event. If we equate entrenchment in CG with frequency of successful use, we can therefore assume that the glottal articulation is very heavily entrenched in Greg's cognitive network (marked in Figure 2 with a heavy box).

Although this speaker uses the glottal variant around 95% of the time, it seems that some words have a greater likelihood of being realised with a particular variant than others. For example, in the word final schema, *that* (which accounts for 71 tokens) and *it* (which accounts for 70 tokens) are only ever realised with the glottal variant in this usage event. Typically these words appear in a reduced-stress environment, which could perhaps explain why the glottal articulation is more likely<sup>9</sup>, but so too do words like *got*, *get* and *pit* which vary for this speaker. With a closer examination of the variation in these particular words a pattern emerges. It seems that word final [t] is more likely to be selected in a monosyllabic word where the following word is *it*, e.g. *get it* or *pit it*. The consonant at the end of the first word in these examples is often realised as an alveolar stop but the consonant at the end of the second word is realised as a glottal stop. Taylor (2002:258) suggests that certain high frequency word combinations or constructions can become so entrenched that they are stored in cognition and retrieved as whole units. In other words, these high frequency combinations can be accessed directly, rather than via the activation of a schema. It is therefore possible that this speaker has stored these constructions in the same way, with the alveolar articulation first in the sequence.

It is also possible that this speaker has extracted another lower-level schema to encompass instances that occur in the context [monosyllabic word [t] ## [i?]], creating a situation of **schema competition**, which arises when two or more incompatible schemas are candidates for the categorisation of an instance (Taylor 2002: 301). The conditions for glottal selection in the (t) schema are massively underspecified because there are very few phonetic restrictions on where it can occur (see note 7). This means that the **elaborative distance** (i.e. the degree to which the schema is underspecified in relation to the instance) between the schema and the instance is great. However, if a schema has been extracted to encompass all instances of the [t] variant word-finally before *it*, the elaborative distance between this lower-level schema and the instance is much less, because this is a very specific phonetic environment. In the case of schema competition, "the schema with the shortest elaborative distance wins out" (Taylor 2002: 302), and so the lower-level schema associated with [t] selection is capable of overriding the very strong entrenchment associated with the glottal articulation in the higher level schema. This pattern of word final [t] before *it* is not confined to the speech of this individual; it was noticed in the data for other individuals in the group and has been commented on in other studies of t-glottaling, e.g. Stuart-Smith (1999:194), Macaulay (1991:35-36) and Trudgill (1999:132), adding further weight to the proposal that speakers recognise some commonality between these instances and hence may form lower-level schemas to deal with the perceived similarity.

However, although entrenchment in the schematic network is a useful tool in understanding linguistic variation, it does not account for the social meaning that speakers associate with these variants. The majority of instances of [t] for this speaker were motivated by a clear shift in style. For example, throughout this recording, Greg and his taping partner Rob had several mock fights and after each one, they proceeded to recite the details of the fight to the tape in a **news reader** or **commentator** style, usually beginning 'for the benefit of the tape...' (see example 1).

(1)

G: by the way ma knuckles actually sair

R: [laughing] so's ma fucking heid. [commentator style] For the benefitu of the tape, Greg has once again

G: [commentator style] assaultued Rob

R: yes

G: [commentator style] in an vicious and...provoked manner

R: provoked?

G: [commentator style] yes. You, like, make comments aboutu my mother...

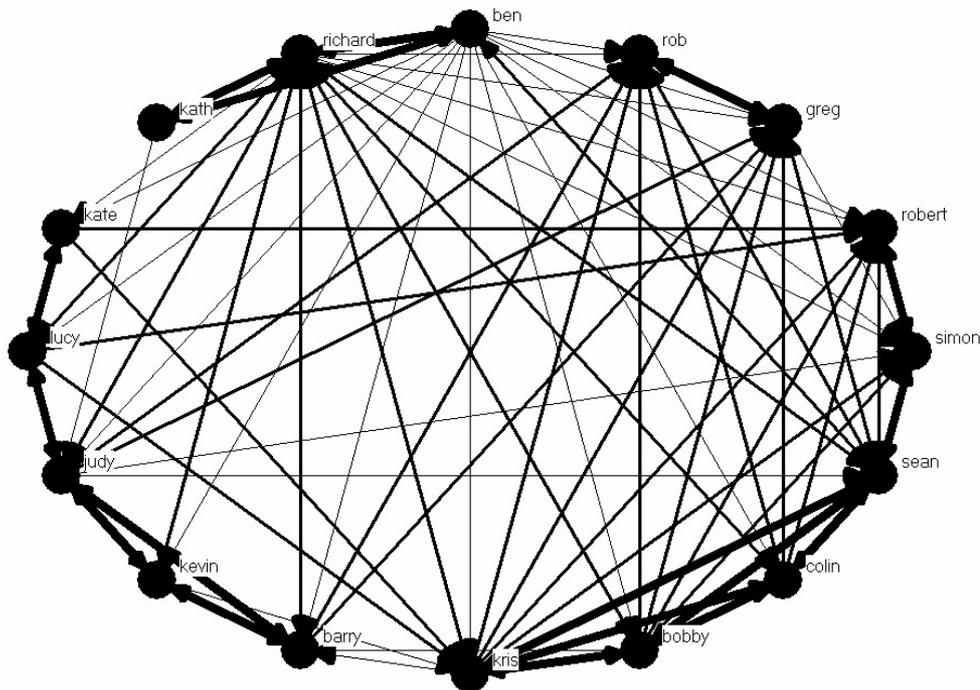
It is clear from example 1 that, for these speakers, commentator style is characterised, not only by the use of (t): [t] but by the selection of a more standard register generally, e.g. note the use of *yes* rather than Scots *aye*; *mother* rather than Scots *maw* [mɔ:] or *mer* [mɜ:ɪ]. Israel & Kemmer (1994: 174) argue that “particular forms or whole classes of forms may become stereotypically associated with the sorts of speech act situations in which they are most commonly experienced.” It therefore seems reasonable to suggest that, through the repeated co-activation of particular linguistic nodes in particular social contexts, these speakers have come to associate the glottal articulation with a default or informal style of speech, and the alveolar articulation with a style typical of commentators. Therefore, although the glottal articulation is very heavily entrenched in the speaker's cognitive network, entrenchment is not the only factor influencing the choice of this particular variant. When this speaker switches to another speech style that he associates with the [t] articulation in his cognitive network, he is capable of overriding the heavy entrenchment of the glottal stop and selecting the [t] variant.

Thus phonological variation in linguistic data can at least be modelled in a cognitive network and both social factors (e.g. style shifting) and linguistic factors (e.g. schema extraction and entrenchment) influencing the variation can be accommodated in the same theoretical framework.

2. SOCIAL NETWORKS. A substantial body of research has been carried out in recent years on the assumption that networks also exist in society. Milroy (2002: 549) defines social networks as “the aggregate of relationships contracted with others”. Social Networks are often described in terms of **density** and **multiplexity**, where density relates to the number of ties (or links) between individuals in a network and plexity relates to the nature of these ties. A maximally dense, multiplex network is therefore one in which all members of the network know each other and they all know each other in more than one capacity.

However, a typical social network analysis does not simply describe the links between individuals in a group in terms of density and multiplexity, it also attempts to quantify these relationships in some way. Milroy (1980: 141-42) measured the network strength of individuals by placing them on a six-point scale according to five factors relating to their position in the immediate neighbourhood. This method of quantification was inappropriate for the adolescents in this sample because they do not form a territorially based cluster in the neighbourhood in the way that Milroy's subjects did. Following Cheshire (1982), I therefore based the social network analysis of this group solely on measurements of friendship links. Figure 3 is a sociogram displaying the positive and negative relationships that the informants felt existed among them. Negative links (or dislike links) are represented with thin lines, positive links (or friendship links) are represented with thicker lines and reciprocal friendship links are represented with very thick lines. The network analysis was performed by

UCINET 6.79 and diagrammed using NETDRAW (Borgatti, Everett & Freeman 1999).



**Figure 3.** *Social Relationships in the West Fife High School Pipe Band*

By comparing the social network model of Figure 3 with the description of the cognitive network model presented in section 1, we can see that there are some clear parallels between the two models. The relationships between nodes of the cognitive network and speakers in the social network model are described in terms of a series of ties or links. The ties in the social network can vary in entrenchment (or multiplexity) as can the links between nodes in cognition, and the nodes themselves can also vary in entrenchment in the cognitive network model as can the degree of familiarity with any given speaker in the social network.

Of course, simply comparing any two network models, particularly bounded networks such as those described above, is likely to produce similarities. The reason I propose that these networks are similar stems more from some of the problems that have been recognised with the social network approach, particularly with the assumption that social relationships between individuals can be accurately quantified. Milroy's (2002: 550) approach to SNA distinguished between **strong** ties (i.e. kin or close friends) and **weak** ties (i.e. ties with acquaintances). Yet it is unclear, for instance, how speakers (or analysts) distinguish a friendship tie from an acquaintance tie. Do all speakers make this distinction at the same level of acquaintance? How does the analyst deal with kin ties that mean little to the speaker or where the interaction is infrequent? It seems that describing social relationships as categorically strong or weak is a huge simplification. Social relationships are not binary; they are gradient, dynamic and often very complex.

The main problem with previous attempts to quantify social ties stems from a failure to recognise the true nature of these ties. Ties in a social network symbolise social relationships, but these relationships only exist because individuals perceive them to exist. If this is the case, then social relationships must only exist in cognition.

When analysts assign a value of strength to a social network tie, it therefore has to be acknowledged that they are actually assigning a value to links in a cognitive network, and this is not easily quantifiable.

I therefore suggest that social networks and cognitive networks are not only similar network models; they may, in fact, be exactly the same cognitive structures. If social networks are simply another sub-network of knowledge, then they are ultimately linked to other aspects of knowledge, some of which is more 'linguistic'. But because the theory does not recognise a clear dichotomy between linguistic and non-linguistic concepts, there is no need to separate linguistic and non-linguistic nodes in this model.

This section highlights some of the ways in which data from this group of adolescents can also be modelled in a social network and draws parallels between social and cognitive networks.

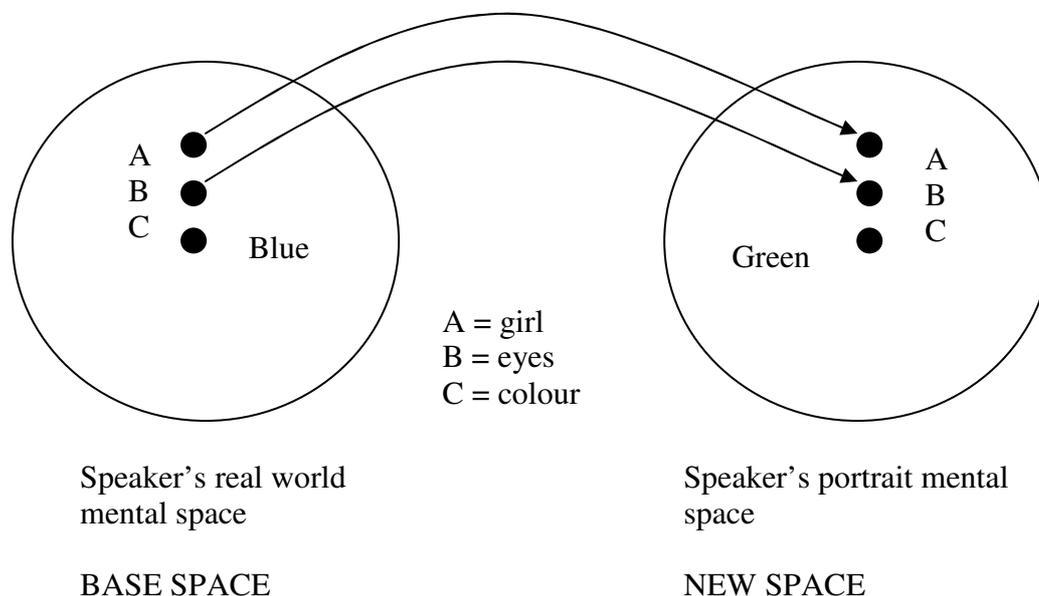
3. SOCIAL SPACE. Despite these parallels, clear differences remain between the models. The main difference is that the cognitive network model discussed in section 1 represents an individual speaker's knowledge but the picture of the network that is presented in a social network analysis or a sociogram (as in Figure 3) does not correspond with the mental representation of any one individual. If it is indeed the case (as a usage-based model of cognition like CG suggests) that knowledge is based on previous experience, then no two individuals will share exactly the same mental representation of this social network, as no two individuals will have had exactly the same experiences of the network. Therefore the networks that speakers perceive to exist cannot be accurately mapped by sociograms. Social networks are difficult to measure objectively and we do not get a full understanding of what these relationships actually mean to individuals in a given community. Milroy (2002: 556) claims that SNA is a "participant rather than an analyst concept," but this sociogram is an abstraction over all of the viewpoints of individuals in the network. It is far removed from reality; it can only exist as an analyst's construct. Of course, individuals perceive the existence of social relationships; but such relationships exist in the minds of these individuals, so we need a model of social cognition that focuses on the individual's conception of the network. The model I propose draws on the cognitive theory of Mental Space (Fauconnier 1994 [1985]).

Mental spaces have been defined as "partial assemblies constructed as we think and talk, for purposes of local understanding and action" (Fauconnier 2005: 1). They are high-level cognitive structures that operate in the 'cognitive background' of speech production and processing, typically below the level of conscious awareness (Fauconnier 1994: xvii), and they are invoked and stored in working memory as discourse unfolds. Mental spaces should not be considered as an alternative to the network model. According to Fauconnier (2005: 2), they are sets of "activated neuronal assemblies". In other words, they are pockets of active nodes in the network, connected by various types of 'mapping' (or linking) devices which ultimately shape into large-scale conceptual networks.

Fauconnier & Turner (1998:134) argue that mental space construction is one of the basic cognitive operations of the human mind. But if we are not consciously aware of forming these structures, how can we be sure of their existence? Fauconnier & Turner (1998) argue that mental spaces are not only psychologically plausible, they are necessary in order to explain our human ability to imagine and to construct mental models that do not (indeed cannot) have direct referents in the physical world. They can also explain our ability to understand apparent contradictions.

Perhaps the most often cited example of evidence for the existence of mental spaces comes from Fauconnier (1994:12): "In Len's painting, *the girl with blue eyes*

*has green eyes.*" In order to understand this example, it is necessary to invoke two mental spaces, one containing the elements of reality (as the speaker perceives it) and another containing the elements of the portrait that is set up by the adverbial space builder *in Len's painting*.



**Figure 4.** "In Len's painting, the girl with blue eyes has green eyes".

The large circles in Figure 4 represent mental spaces. Structure from the **parent space** or the **base space** is transferred into the new space by default and so space building typically goes unnoticed. This is known as the **access principle** or the **ID principle** (Fauconnier 2005: 3). In this example, however, there is a mismatch between the structure in the parent space and the new space, highlighting the existence of the mental spaces. The girl in the painting is the same girl as in the speaker's reality, but the colour of her eyes in the reality space is different from their colour in the portrait space.

Fauconnier (1994) further proposes the existence of various **types** of mental space: time space (e.g. in 1929) space space (e.g. in Moldova), domain space (e.g. in Canadian football) and hypothetical space (e.g. if P then Q). If mental space building is a fundamental aspect of cognitive processing that is therefore not specific to language and if social knowledge is as much an aspect of the knowledge of an individual speaker as linguistic knowledge, then surely we must be able to posit the existence of social space, a mental space construction that models the individual's conceptualisation of themselves and their place in society. The concept of social space is certainly psychologically plausible (or at least no less psychologically plausible than any other type of mental space) and the term is, in fact, already used by Hudson (1996: 11), who argues that society is structured in cognition as a "multidimensional space" and that we can choose to locate ourselves along various dimensions within it.

Mental spaces are created by abstracting over experiences in interaction and they are structured around domains<sup>10</sup>. For instance, within the domain of 'boxing', Fauconnier (2005: 3) explains that a mental space may be organised by the specific domain (e.g. boxing) or by a more generic domain (e.g. fighting) or by an even more

generic domain (e.g. competition). Similarly, the individuals in this study may profile their social network against the very specific domain of the West Fife High School Pipe Band or against the more generic West Fife High School or against an even more generic domain of the piping community (as well as a variety of other social domains that may be relevant for these individuals).

Each individual may recognise different members of the group as more salient in their own conception of the network for different reasons (perhaps because they feel connected by a positive or a negative link). These salient individuals constitute the **figure** of the social space, where the figure in a scene is the CG term for the substructure perceived as standing out from the remainder of the scene, which constitutes the **ground** (Langacker 1987:120). Each individual is aware of the existence of others in the network (because they are aware of who is and who is not a member of this band), but these other individuals may not be particularly prominent in some speakers' mental picture of the group and so they constitute the ground.

It is also owing to some kind of salience that an entity is used as a reference point in CG. Reference point construction is described as "the ability to invoke the conception of one entity for purposes of establishing mental contact with another" (Langacker 1999:173). Cognitive reference points are salient entities that the individual can use to locate non-salient entities in the world. The individuals which hold some salience in the speaker's cognitive network are therefore likely to function as cognitive reference points, landmarks in cognition that the speaker can invoke relative to which he can locate others and position himself within the multi-dimensions of social space.

The main difference between the social space model and a typical social network analysis is that the social space model recognises that social relationships are mental constructs and are therefore dynamic structures that exist in the mind of the individual. As such, it has the capacity to explain sociolinguistic variation between speakers because it can question how speakers make associations in cognition between social knowledge and linguistic knowledge. In other words, it can allow us to question how speakers give social meaning to linguistic variants at the most local level of analysis possible – the mind of the individual.

4. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH. In section 1, I argue that we perceive certain linguistic variants to be linked to other linguistic variants in cognition by categorisation networks. In section 2, I explain that we also perceive the individuals we encounter in society to be linked to ourselves and to other individuals in similar ways. However, in a network model of cognition such as CG, there is no clear dichotomy between linguistic and non-linguistic concepts. There is therefore no need to separate linguistic and non-linguistic nodes in this model. Through the repeated co-activation of particular nodes and links in the network, speakers come to abstract relationships of similarity between certain linguistic variants (such as those of the (t) variable) and certain individuals or types of individuals (e.g. commentators, friends, enemies) in their cognitive network. All of this information then enables the speaker to build up a prototype and extract a schema of a particular social type that includes both linguistic and social knowledge.

The main argument proposed in this paper is therefore that social networks and cognitive networks are not just similar network models; they may, in fact, be exactly the same cognitive structures. If this is the case then social networks are simply another sub-network of knowledge that are ultimately linked to other aspects of knowledge, some of which happens to be more directly 'linguistic' in nature. Furthermore, the concept of social space is both psychologically plausible and theoretically important, because it offers linguistic theory a way of modelling social

structures that are relevant to individual speakers and not the abstract sociograms that are proposed by social network analysis.

Given the psychological evidence for the existence of network structures in the human mind, this conclusion may seem unsurprising, yet it is a conclusion that is very rarely drawn. As Hudson (1986) explains, little interaction exists between the disciplines of cognitive linguistics and sociolinguistics, despite the obvious common ground they share. The majority of those working in cognitive linguistics (and related disciplines such as neuro-linguistics) still fail to articulate the importance of the social aspects of language use. Despite invoking models that are designed to incorporate social knowledge and sociolinguistic variation, cognitive linguistics continues to retain a traditional focus on language structure at the expense of language use (Geeraerts 1995: 115).

The work presented here shows that it is not only possible but beneficial to incorporate both social and linguistic information within the same theoretical framework and that there is a need to recognise the importance of such a synthesis. Of course, there remains a series of questions regarding the precise nature of the network I have proposed. For instance, what exactly is the nature of the phonological nodes and on what basis do speakers perceive similarity between instances? The key to answering these questions, it seems, lies in the combination of sociolinguistic and psychological methods of data collection and cognitive linguistic methods of analysis.

<sup>1</sup> Much of what appears here is based on a chapter of my MSc dissertation (Clark 2005) and I am grateful to Graeme Trousdale, Anne King, Jane Stuart-Smith and Dick Hudson for their comments on this work. I would also like to acknowledge the helpful comments of the Language in Context Research Group at Edinburgh (and in particular, Miriam Meyerhoff) and the audience at the NDCL conference in Brighton (October 2005) where parts of this idea were also presented. Acknowledgement is also due to the anonymous reviewers whose comments were extremely useful.

<sup>2</sup> Cognitive Linguistics is the general cover term given to a range of theoretical approaches in modern linguistics such as Word Grammar (Hudson 1984, 1990), Construction Grammar (Goldberg, 1995) and Stratificational Grammar (Lamb 1999). These approaches differ at the level of specific detail but they all take a fundamentally non-modular view of language.

<sup>3</sup> These data form part of the corpus collected for Clark (2005). This was a pilot study that was conducted for an MSc dissertation with the intention of expanding the research into a larger PhD project.

<sup>4</sup> This assumption is based entirely on qualitative observations of parents' occupations (e.g. police officer, fork-lift driver, contractor, technician, plumber etc.), the schools the adolescents attended (Kath is the only member of the group to attend a fee-paying school); and the socio-economic characteristics of the area – this particular area of West Fife, where most of the adolescents live, was the least expensive place to buy property in Britain in 2003 (<http://www.hbosplc.com/economy/includes/01-01-04-scottishwinnersandlosers.doc>). No attempt was made to assign these speakers to a social class index.

<sup>5</sup> It is generally accepted as practice in sociolinguistics to enclose sociolinguistic variables (i.e. collections of variants that pattern in accordance with particular social and linguistic factors) in rounded brackets and variants of these variables in square brackets.

<sup>6</sup> This measurement of phonological variation was felt to be sufficient for the purposes of this pilot study because the variants of this variable are, at least auditorially, discrete consonantal alternations.

<sup>7</sup> This latter variant (discussed by Carr (1991) in Tyneside as T→R weakening) occurred sporadically and very infrequently.

<sup>8</sup> This explanation is slightly oversimplified because it does not consider syllable structure. The medial stop in e.g. *butter* is much more likely to be glottalised than the medial stop in e.g. *tattoo* because the stop in *tattoo* is foot initial and, as Trousdale (2002:273) explains, textbook accounts of glottaling in English (which are based primarily on RP) suggest that t-glottaling is not possible word- or foot initially. However, (as in Trousdale 2002: 273 and Docherty *et al.* 1997: 290) there are instances in these data that do not confirm this generalisation. For example, with the exception of Kath, all

speakers display variation between the glottal and the alveolar realisations word initially in the lexical item *tae* (the Scots form of 'to') and also word medially in, for example, *fourteen*.

<sup>9</sup> Docherty *et al.* (1997: 300) note the apparent stylistic function for some speakers to use the "fully released variant to mark emphatic stress".

<sup>10</sup> Fauconnier uses the term frames, introduced by Fillmore (1982), which is similar to the notion of domains in CG. I use the term domains to avoid confusion in the terminology.

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