Metaphor in usage

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Abstract

This paper examines patterns of metaphor in usage. Four samples of text excerpts of on average 47,000 words each were taken from the British National Corpus and annotated for metaphor. The linguistic metaphor data were collected by five analysts on the basis of a highly explicit identification procedure that is a variant of the approach developed by the Pragglejaz Group (2007). Part of this paper is a report of the protocol and the reliability of the procedure.

Data analysis shows that, on average, one in every seven and a half lexical units in the corpus is related to metaphor defined as a potential cross-domain mapping in conceptual structure. It also appears that the bulk of the expression of metaphor in discourse consists of non-signalled metaphorically used words, not similes. The distribution of metaphor-related words, finally, turns out to be quite variable between the four registers examined in this study: academic texts have 18.5%, news 16.4%, fiction 11.7%, and conversation 7.7%. The systematic comparative investigation of these registers raises new questions about the relation between cognitive linguistic and other approaches to metaphor.

Keywords: BNC-Baby, metaphor, metaphor identification, text annotation, register, simile

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1. Introduction

1.1. *Basic questions about metaphor in cognitive linguistics*

The cognitive linguistic approach to metaphor launched by Lakoff and Johnson (1980; cf. 1999) has not only been essential for the development of cognitive linguistics as a school of linguistics itself but has also affected many other disciplines concerned with the study of metaphor, including philosophy, poetics, psycholinguistics and psychology, discourse analysis and communication studies, and anthropology (e.g., Gibbs 2008). Attention to metaphor in discourse is crucial for the realization of the cognitive linguistic objective of constructing a usage-based grammar, in which lexical elements and other lexico-grammatical constructions may be motivated by metaphor 'in thought', or cognition. Yet this research programme is also controversial, and fundamental questions have been raised about central cognitive-linguistic tenets about metaphor in usage, for instance by Steen (1994), Chilton (1996), Cameron and Low (1999), Eubanks (2000), Cameron (2003), Charteris-Black (2004), Koller (2004), Musolff (2004), Deignan (2005), Caballero (2006), Stefanowitsch and Gries (2006), Steen (2007), Cienki and Müller (2008), Müller (2008), Semino (2008), and Musolff and Zinken (2009), to mention just the most familiar book publications. Three issues appear to stand out.

One question concerns the relationship between the on-going psychological processes and their products, on the one hand, and the linguistic forms and conceptual structures of metaphor analyzed as signs or symbols, on the other. The problem here is that what is analyzed in cognitive linguistics as metaphorical in the linguistic and conceptual structures of discourse does not have to be a one-on-one reflection of the psychological processes of human verbal and cognitive behaviour in discourse (e.g., Cameron and Low 1999; Charteris-Black 2004; Gibbs 2006; Steen 2007; Müller 2008). Metaphor in the structure of language does not always have to be directly driven by metaphor in the on-line processes of thought. Moreover, these processes only pertain to the short-term discourse processes of production, reception and interaction that characterize performance; how the relationship between metaphor and these discourse processes is connected with long-term psycholinguistic processes such as language acquisition, maintenance and attrition is an even more complex issue. The entire question impacts on the way in which cognitive-linguistic and psycholinguistic approaches to metaphor can be seen as identical or distinct; various psycholinguists and psychologists have been fairly vociferous in dissociating themselves from the cognitive-linguistic position about metaphor as thought; for some examples and references, see Steen (2007) and Gibbs (2008).

Another issue has to do with the social and cultural variation of metaphor in usage. What is metaphorical to some language users does not have to be meta-

phorical to other language users (e.g., Shore 1996; Cameron 2003; Kövecses 2005; Steen 2007). The cognitive linguistic idea is that our thought and language are metaphorical in roughly the same ways for everyone because of a number of constant parameters in human experience; this is an important and exciting proposition, but it also is a gross idealization when it comes to observing variation in usage. Even if linguistic forms may be the same across a number of contexts of usage, this does not mean that they necessarily function in the same way to the concrete individual participants in these various usage events. This issue affects the way in which cognitive linguistic approaches can be said to be the same as sociolinguistic, discourse-analytical and cultural-linguistic ones; here, too, it should be pointed out that various scholars from the other camps, who are mostly known as applied linguists, have again dissociated themselves from a uniform role of metaphor between groups of language users.

A third question concerns the precise relationship between the linguistic forms and conceptual structures of metaphor themselves. The problem here is the adequate and accurate identification and demarcation of conceptual metaphors, or even less systematic cross-domain mappings, in relation to the concrete linguistic expressions in situated events or documents (e.g., Cameron 2003; Ritchie 2004; Steen 2007). Fundamental problems have been pointed out with respect to distinguishing between competing variants or alternatives of conceptual metaphors. Moreover, their nature as complex or primary metaphors is unclear. Furthermore, the way they can or must play a role in concrete instantiations of meaning in discourse is open to debate. This third issue therefore has an impact on the general linguistic validity of cognitive linguistic proposals for metaphor and the question as to whether they are acceptable to the linguistic community at large. Critical perspectives from other schools in linguistics have been formulated by, for instance, Wierzbicka (1986), Jackendoff and Aaron (1991) and Sperber and Wilson (2008).

There are hence fundamental theoretical and empirical questions about the cognitive-linguistic approach to metaphor. This is not surprising, for the cognitive linguistic approach has presented a boldly new and far-reaching theory, which has even been advertised as 'the contemporary theory of metaphor' (Lakoff 1993). The non-converted and sceptical have hence been provoked to raise critical questions about the cognitive linguistic position on the one hand and psycholinguistic, sociolinguistic, and general linguistic approaches to metaphor on the other. This has only deepened our appreciation of the complexities and richness of metaphor in usage.

The present contribution aims to address some of these issues by adopting a novel methodological perspective which has been applied to a large set of materials. It is inspired by cognitive linguistics, but does not follow all of its current practices. Our alternative is inspired by aspects of discourse analysis,

as is apt for the study of metaphor in usage. This is not incompatible with the cognitive linguistic approach to metaphor and presents an alternative for consideration. The empirical findings of our research, moreover, are novel and can be interpreted within the three-dimensional framework for metaphor in usage developed in Steen (2008). They offer a new, usage-based perspective for the debate about metaphor in cognitive linguistics, and raise new questions for future collaboration between cognitive linguists and other linguists, psycholinguists, and sociolinguists.

1.2.   *A methodological answer*

One practical approach to addressing the critical issues surrounding metaphor in cognitive linguistics is via methodology, in particular, of the analysis of metaphor in the documents and transcripts of concrete events of usage. When the object of study is metaphor in discourse, the problem arises how metaphor can be identified reliably and validly in the linguistic forms and conceptual structures of large sets of verbal data, since discourse analysis by definition sets out from a given set of language data. One primary question for most cognitive linguists therefore is how they can get from these language data to the underlying conceptual mappings in such a way that their findings form a solid basis for the study of metaphor in discourse (e.g., Steen 1999, 2007, 2009; Semino et al. 2004). When this question is answered by carefully attending to the methodology of analysis, precise distinctions and relations emerge between various aspects of metaphor research as described by Steen (2007); this also throws into relief some of the issues above about metaphor raised by psycholinguists, sociolinguists, and other linguists.

Two major types of answers to the question of metaphor identification have been proposed in the literature (Steen 2007). Firstly, metaphor identification in discourse can be done deductively, which means that a set of conceptual metaphors is assumed by the analyst and used for the detection of related linguistic expressions of these metaphors in a set of materials (e.g., Koller 2004). But, secondly, metaphor may also be identified inductively, moving from the available linguistic structures towards a set of reconstructed conceptual structures that constitute cross-domain mappings; since this approach is inductive and not deductive, the resulting cross-domain mappings are not necessarily identical with the conceptual metaphors proposed in cognitive linguistics (e.g., Cameron 2003). If it is the aim of the analyst to describe all metaphor in discourse, as opposed to examining a specially selected set of conceptual metaphors and their expressions in a specific set of discourse data, then the deductive method is in greater difficulty since it does not have an established adequate list of well-defined conceptual metaphors that is exhaustive: George Lakoff and his associates worked on a Master Metaphor List in the 1990s, but the

project appears to have been abandoned. A top-down approach from conceptual metaphor to linguistic expression may as a result miss many metaphors in discourse.

When an inductive approach is followed, this does not mean that all we know about conceptual metaphors should be ignored, for that would be throwing out the baby with the bath water. What it does mean is that we need an explicit, systematic, and reliable tool for finding linguistic expressions that may be related to metaphor in conceptual structure, and that this tool should at least lead to the inclusion of the obvious cases which have been so successfully revealed by the deductive approach that is characteristic of the cognitive linguistic approach to metaphor. Such a reliable inductive tool has been advanced by the Pragglejaz Group (2007), of which the first author of the present paper was the founding coordinator. The Pragglejaz Group was a group of ten metaphor researchers, namely Peter Crisp, Ray Gibbs, Alan Cienki, Graham Low, Gerard Steen, Lynne Cameron, Elena Semino, Joe Grady, Alice Deignan, and Zoltán Kövecses. They developed a tool called MIP, standing for Metaphor Identification Procedure, which consists of a brief set of instructions for the discourse analyst who aims to find metaphorically used words in a stretch of discourse (Pragglejaz Group 2007: 3):

1. Read the entire text/discourse to establish a general understanding of the meaning.
2. Determine the lexical units in the text/discourse
3a. For each lexical unit in the text, establish its meaning in context, i.e., how it applies to an entity, relation or attribute in the situation evoked by the text (contextual meaning). Take into account what comes before and after the lexical unit.
3b. For each lexical unit, determine if it has a more basic contemporary meaning in other contexts than the one in the given context. For our purposes, basic meanings tend to be:
    –   more concrete; what they evoke is easier to imagine, see, hear, feel, smell, and taste.
    –   related to bodily action.
    –   more precise (as opposed to vague).
    –   historically older.
    Basic meanings are not necessarily the most frequent meanings of the lexical unit.
3c. If the lexical unit has a more basic current/contemporary meaning in other contexts than the given context, decide whether the contextual meaning contrasts with the basic meaning but can be understood in comparison with it.
4. If yes, mark the lexical unit as metaphorical.

This set of instructions was developed and tested over five years. It now produces fairly reliable results between sets of individual analysts consisting of as many as six scholars at the same time, who display relatively high levels of agreement between their independent analyses of texts (Pragglejaz Group 2007).

According to the Pragglejaz Group, metaphorical meaning in usage is defined as indirect word meaning and arises out of a contrast between the contextual meaning of a lexical unit and its more basic meaning, the latter being absent from the actual context but observable in others. For instance, when a lexical unit like *attack* or *defend* is used in a context of argumentation, its contextual meaning has to do with verbal exchange. However, this is an indirect meaning, in the sense of Lakoff (1986, 1993) and Gibbs (1993, 1994), because it can be contrasted with the more basic meaning of these words in other contexts, which involves physical engagement or even war between people. Since the basic meaning can afford a relation with the contextual meaning on the grounds of some form of nonliteral comparison, all uses of *defend* and *attack* in contexts of argumentation can be analyzed as metaphorical. This procedure therefore provides an operational way of finding all conventional metaphor in actual usage (technical details about the notion of lexical unit will be discussed later in this article).

Novel metaphorical usage is accommodated as follows. When the linguistic form *wipe out* is used in the context of argumentation, as in Lakoff and Johnson's example *If you use that strategy, he'll wipe you out,* its contextual sense is clear. However, that contextual sense, having to do with argumentation, has not become highly conventionalized. For instance, it has not ended up in the *Macmillan English Dictionary for Advanced Learners* (Rundell 2002). Yet MIP does not have a problem with this: the ad hoc or situation-specific contextual sense that may be constructed for *wipe out* may simply be contrasted with and compared to the basic sense of *wiping out,* which has to do with cleaning. As a result, *wipe out* is also identified as metaphorical language use.

By contrast, historical metaphor is not identified as metaphorical by MIP. For instance, the words *fervent* and *ardent* used to have two senses, one for temperatures and one for emotions. This may, for instance, be gathered from the *Concise Oxford Dictionary* published in 1974 (McIntosh 1974). However, in contemporary British English both terms have lost their original temperature sense: in the Macmillan dictionary, for instance, they only have their present-day emotion senses. Hence expressions like *ardent lover* are not metaphorical when analyzed by MIP, because there is no contrast between the contextually appropriate emotion sense and the historically older and more basic temperature sense, simply because the latter is no longer available to the typical contemporary language user (Deignan 2005).

When we take a closer look at the rationale of the Pragglejaz Group's procedure, we soon find important connections with the fundamental issues about metaphor research evoked above. Thus, 'metaphor' is always a relational term, and short for 'metaphorical to some language user'. In the research to be reported below, we have adopted the position that our language user is the idealized native speaker of English as represented in the description of English by the dictionary of a particular period. This facilitates our application of MIP. It simultaneously makes explicit our position towards one of the three above-mentioned issues, the sociolinguistic question of 'metaphorical to whom?' Idealized native speakers, for instance, are abstractions glossing over a good deal of variation on a number of parameters among real native speakers of the same language.

Another important advantage of MIP is its independence from conceptual analysis: linguistic forms are identified as related to metaphor on the basis of shallow lexical-semantic analysis that only involves distinct and comparable meanings. Findings may subsequently be analyzed for their possible relations to one or more cross-domain mappings in conceptual structure, but this is not required for the identification of metaphor in the language data. Such an approach goes against received practice in cognitive linguistics, but not in other schools of linguistics, as referenced above. It is indeed precisely one aim of the development of MIP to make available reliable, generally acceptable linguistic analyses of metaphor in usage for subsequent exploration of related conceptual structures, so that cognitive linguistic approaches to metaphor 'in thought' can be pursued with more methodological rigour. Our adoption of MIP hence also clarifies our position towards another of the above-mentioned three fundamental issues, pertaining to the relation between cognitive linguistic and other linguistic approaches to metaphor at the levels of linguistic forms and conceptual structure.

A third important assumption is our restriction to identifying metaphor in language at the level of semiotic analysis. We study the linguistic forms of metaphor at the level of the sign system and its manifestation in meaningful expressions and defer examining their assumed relation to conceptual structures, which can also be studied in either semiotic or behavioural ways (Steen 2007). This means that we do not make detailed assumptions about the processes that may be associated with these expressions, and we certainly do not claim that we can describe the details of these processes on the basis of the formal and semantic analysis that we present here. Evidence about the processing side of metaphor in usage can only be gathered on the basis of behavioural data, which involves the observation of people doing things with language in real time. We are not concerned with that type of analysis in this paper. Again, we only wish to present an analysis of metaphor in usage from a semiotic perspective so that independent research on metaphor in behaviour can make use of our insights.

This paper hence presents the findings of a large-scale application of an extended and refined version of MIP, called MIPVU, about which more in the methods section (cf. Steen, Dorst, et al., 2010). It is a report of a first analysis of four samples of discourse from BNC-Baby, a sample from the British National Corpus containing four registers: academic discourse, conversation, fiction and news. Our sample totals some 190,000 words, which were annotated at the level of lexical units for their relation to metaphor. This may contribute to a better view of the role of the linguistic form of metaphor in discourse, and in a usage-based grammar. It moreover has interesting implications for the relation between cognitive linguistic approaches to metaphor on the one hand and psycholinguistic, sociolinguistic and generally linguistic approaches to metaphor on the other.

1.3.   *Goals*

Our theoretical framework makes a distinction between three more specific research goals. These are primarily related to linguistic, psycholinguistic, and sociolinguistic aspects of the cognitive linguistic approach to metaphor in usage.

(1)   First of all, we will show that it is possible and informative to collect metaphor data at a linguistic level alone. We have deliberately left aside the question of how these linguistic metaphors are related to which conceptual metaphors in conceptual structure, if any. Indeed, our linguistic findings are precisely meant to provide a good starting point for further cognitive linguistic analysis of the conceptual structures of the words related to metaphor. They can also lead to better-motivated research on their cognitive processing during comprehension and understanding.

(2)   A second objective is to gain insight into the competition between some of the linguistic and rhetorical forms of metaphor. In particular, we will look at the linguistic expression of metaphor as either metaphor proper or as simile (cf. Gentner and Bowdle 2001, 2008; Bowdle and Gentner 2005; Glucksberg and Haught 2006; Glucksberg 2008). Since this opposition between distinct figures has become crucial for the debate about competing psycholinguistic models of metaphor, it will be informative to have a more solid view of the frequency and importance of the most familiar types of these figures in actual usage.

(3)   Our third major objective in this study has to do with the relation between metaphor and register. The materials were sampled from the four-million word BNC-Baby, taken from the 100-million word British National Corpus. BNC-Baby was chosen because it offers a set of language materials that are parallel with the phenomena described in the university grammar of spoken and written English produced by Douglas Biber and colleagues

(Biber, et al. 1999). Our alignment with this research facilitates the description of metaphor in four specific registers that have been well studied from a lexico-grammatical point of view. The project is hence in tune with the new cognitive linguistic interest in sociolinguistics and language variation (e.g., Geeraerts 2005; Kristiansen and Dirven 2008).

In sum, we aim to identify and analyze the various forms of lexical metaphor in natural discourse on a relatively large and systematic scale. It is our intention to interpret these findings against the background of sociolinguistic variation between registers and some issues that are central to current psycholinguistic models of metaphor processing. The purpose of this research is to add to the cognitive linguistic description and explanation of metaphor in usage. We do this by addressing the question of which forms of metaphor are used in which ways in which registers.

2.   Method

The Pragglejaz Group have presented a list of methodological items they recommend should be reported in any study involving the identification of metaphor in discourse (2007: 14). Some are not applicable here, such as the question whether contemporary meanings were retained in the case of historical texts: our texts are from the latter part of the twentieth century. Also, none of our texts counts as an allegory. Another question asks whether we used text external indications by the author during the analysis; we did not. An iterative procedure in which higher-level units such as metaphorical idioms were coded after words were done was not applied either. Yet we did follow another kind of iterative procedure, in which independent analyses were checked and discussed by all members of the research team (see 'protocol' below). Not applicable either was the question about transcription decisions for oral (or dialectal) data, since all of these have been made for us in the text files of the British National Corpus.

    The remaining items in the Pragglejaz Group list are treated at more length in the following subsections. For full details about our procedure and protocol, we refer to our book publication (Steen, et al. 2010).

2.1.   *Materials*

All files were taken from BNC-Baby. The original plan of the project was to annotate ten percent of each file in this corpus. However, because the number of lexical units related to metaphor was higher than expected, and because our protocol was more time-consuming than planned, we managed to analyze excerpts from only half of the files. Details of the corpus can be found in the Appendix.

Selected fragments were randomly taken from the beginnings, middles, and ends of the complete BNC-Baby files. The selection of the files was prepared by splitting up all files into separate fragments defined by the highest division into sections (such as chapter sections in fiction and academic writing, or separate newspaper articles in news) in the texts. A small number of files were discarded because their content was too difficult: it is impossible to identify metaphorical lexical units if the contextual meaning of too many stretches of discourse are unclear to the analysts. Other files were discarded because they were too short and therefore too deviant from the average length of the excerpts. Even though these criteria were clear from the start, they were applied intuitively, causing a lack of complete consistency; however, we have no reason to believe that this has had great effects on the findings.

2.2.   *Technique*

Procedure   An explicit set of instructions was developed at the beginning of the research. The starting point of this set was provided by MIP, the Metaphor Identification Procedure published by the Pragglejaz Group (2007). The main additions and alterations to MIP involve the following two features:

1. the detailed explication of many aspects of the decision-making process regarding lexical units and the identification of metaphorically used lexical units;
2. the addition of new sections on other forms of metaphor (direct and implicit metaphor), novel compounds, and signals for metaphor ('MFlags').

Our variant of MIP is called MIPVU, with VU being the abbreviation of *Vrije Universiteit* Amsterdam, the university at which our work was carried out. MIPVU comprises a brief manual of some 16 pages. It has been described and demonstrated in detail in Steen et al. (2010). The most important issues are summarized below.

Annotation of words related to metaphor   On the basis of the procedure, all words were examined and when relevant annotated for their relation to metaphor. This terminology is employed to suggest that a lexical unit can be related to a metaphorical idea in conceptual structure in three different ways, producing three types of metaphors in usage:

1. it can be used metaphorically itself, that is, *indirectly* (*He defends his claims well*);
2. it can be the *direct* expression of a conceptual domain that functions as a source domain in a cross-domain mapping that is explicitly expressed as some form of comparison (*And he wings up high, like an eagle*, said of

a bicycle racer who has escaped from the pack and races up a steep mountain);

3. or it can be an *implicit* expression of a metaphorically used source domain, as in *Naturally, to embark on such a step is not necessarily to succeed immediately in realizing it* (where *it* substitutes the metaphor-related antecedent *step* and thus is used metaphorically in an implicit way); implicit metaphor is always based on substitution or ellipsis.

When metaphors are expressed directly, as in (2), they are also often signalled by some lexical flag, such as *like* in the example in (2), which we code as MFlag (for Metaphor Flag). Such direct and signalled metaphors are often, but not always, similes (cf. Goatly 1997, for extensive discussion).

One preliminary issue in our procedure for metaphor identification concerns the delimitation of lexical units. Although most lexical units are single words, there are some notorious borderline cases including polywords, idioms, phrasal verbs, and compounds (cf. Pragglejaz Group 2007). Some of these problems come with their own solutions in the BNC, such as polywords, which are multi-word expressions like *of course* or *in fact* that are treated as single lexical items by the Part-of-Speech tagging programme in BNC-Baby; this is fine for MIP and our variant. Similarly, idioms consist of a number of distinct lexical units, which may be kept as such in the database, following the strategy of the Pragglejaz Group. Phrasal verbs and compounds are also split into their component words in BNC-Baby, each of them receiving a separate Part-of-Speech tag, but this does require an alternative treatment during metaphor analysis. This is because phrasal verbs and compounds function as single lexical units in our theoretical framework: they have a unitary, single conceptual and referential function in discourse, where they designate distinct entities, attributes, or relations. Therefore we have given all phrasal verbs and compounds an additional annotation in our database, showing that they are single but complex lexical units, as opposed to all other lexical units that are simple. With one group of exceptions, all of these complex lexical units are typically conventional and can be found in the dictionary.

The group of exceptions concerns novel compounds. Since they are novel, they are by definition not listed in the dictionary. We argue that this absence can also be taken to reflect their absence from the mental lexicon of the idealized contemporary language user, who therefore has to (a) analyze novel compounds into their component parts, (b) presumably activate the two related concepts and (c) set up some referential relation between them (e.g., Estes 2003). Novel compounds are therefore analyzed as comprising two lexical units, each of which will have to be judged for metaphorical usage in the regular way of MIP (cf. Giegerich 2004). They do count as single cases in our database, however, since they are new coinages. Thus, *state-masonry* is a novel

compound of which *masonry* has been coded as related to metaphor, while the whole word counts as one case in the sample.

Another issue is the recognition of borderline cases. These have been explicitly marked up as such by the code WIDLII, 'When In Doubt, Leave It In'. In our protocol, this code was assigned to those cases that, after initial independent annotation by one analyst, and subsequent online commenting by colleagues, were not speedily resolved by live group discussion between all analysts. Cases eventually marked as WIDLII represent the problematic cases in our data. Their annotation as controversial explicitly signals them as an interesting group for further research.

Furthermore, a small group of lexical units (n = 401) were discarded for metaphor analysis because their contextual meaning was completely unclear. Almost all of these cases came from the conversation sample. They represent about 1% of the data in the conversation sample.

Finally, all cases of *for* (n = 1384) and *of* (n = 4796) were treated as nonmetaphorical on the basis of the argument that they were delexicalised prepositions exhibiting a problematic distinction between basic and other senses. Together these two prepositions comprise 33.8% of all prepositions, and 3.3% of the entire data set.

Tools   The *Macmillan English Dictionary for Advanced Learners* (Rundell 2002) was the main tool we used for making decisions about lexical units, contextual meanings, basic meanings, and distinctness of contextual and basic meanings. The reasons for using this type of dictionary, and Macmillan in particular, are that they are recent and corpus-based (cf. Pragglejaz Group 2007).

We also used a second dictionary to have a second opinion about specific types of problems, the *Longman Dictionary of Contemporary English*. An informal test at the beginning of the project, comparing about 100 lexical units, showed that there was no essential or systematic difference between the two dictionaries for our purposes. We therefore fixed Macmillan as our first dictionary, to be supplemented by Longman only in cases of doubt.

2.3.   *Details about the analysis*

Analysts   All data were analyzed by the PhD students on the project. In the first year, these were Ewa Biernacka, Lettie Dorst, Anna Kaal, and Irene López Rodríguez. From the second year on, Berenike Herrmann and Tina Krennmayr replaced Ewa Biernacka and Irene López Rodríguez. The PhD students received training in MIPVU from the principal investigator.

Protocol   MIPVU is the basis of our identification procedure, but it should be seen in the context of our overall approach to the materials. We handled the texts according to the following protocol:

1. Excerpts were selected from BNC-Baby by the principal investigator and entered into an administrative database;
2. PhD students selected the excerpts assigned to them and produced an individual set of annotations; care was taken that all analysts saw materials from each register in order to attune them to differences between phenomena that had to be solved consistently with the same procedure;
3. The individual set of annotations were posted on an intranet website for comments by the other PhD students;
4. The other PhD students went through the work of their colleagues and posted comments and queries;
5. All PhD researchers and the principal investigator had group meetings about the comments, referring to the details of the procedure and to previous decisions about specific cases, which had been recorded in a special lexical database; they made final verdicts about problematic cases, which were recorded.
6. The annotations in the individually analyzed files were subsequently corrected on the basis of the web version;
7. The final annotations were then stored in a separate folder;
8. Any decisions about problematic cases were recorded in a special lexical database, for future reference.

A slightly simplified example of a web version after discussion is presented below (from academic text AS6, fragment 01).

The essays in </mrw> this </mrw> book do not amount </mrw> to </mrw> a programme: but they are intended to provide a springboard </mrw> for <mrw type = "met" status = "UNCERTAIN" morph = "n" TEIform = "seg"> *one </mrw>*.
I think we should actually mark this deictic marker as well
3.2 *one*: I'm not sure, maybe only if the word it refers to is M; in this case it refers to programme, right? So not M because programme is not M? L
　　　3.2.1 perhaps you are all right. not M. AIC

All text in italics is from the BNC-Baby text, with annotations added in angular brackets: the code 'mrw' stands for Metaphor-Related Word, and includes indirect, direct, and implicit metaphor. The underlined comments inserted in between the annotated BNC-Baby fragment are queries posted by the individual analyst into the annotated document; they alert the other PhD students to potential problems and are meant to elicit discussion. Underneath the annotated text, new, numbered comments made by the other analysts can be found about specific lexical units. Comments are signed by the initial of the analyst who posts the comment. They are numbered by utterance number and responses to comments can be added by other members of the group, with further indentation, another number, and signature being added. In this case,

one comment can be seen, which uses 'M' for metaphorical; the Analyst In Charge (AIC) positively responds to the comment.

Reliability before discussion   Five reliability tests were conducted throughout the entire period of annotation, to examine the extent of agreement between analysts when they had analyzed their materials independently of each other (before discussion). The smallest test included 713 words, the largest 1940, with a total number of 6659 cases in all tests together. Since the incidence of all of the special cases, such as direct metaphor, indirect metaphor, and WIDLII, was extremely low, both in the overall data and in the reliability tests, the analysis of the reliability data was only concerned with one type of classification: related to metaphor, or not. Error margins for the other phenomena were estimated in a different way (see 'troubleshooting' below).

An example from the materials and data is given below (from academic text CLP):

From**1234** the narrow**1234** accountancy viewpoint**1234**, people are a cost**23** and it is desirable to keep**1234** this**1234** cost**2** as low**1234** as possible. In**1234** these**1234** terms**3** it is very difficult to justify**1**, for example, sending**2** a member**134** of staff on**1234** a training**1** course**1234**. The training**1** requires expenditure and so also does the replacement for the person away**3**. Where**124** is the return**1234**? The return**1234** is actually in**1234** the improved human resource**23** but this**1234** is not readily measurable**2** in**1234** terms**3** which accountants use**1234**.

The digits in bold indicate which word was marked as related to metaphor by which analyst.

Reliability was good (a full report is offered in Steen et al. 2010). Measured by Fleiss' kappa, which looks at agreement on a case-by-case basis, the mean value was about 0.85. On average, the analysts achieved unanimous agreement about the question whether a lexical unit is related to metaphor or not about some 92% of all cases. This is unanimous agreement between four independent analysts, that is, before discussion. It also holds between two differently composed teams, with two analysts remaining constant. It should be noted that this is substantially higher than the figures for the Pragglejaz Group (2007), which moreover concerned a much smaller data set.

Measurements of Cochran's Q, which looks at analyst bias while ignoring what happens between cases, were often significant. This suggests that, when working independently, one or two analysts often scored fewer or more items in all than the others, per test. This problem was subsequently alleviated by the overall protocol of analysis, as described above: most of the errors or too generous inclusions were filtered out. That this reduction is also dependent on group dynamics is acknowledged here, but it should also be appreciated that

the basis of our identification procedure lies in the reliable individual case-by-case analyses, as was shown by Fleiss' Kappa. Therefore, what we are dealing with here is the further increase of consistency against the systematic and explicit set of instructions.

Troubleshooting after completion   When all of the metaphor data had been collected, a separate round of post-hoc troubleshooting was carried out (again, a detailed report can be found in Steen, Dorst et al. 2010). Selected samples of features that we had experienced as troublesome were inspected in order to judge how great the damage might be. Some systematic errors were detected and removed, and remaining margins of error were estimated. The upshot of this exercise is as follows:

1. For the prior identification of phrasal verbs, compounds, and polywords by the BNC, a margin of error of 0.3% should be taken into account.
2. One percent of all lexical units in the conversations has been discarded for metaphor analysis on account of their lack of intelligibility in context.
3. There may be a 20% error margin for the group of lexical units classified as metaphorical on the basis of WIDLII (When In Doubt, Leave It In).
4. For the class of lexical units flagging the presence of metaphor (MFlags), agreement was about 95%.
5. The error margin for classifying lexical units related to metaphor as direct expressions of metaphor was not separately examined since the behaviour of these words is closely connected to the behaviour of MFlags (see previous point).
6. The error margin for classifying lexical units related to metaphor as implicit expressions of metaphor was separately examined and led to a separate round in which we re-analyzed all potential cases in all of the data. We did so by checking all cases of a list of about 30 potentially cohesive words. This list included modal verbs, primary verbs, expressions such as *one, another,* and so on, and comprised about 16% of all data.

We decided whether each token of these types was indeed used for cohesion or not, and if it was, whether its cohesive use was implicitly metaphorical. Reliability estimates between pairs of raters of truly cohesive use of these potentially cohesive devices in a test sample of over 2,000 words yielded kappas of on average 0.79. For all samples of written text, agreement about the subsequent decision for implicitly metaphorical use between four analysts was 100%, but for conversation it was substantially lower.

On the basis of this test, more explicit instructions were formulated, all data were divided by register, and then re-analyzed by one analyst each. A final sample of about 1000 cases per register was analyzed by the principal

investigator, and this led to the same reliability results between an individual analyst and the principal investigator. In all, then, reliability of implicit metaphor is roughly equal to reliability for indirect metaphor.

2.4.   *Preparation of final database*

After all annotated files had been corrected for errors discovered during the stage of troubleshooting, they were converted into an SPSS database. Separated lexical units that needed to be treated as single units (compounds, phrasal verbs, and polywords) were collapsed into single cases. All contractions such as *he'd* for *he would* were treated as two distinct 'lemmas' in the SPSS database. By contrast, all separate POS-tags for genitive *'s* or simply ' have been ignored as separate cases in the statistical analyses. The total number of cases (lexical units) that remain in the SPSS database is 186,688.

3.   Results

All lexical units were annotated for the categories that are functionally most important when it comes to the variable 'relation to metaphor': (a) non Metaphor-Related Words (non-MRWs), (b) Metaphor-Related Words (MRWs), and (c) words that function as Metaphor Flags (MFlags). A subdivision was made between clear cases of MRWs and those cases that were doubtful but included in order to keep a broad scope (coded as WIDLII, 'When In Doubt, Keep It In'). We will now first report the overall division of the data across these four categories.

Of all 186,688 lexical units in the sample, 161,105 (86.3%) are not related to metaphor. It is not true that a cognitive linguistic approach to metaphor turns everything into metaphor, a complaint sometimes heard when examples of this approach are offered to novice and lay audiences. By contrast, when we include the borderline cases called WIDLII, a total of 25,442 lexical units (13.6%) *are* related to metaphor. In other words, our corpus analysis suggests that on average one in every seven and a half words is related to metaphor. Finally, 141 lexical units, or less than 0.1%, function as metaphor flags. This class includes signals such as *like* and *as*, and suggests that less than one in a thousand words functions as a signal for metaphor. Since MFlags typically signal similes and comparable figures, this points to the extremely low frequency of these rhetorical figures in comparison with the number of all metaphor-related words.

The division between clear cases of metaphor versus doubtful cases of metaphor yields a figure of 1831 cases classified as WIDLII, out of a total of 25,442 MRWs. This is 7.33% of all cases marked as related to metaphor. Intuitively this looks like an acceptable band of borderline cases in as complex a field as metaphor identification. When we take into account the 20% error mar-

gin calculated for the WIDLII category as such, which was reported in Section 2, the true maximum value of this band of borderline cases may be estimated to be in fact slightly higher, amounting to some 8 or 9 percent. In the overall picture, however, the entire group of uncertain cases constitutes just less than one percent of all of the 186,688 lexical units that have been analyzed. The set of lexical units marked as WIDLII therefore seems to constitute a valid if small group of borderline cases that may warrant further investigation in the future.

Separate investigation showed that, of all lexical units in our data, 1.6% (2990 cases) is complex. This includes all polywords marked as such by BNC-Baby, which in fact comprise almost half of all complex lexical units in our data (1458 cases). The other half includes phrasal verbs and compounds, which did not come with a prior code in BNC-Baby but could be identified as such on the basis of the dictionary. In all, however, multi-word units defined in the way we have done, with respect to their distinct referential role in the discourse, are infrequent. Since the set of complex lexical units only comprises 1.6% of all data, we will ignore this distinction for the rest of this analysis.

We can now establish the relation of the four metaphor categories with the four registers. A two-way frequency table is presented in Table 1, which crosses the variables of register (with the levels of conversation, fiction, news, and academic texts) with relation to metaphor (with the levels of not related to metaphor, WIDLII, related to metaphor, and metaphor flag). For each cell, we present observed counts, expected counts, row percentages, and standardized residuals; the latter are most important for interpreting the findings: when they exceed a positive or negative value of 2.54, they suggest that the observed frequency significantly deviates from the count expected by mere chance at alpha = 0.01. A chi-square analysis shows that there is a significant association between the two variables ($\chi^2(9) = 3,044$, $p < 0.001$; Cramer's $V = 0.07$, $p < 0.001$). The four registers indeed vary with regard to frequency of MRWs.

The academic sample has the highest proportion of clear MRWs (17.5%), conversation the lowest (6.8%), and news (15.3%) and fiction (10.9%) are in between. The distribution of the non-MRWs exhibits the mirror image of this pattern: conversation has the highest number of non-metaphorical words, then fiction and news, and the academic sample has the lowest proportion of non-metaphor related words. These two complementary patterns account for 99% of all data. They show that there is an interaction between 'relation to metaphor' and register, to the effect that academic and news texts are rather metaphorical in terms of density of metaphor-related words, whereas fiction and conversation are not.

The interaction does not involve the distribution of the doubtful cases of metaphor labelled WIDLII. These do not appear to interact with register: with

Table 1.   *Lexical units in relation to metaphor, divided by register*

		Relation to metaphor				Total
		Non-MRW	Unclear MRW ('WIDLII')	Clear MRW	MFlag	
Academic	Obs Count	40,174	496	8,624	20	49,314
	Exp Count	42,556.2	483.7	6,236.9	37.2	49,314
	% in register	81.5%	1.0%	17.5%	0.0%	100%
	Std Residual	−11.5	0.6	30.2	−2.8	
News	Obs Count	37,413	488	6,854	37	44,792
	Exp Count	38,653.9	439.3	5,665.0	33.8	44,792
	% in register	83.5%	1.1%	15.3%	0.1%	100%
	Std Residual	−6.3	2.3	15.8	0.5	
Fiction	Obs Count	39,281	410	4,883	74	44,648
	Exp Count	38,529.6	437.9	5,646.8	33.7	44,648
	% in register	88.0%	0.9%	10.9%	0.2%	100%
	Std Residual	3.8	−1.3	−10.2	6.9	
Conversation	Obs Count	44,237	437	3,250	10	47,934
	Exp Count	41,365.3	470.1	6,062.4	36.2	47,934
	% in register	92.3%	0.9%	6.8%	0.0%	100%
	Std Residual	14.1	−1.5	−36.1	−4.4	
Total	Obs Count	161,105	1831	23,611	141	186,688
	Exp Count	161,105	1831	23,611	141	186,688
	% in register	86.3%	1.0%	12.7%	0.1%	100%

alpha at 0.01 because of the large number of observations, the unclear cases are evenly distributed across the four registers in relation to the number of non-metaphorical words, metaphorical words, and MFlags. In this way the WIDLIIs appear to fill out almost all of the final percent of the classified data missing from the picture after examination of the 99% represented by clear MRWs and non-MRWs.

The last metaphor category, MFlags, does contribute substantially to the overall interaction between 'relation to metaphor' and register. This is true even though it is extremely small in absolute numbers. MFlags has one insignificant interaction with register, for news, but all other registers interact in significant ways with it, with academic texts ending just under alpha at 0.01. Given the association between MFlags and simile, this suggests that simile and related figures are not evenly distributed across academic texts, fiction, and conversation.

The pattern of distribution for MFlags is radically different to the one for the contrast between the two categories of non-MRWs and MRWs, which are so dominant. For non-MRWs and MRWs, the corpus appears to be divided into two opposite sets of texts that are more metaphorical (academic and news)

versus less metaphorical (fiction and conversation). For MFlags, by contrast, there are fewer metaphor signals in academic texts and in conversation than may be expected by chance, while there are many more in fiction than may be expected by chance. All of these tendencies are significant at the 0.01 level. News is the only register where the observed number of metaphor flags corresponds with the expectations based on chance.

MFlags are presumably related to the group of direct metaphors; the findings for MFlags hence naturally lead on to an examination of the distribution of the three types of metaphor which we have distinguished in our analysis: indirect metaphor, which is the classic case of metaphorically used words; direct metaphor, which is typically represented by simile; and implicit metaphor, which is expressed by substitution or ellipsis (see Section 2.2 above). We have collapsed all clear and unclear cases for the following analysis. The question is therefore how the three types of metaphor—indirect, direct, and implicit—are distributed across the four registers.

Since the overall distribution of metaphor-related words and non-metaphor-related words is uneven, the relation between the three metaphor categories on the one hand and the group of words that are not related to metaphor on the other needs to be included: the proportion between metaphorical versus non-metaphorical word use may exert an effect on preferences for the type of metaphor chosen. For instance, if a text has 80% non-metaphorical words, it has more space for the expression of metaphor than if it has 95% non-metaphorical words; the increase in space might privilege the use of explicit and extended metaphorical comparisons (direct metaphor) whereas the reduction in space might boost the use of implicit metaphor. These are just theoretical, basically numerical possibilities, but they motivate the inclusion of non-metaphor related words in the analysis. A two-way frequency table was therefore constructed that crosses the variables of metaphor type (with four levels: non-metaphor related, indirect, direct, and implicit) and register (with four levels: conversation, fiction, news, and academic texts). The category of non-metaphor related words also includes the cases treated as metaphor flags in the previous analysis (Table 1).

Table 2 offers details about observed and expected frequencies, percentages of observations per register, and standardized residuals. No cells have an expected frequency lower than 5, which means that a chi-square analysis is allowed. It shows that there is a significant association between the two variables ($\chi^2(9) = 3,045$, $p < 0.001$; Cramer's $V = 0.07$, $p < 0.001$).

All observed frequencies are significantly different from the expected frequencies at alpha $= 0.01$, with the exception of implicit metaphor for news and fiction. Indirect metaphor is the predominant group. It is responsible for the complementary pattern of distribution between metaphor-related words and non-metaphor related words observed in Table 1. Indirect metaphor accounts

Table 2.   *Types of lexical metaphor, divided by register*

		Relation to metaphor				Total
		Non MRW	Indirect MRW	Direct MRW	Implicit MRW	
Academic	Obs Count	40,192	8,961	40	121	49,314
	Exp Count	42,592.9	6,555.5	88.8	76.9	49,314
	% in register	81.5%	18.2%	0.1%	0.2%	100%
	Std Residual	−11.6	29.7	−5.2	5.0	
News	Obs Count	37,450	7,145	112	85	44,792
	Exp Count	38,687.2	5,954.3	80,6	69.8	44,792
	% in register	83.6%	16.0%	0.3%	0.2%	100%
	Std Residual	−6.3	15.4	3.5	1.8	
Fiction	Obs Count	39,355	5,074	165	54	44,648
	Exp Count	38,562.9	5,935.2	80.4	69.6	44,648
	% in register	88.1%	11.4%	0.4%	0.1%	100%
	Std Residual	4.0	−11.2	9.4	−1.9	
Conversation	Obs Count	44,247	3,637	19	31	47,934
	Exp Count	41,401.0	6,372.0	86.3	74.7	47,934
	% in register	92.3%	7.6%	0.0%	0.1%	100%
	Std Residual	14.0	−34.3	−7.2	−5.1	
Total	Obs Count	161,244	24,817	336	291	186,688
	Exp Count	161,244	24,817	336	291	186,688
	% in register	86.4%	13.3%	0.2%	0.2%	100%

for 13.3% of all data, whereas implicit metaphor and direct metaphor each comprise 0.2%. Of all the 25,444 metaphor-related words together, implicit and indirect metaphor each comprises over 1%.

Implicit metaphor follows the main pattern of indirect metaphor. It is most frequent in academic discourse, followed by news and fiction, and least frequent in conversation. The standardized residuals show that these differences are significant only for overuse in academic discourse and underuse in conversation, though.

Direct metaphor does not follow this pattern. It is overused, relatively speaking, in fiction and news, but underused in conversations as well as in academic texts. All of these observations are significantly deviant from what is expected by chance.

As expected, the pattern observed here for direct metaphor corresponds with the above findings for MFlags. In fiction, the overuse of direct metaphor corresponds with an overuse of metaphor flags. In conversations and in academic writing, direct metaphor and metaphor flags are not used as much as might be expected. And in news, direct metaphor is used more often than could be predicted on the basis of chance alone, and it is signalled fairly often, but not as much as might be expected.

The general conclusion is that direct and implicit metaphor clearly each have their own role to play in the make-up of the metaphorical register profiles that emerge in this section. Both are fairly small categories, each constituting a little more than one percent of all lexical units related to metaphor. However, implicit metaphor exhibits a different pattern than direct metaphor: implicit metaphor is comparable to indirect metaphor, whereas direct metaphor is distributed in a way of its own. We shall now turn to an interpretation of these findings.

4.   Discussion

The availability of a reliable method for metaphor identification in discourse has opened up new possibilities for research on metaphor in usage. We manually annotated four samples of natural discourse from the British National Corpus, with a total number of 187,971 words, for metaphor. We were able to show that 13.6% of all words was related to metaphor. In addition, the number of signals for similes, analogies, comparisons, and other explicitly flagged forms of metaphor was low: signals such as *like* comprised less than one pro mille of all lexical units in the data. This figure is related to the number of words we found in similes and other alternative forms of metaphor, which was about two pro mille. What is more, the distribution of these phenomena across the four registers in our study (academic texts, news texts, fiction, and conversation) has revealed unexpected and complex patterns.

There are two stories. The first story is about the most encompassing pattern, involving 99% of the metaphorical data; it concerns the classic case of metaphorically used words. Thus, when people use terms like *defend, attack, position, strategy, manoeuvre* and so on to communicate about discussions and argument, they may be said to use these terms metaphorically: according to cognitive linguists, they do so on the basis of some underlying comparison ('cross-domain mapping') between the concrete 'war' senses of these words and their abstract 'argument' senses (ARGUMENT IS WAR, Lakoff and Johnson 1980). The concrete sense is called the basic sense, the use of which is assumed to be direct, whereas the abstract sense is the metaphorical sense, which is indirect (Pragglejaz Group 2007). These words are hence used indirectly to evoke (by non-literal comparison) another referent than the one designated by their basic meaning (Lakoff 1986, 1993; Gibbs 1993, 1994). This type of metaphor we therefore label as 'indirect metaphor'.

Odd as this may seem, this is only one story. For there is a second story, about the small group of direct metaphors, which are expressed as similes, figurative analogies, comparisons, and extended variants of all of these. This group is characterized by the typical presence of a signal for comparison and

by the fact that its source domains are directly expressed as such in the discourse. When Shakespeare asks 'Shall I compare thee to a summer's day?', we have a direct expression of a metaphorical comparison which includes direct reference to the source domain of the summer's day (Steen and Gibbs 2004). In utterances about defending or attacking a position, however, the presumed source domain is evoked indirectly, via the contrast between the appropriate contextual sense of argumentation and the more basic sense of war or physical conflict. Moreover, a signal for comparison is typically lacking.

The group of direct metaphor is small but functionally important. It forces addressees to access source domains as relatively autonomous semantic or conceptual spaces. What is more, it exhibits a radically different pattern of distribution in discourse than indirect metaphor. In particular, there is a split between fiction and news which use direct metaphor most often, while academic texts and conversation seem to avoid it. This pattern is in much greater agreement with popular assumptions about the relation between register on the one hand and metaphorical meaning on the other than the pattern reported just now for classic, indirect metaphor (which however comprises the bulk of all cases). We propose to interpret the distinction between these two patterns with reference to another distinction that has been neglected in the study of metaphor in discourse, the one between deliberate and non-deliberate metaphor (Steen 2008, in press), as we shall now explain.

Direct metaphor, such as simile, is a class of metaphor characterized by a particular linguistic form: in referential terms, it directly evokes a source domain. As a result, it may also be argued to have a typical communicative property, that it is deliberate: it intentionally and explicitly instructs addressees to set up a cross-domain comparison between the referents designated by the words in the discourse. This is precisely what Shakespeare's first line of Sonnet XVIII quoted above asks us to do: we have to set up referent that pertains to the 'you', and another referent that has to do with 'a summer's day'. It is virtually impossible to interpret such direct expressions of metaphor in discourse without using some form of comparative processing between two relatively independent referents, and without postulating some intention on the part of the assumed sender to use metaphor as metaphor. Direct metaphor, including simile, is almost by definition deliberate.

Indirect metaphor, by contrast, does not necessarily have this communicative feature of deliberateness. Indeed, it has been one of the main tenets of contemporary metaphor research that indirect metaphor is mostly used unconsciously, that is, without any awareness of its dependence on cross-domain mapping. Some psycholinguists have even argued that indirect metaphor may also be resolved by categorization instead of comparison (Gentner and Bowdle 2001, 2008; Glucksberg 2001, 2008), especially when it is conventional, a characteristic which holds for an estimated 99% of all of our cases of indirect

metaphor. Another processing option, which has received less attention but is equally feasible, is that much indirect metaphor is resolved in even more shallow fashion, by lexical disambiguation, and does not get to any stage of conceptual mapping at all, whether by comparison or by categorization (Steen 1994, 2008; Giora 2003). Indirect metaphor may therefore be well resolvable without comparison or cross-domain mapping. This, in turn, produces a paradox of metaphor: most metaphor may typically not be processed metaphorically (Steen 2008).

   Indirect metaphor consequently may either be used non-deliberately, which we think is the typical case, or deliberately, which also happens. When indirect metaphor is used deliberately, and is hence meant to trigger processing by comparison, it typically alerts addressees in some way that they are meant to process the metaphorical expression as a cross-domain mapping. This may be done, for instance, by using marked constructions such as an *A is B* format, as in Karl Marx's 'Religion is the opium of the people'. Other constructions may involve the use of a set of words from a source domain within a number of phrases, or even an extended comparison across utterances. All of these considerations about the deliberate versus non-deliberate use of metaphor have to do with their communicative function, which is a discourse aspect of metaphor that has been neglected in many current cognitive-scientific models of metaphor (Steen 2007, 2008, in press).

   These ideas may account for the contrasting register profiles for indirect versus direct metaphor mentioned above. People's general experience of fiction as typically metaphorical may be based on their association of fiction with deliberate metaphor, typically in the form of simile (e.g., Lodge 1977; Semino and Steen 2008), which may have impinged on their awareness more often than in any other register. By contrast, the avoidance of such figures in academic writing may also have registered in their minds, and contributed to the overall idea that scientific writing is non-metaphorical. That this in fact is not true is shown by our findings for indirect metaphor: from that perspective, academic writing is heavily metaphorical, and this may have to do with the abstract nature of the topics of many scientific texts. These indirect metaphors in academic texts, however, are not typically deliberate but mostly automatic and unconscious, which is why they probably do not register as metaphorical. To be sure, metaphors are also used deliberately in academic discourse, for instance in the form of extended analogies and comparisons; but apparently they are not used as often as may be assumed, and even when they are used, they may not be experienced as very typical of academic writing. These proposals can be connected to existing work on the nature of distinct registers such as Biber et al. (1999), and elaborated and interpreted in the framework of a three-dimensional discourse model of metaphor which makes a distinction between metaphor in language, thought, and communication (Steen 2008, in

press): direct and indirect metaphor are forms of expression *in language* of assumed (but for the moment unspecified) cross-domain mappings *in thought* which may or may not be deliberately used as specific rhetorical devices *in communication*.

In this framework, another small group of metaphor in usage, implicit metaphor, may also be given its own place. It is like indirect metaphor, but does not display any lexical manifestation of a source domain. Instead, this is replaced by substituting lexis, or left altogether unexpressed. In either case, such utterances are metaphorical on the grounds of underlying metaphorical propositions that need to be reconstructed when language users process the surface text and produce a conceptual model of the discourse. How such expressions are used in communication needs further study.

Metaphor in usage is a complex affair. It may be manifested by three different types of metaphor, indirect metaphor, direct metaphor and implicit metaphor, which display widely differing frequencies. The bulk of metaphor in usage involves indirect metaphor, or metaphorically used words, that are not signalled by a metaphor flag such as *like*. Moreover, the distribution of these different classes of metaphor interacts with different registers, as we have shown for academic discourse, news, fiction and conversation. These interactions yield complex register profiles for metaphor that may be sensibly interpreted with reference to the linguistic forms, conceptual structures and communicative functions of metaphor in usage.

5.   Conclusion

In this article we have approached metaphor in usage as a research problem that may benefit from a methods-driven approach. We have attempted to show that metaphor can be reliably identified in large-scale linguistic research without having to resort to assumptions about conventionalized conceptual metaphors. We have also raised the question whether the experimental focus on metaphor versus simile in psycholinguistic processing models of metaphor is justified by the distribution of metaphor and simile in natural language use. And we have finally queried whether metaphor is evenly used in the same ways across different varieties of language, or whether a usage–based approach needs a sociolinguistic component next to a cognitive-linguistic one.

Our method-driven research has been inspired by the cognitive-linguistic approach but we do not agree with all of its typical assumptions (Steen 2007). In particular, we do not postulate a one-on-one connection between the metaphorical use of words such as *defend* and *attack* on the one hand and presumably underlying conceptual metaphors such as ARGUMENT IS WAR on the

other. In fact, we agree with various critics of the cognitive linguistic approach (e.g., Vervaeke and Kennedy 1996; Ritchie 2004) that the relation between metaphor-related words in language and cross-domain mappings in thought requires much further study. It has precisely been one of the aims of the present research programme to make available a new resource for the systematic and large-scale study of the connection between metaphor in language and thought.

This is possible because we do theoretically define metaphor at the conceptual level, as a cross-domain mapping in conceptual structure. We also agree that metaphor in language can eventually be seen as a reflection of metaphor in thought, albeit perhaps in many different ways. We have consequently examined the expression in language of 'metaphor in thought' as a relatively independent phenomenon, with the help of a lexical-semantic as opposed to conceptual analysis of word use, along the lines developed and tested by the Pragglejaz Group (2007). Our own variant of this approached, called MIPVU, has enabled us to achieve a uniquely high level of reliability in annotating words that are expressions of metaphor, which we refer to as 'metaphor-related words' (Steen, et al. 2010).

Our objective in focussing on the linguistic aspect of metaphor in usage was to show that our variant of MIP (Pragglejaz Group 2007), MIPVU, works and, what is more, is even more reliable than MIP itself. We also demonstrated that it is possible to be maximally explicit and systematic about issues that have to do with the demarcation of lexical units. And MIPVU finally caters to other forms of metaphor than just metaphorically used words, the focus of MIP. The latter are a form of indirect language use, as noted above, but our approach can also identify other forms of metaphor (such as simile) which are typically direct. All of these are general linguistic variations on the cognitive linguistic view of metaphor in usage, measured at the level of lexical units only.

The bulk of 'metaphor in language' in our data is indeed of the kind illustrated by words like *defend* and *attack* in the context of argumentation. This is the typical example of metaphor employed in cognitive linguistic analyses of metaphor, and it involves the indirect use of words which on other occasions display direct, presumably more basic senses that have to do with physical conflict or even war. This indirect, metaphorical use of words consequently requires some form of non-literal comparison for semantic interpretation. This type of linguistic form of metaphor comprises up to 99% of all metaphor in discourse in our data.

One more detailed question of our research had to do with the number of *A is (like) B* expressions, which have formed the basis of the experimental work reported by psycholinguists. Casual observation suggests that these formats are rather rare and marked in authentic usage, but we have now been able to

offer more precise estimates of their incidence, which will be of help when we aim to evaluate the contributions by psycholinguistic research to the overall picture of metaphor in usage. This revaluation has led to new questions about the adequacy of current two-dimensional models of metaphor in usage that limit their attention to metaphor in language and thought; in our view, the communicative function of metaphor as a deliberate or non-deliberate rhetorical device is essential in accounting for the presumed processes of cross-domain mapping and other types of processing attending the process of metaphor versus simile.

Another more detailed question that we have posed is: is there a clear difference between the registers of academic texts, conversation, fiction and news texts when it comes to their degree of metaphorical meaning? For instance, is it true that fiction, being literary, is the most metaphorical of the four? And are academic texts, being scientific, indeed the least metaphorical? These two traditional views of the relation between metaphor and register have now been relativized and made more precise by our usage data.

We have found that the distribution of indirect metaphor across academic texts, conversation, fiction and news texts is not even. In fact, the uneven distribution of metaphorically used words is not according to the most natural expectations that might be entertained about the relation between metaphor and these four registers. For instance, it is not the case that metaphor occurs most often in fiction, and least often in academic texts. Instead, it turns out that academic texts have a high metaphor density, with no less than 18.6% of their lexical units being used in a metaphorical way (clear and less clear cases combined); news texts are comparable (with 16.4%), whereas fiction has only 11.8%, and conversation a mere 7.7%. Again, these are patterns for indirect metaphor, accounting for 99% of all of our metaphorical data. The picture becomes more complex when direct and implicit metaphor are included. These are new findings which enrich the grammatical picture of register variation presented by Biber et al. (1999) with an important lexical-semantic component.

In all then, new questions can be formulated for the study of metaphor in usage. Cognitive linguistic approaches for metaphor have set the scene for some ground-breaking work since the 80s of the previous century, but current work can go beyond that framework. In making these advances, productive collaboration can be sought with other linguists, including corpus linguists, as well as with more behaviourally oriented scholars of metaphor in psycholinguistics and sociolinguistics. Their joint effort may help to bring out more details about the way metaphor works in usage.

Appendix A
Overview of annotated files from BNC-Baby

Academic

File ID	Total number of words in BNC file	Total number divisions in BNC file	ID number of file division coded	Number of lexical units in data
A6U	27,329	6	2	2,814
ACJ	37,678	2	1	4,189
ALP	25,632	4	1	2,253
AMM	39,563	2	2	3,866
AS6	30,938	4	1	3,366
AS6	id	id	2	2,840
B17	34,305	3	2	1,608
B1G	38,559	2	2	3,006
CLP	40,742	2	1	3,368
CLW	38,714	1	1	3,748
CRS	40,250	3	1	2,044
CTY	34,131	5	3	3,434
EA7	25,531	3	3	2,771
ECV	40,343	7	5	3,847
EW1	41,695	2	1	3,708
FEF	26,854	4	3	2,703
Total	522,264	NA	NA	49,561

Conversation

File ID	Total number of words in file	Total number of divisions in file	ID number of file division coded	Number of lexical units in data
KB7	103,997	60	10	3,072
KB7	Id	id	31	3,161
KB7	Id	id	45	2,830
KB7	Id	id	48	2,983
KBC	31,337	13	13	3,641
KBD	58,087	25	7	3,124
KBD	Id	id	21	2,779
KBH	47,995	63	1	436
KBH	Id	Id	2	1,227
KBH	Id	Id	3	165
KBH	Id	Id	4	1,838
KBH	Id	Id	9	714
KBH	Id	id	41	616
KBJ	11,137	26	17	1,083
KBP	27,179	15	9	2,666
KBW	115,332	62	4	1,712

File ID	Total number of words in file	Total number of divisions in file	ID number of file division coded	Number of lexical units in data
KBW	Id	Id	9	1,351
KBW	Id	Id	11	1,670
KBW	Id	Id	17	2,295
KBW	Id	id	42	2,655
KCC	5,311	2	02	836
KCF	21,898	30	14	1,305
KCU	49,751	9	02	3,347
KCV	32,714	50	42	2,495
Total	504,738	NA	NA	48,001

Fiction

File ID	Total number of words in file	Total number of divisions in file	ID number of file division coded	Number of lexical units in data
AB9	42,247	8	3	4,221
AC2	37,662	10	6	3,045
BMW	42,584	9	9	4,584
BPA	37,769	19	14	2,920
C8T	41,117	2	1	2,877
CB5	41,727	2	2	2,818
CCW	40,408	4	3	2,083
CCW	Id	id	4	1,958
CDB	38,169	6	2	2,703
CDB	Id	id	4	1,907
FAJ	42,500	23	17	4,058
FET	35,526	7	1	4,222
FPB	41,894	1	1	4,119
G0L	43,292	1	1	3,377
Total	484,895	NA	NA	44,892

News

File ID	Total number of words in file	Total N divisions in file	ID N of file division coded	Number of lexical units in data
A1E	9,916	17	1	584
A1F	8,909	20	6	87
A1F	Id	Id	7	269
A1F	Id	Id	8	111
A1F	Id	Id	9	223
A1F	Id	Id	10	178
A1F	Id	Id	11	222

File ID	Total number of words in file	Total N divisions in file	ID N of file division coded	Number of lexical units in data
A1F	id	id	12	62
A1G	10,242	31	26	405
A1G	Id	id	27	593
A1H	3,108	6	5	935
A1H	id	id	6	724
A1J	13,981	40	33	813
A1J	id	id	34	605
A1K	1,905	3	2	1,012
A1L	1,849	2	1	1,074
A1M	4,910	5	1	1,113
A1N	14,770	49	9	698
A1N	id	id	18	812
A1P	2,595	4	1	647
A1P	id	id	3	653
A1U	4,198	5	4	1,892
A1X	3,322	5	3	145
A1X	Id	id	4	194
A1X	Id	id	5	279
A2D	1,042	7	5	1,039
A31	3,492	3	3	699
A36	6,173	9	7	546
A38	3,254	3	1	756
A39	2,355	3	1	257
A3C	8,522	13	5	1,031
A3E	1,858	4	2	233
A3E	Id	id	3	778
A3K	3,500	11	11	1,227
A3M	3,007	6	2	887
A3P	8,032	14	9	947
A4D	3,167	4	2	1,246
A5E	5,411	8	6	1,080
A7S	5,414	8	3	848
A7T	8,720	16	1	951
A7W	25,255	55	1	1,734
A7Y	10,862	9	3	895
A80	10,608	26	15	585
A8M	3,595	7	2	313
A8N	12,014	19	19	653
A8R	6,735	7	2	851
A8U	8,816	18	14	832
A98	6,769	12	3	593
A9J	3,705	2	1	1,505
AA3	9,084	15	8	757
AHB	17,314	52	51	901
AHC	39,523	82	60	1,116
AHC	Id	id	61	1,097

File ID	Total number of words in file	Total N divisions in file	ID N of file division coded	Number of lexical units in data
AHD	4,236	10	6	303
AHE	1,236	3	3	315
AHF	27,457	73	24	1,202
AHF	Id	Id	63	1,311
AHL	2,552	5	2	447
AJF	6,472	14	7	669
AL0	5,143	9	6	532
AL2	9,361	50	16	410
AL2	Id	id	23	413
AL5	2,523	5	3	827
Total	356,912	NA	NA	45,116

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