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■ *Research Paper*

The Language of Knowledge Management: A Linguistic Approach to Metaphor Analysis

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This paper discusses two problems in metaphor identification in knowledge management. It does so against the background of a sketch of the most important issues in linguistic metaphor research in relation to language, cognition and communication. This produces a background for the body of the paper, in which two issues are addressed: (1) What counts as a metaphor in language, including language about knowledge? (2) What counts as a metaphor in thought, including thought about knowledge? The answers to these questions capture some of the latest discussions in linguistic metaphor research, which can help increase the quality of further research on metaphor in knowledge management.

Keywords conceptual structures; knowledge; linguistic forms; metaphor; metaphor identification

INTRODUCTION

Knowledge management has recently hit on the metaphorical underpinnings of knowledge, as is attested by this special issue, but this discovery is in fact just another instantiation of the general cognitive–scientific interest in the metaphorical structure of many abstract concepts in a wide range of socio-cultural domains, including management and organization, education and science, politics and government and health and care (Ortony, 1979/1993; Gibbs, 2008). This general attention to metaphor in thought is partly due to the cognitive–linguistic postulation of conventional metaphorical structures in all cognition by Lakoff and Johnson (1980) in their well-known *Metaphors we live by*. These conventional metaphorical structures in cognition are called conceptual metaphors and have been studied in many different ways over the past 30 years (cf. Kövecses, 2002/2009; Lakoff, 2008). Metaphor 'in thought' is often modelled via this notion of conceptual metaphors, which can be defined as conventionalized and systematic mappings (sets of correspondences) between

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distinct conceptual domains; this includes seeing knowledge (or ideas or understanding) as food, movement or perception (Lakoff and Johnson, 1999). This is one important part of the general background which has led to the current special issue, as may be shown by the references in Morgan (2006), Andriessen (2006, 2008) and others.

However, a number of problems with the cognitive–linguistic approach to metaphor in thought and language have emerged over the past 30 years (Steen, 2007, 2008, in press). The following four problems are of particular relevance to metaphor in knowledge management. First, the problem of what counts as a metaphor in language (and other codes of expression such as visuals) has led to groundbreaking methodological work on linguistic metaphor identification. Criteria for metaphor identification were seldom explicit, often diverging between researchers and never tested for interanalyst agreement in order to examine the reliability of data analysis. Since researchers aim their claims to be open to criticism, comparison and validation, standardization was dearly needed. The Pragglejaz Group, an ensemble of ten international metaphor scholars, worked for seven years to produce a reliable procedure for metaphor identification (Pragglejaz Group, 2007), which has since been applied by many metaphor researchers working on metaphor in natural language use in all kinds of settings. The method has been further developed, improved and applied by Steen *et al*. (2010) in their linguistic analysis of a substantial amount of data from four registers of English and Dutch (academic texts, news texts, fiction and conversations).

The issue of linguistic metaphor identification naturally leads to a second problem: how can such linguistic expressions of metaphor be reliably related to the specific underlying conceptual metaphors that they are supposed to express? This problem is possibly even more intimidating than the one of linguistic metaphor identification: which metaphorical model in thought, exactly, is being used when people speak or write in particular metaphorical ways? For instance, when they use expressions like *win*, *defend* or *lose* in the context of argumentation, do they conceptualize argument as sports, fighting, war or yet another concept? Equally well-developed methods and techniques for addressing this type of question, about conceptual metaphor identification, are currently not available (cf. Steen, 2007). If knowledge management researchers aim to model the metaphorical nature of the conceptual structure of knowledge with social–scientific adequacy, for fundamental or applied purposes, they have to address this methodological problem in all its complexity.

A third issue has to do with the relation between this type of structural analysis of the meanings of linguistic forms and conceptual structures, on the one hand, and the way in which these linguistic forms and conceptual structures are processed and mentally represented in the psychology of individual language users in concrete settings, on the other. The fact that language data may be analysed, both linguistically and conceptually, in such a way as to point to specific metaphorical meanings and conceptual structures is one thing, but it does not automatically imply that these metaphorical semantic structures are in fact mentally processed as metaphorical representations by all or even most individual language users. Psycholinguists have formulated fundamental criticism of this conclusion and offered alternative models. For instance, language may be processed in a shallow way which selects the appropriate conventionalized, abstract, figurative senses of words like *win*, *defend* or *lose* without activating their concrete 'war' or 'fighting' senses long enough to trigger their related underlying conceptual structures; in such a scenario, metaphorical mappings are not reconstructed 'in thought' by people when they process language online; the presumable effects of a particular source domain such as war or fighting would then also not come into play in people's online dealing with argumentation. Such a language processing scenario seriously questions the validity and reach of the cognitive–linguistic claims about the workings and power of metaphor; empirical research is currently carried out to see when metaphor gives rise to online cross-domain comparison in people's language

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processing (e.g. Gentner and Bowdle, 2001, 2008; Glucksberg, 2001, 2008; Steen, in press).

A fourth issue is related to this: almost all metaphor research has concentrated on how metaphor is processed in conventional, fast, automatic and unconscious ways. Recently, however, this has been contrasted with the deliberate, conscious use of metaphors, which occurs much less frequently, but may be essential for explaining the power of metaphor (Steen, 2010, submitted). Thus, when Andriessen (2008) asks knowledge workers to contrast their conceptualization of knowledge as stuff with its conceptualization as love, he in fact elicits conscious metaphorical cognition. It is likely that all deliberate, conscious metaphor use does involve cross-domain mapping during online language processing and cognition; it may therefore be deliberate, conscious metaphor which typically produces new information and knowledge to knowledge workers; note that this does not have to involve a novel metaphor, because revitalizing aspects of conventional metaphors in our consciousness may be just as important for restructuring our knowledge about the relation between some source and target. Non-deliberate, unconscious metaphors may not necessarily have this effect, as was pointed out with reference to the third issue above. Deliberate metaphor forms one—relatively small—subset of all metaphorical structures in language and thought, but it may in fact be the most essential set of metaphors for the way people communicate, including about knowledge management.

These are four issues which offer novel perspectives on metaphor, including the metaphorical structure of knowledge. They have been produced by careful observational and experimental research in linguistics. They may offer a useful starting point for knowledge management researchers to review the research on metaphor in language, cognition and communication in order to apply this research to the more specific questions they have about the metaphorical structure of knowledge. This paper will therefore explore the first two issues in a little more detail: they offer information about patterns of metaphor in the structures of language and thought that is essential to any further social–scientific research on the (psychological or social) behaviour of knowledge managers. The following two questions will hence be addressed:

- What counts as a metaphor in language?
- What counts as a metaphor in thought?

These questions capture some of the latest discussions in present-day metaphor research, which may help to increase the quality of further research on metaphor in knowledge management.

FINDING THE LINGUISTIC FORMS OF KNOWLEDGE METAPHORS

Consider the following quotations containing the word *knowledge* from various pages of the Philips company website:

(1) You've studied intensely for your MBA and with at least five years of work, you're keen to combine *knowledge* with practical skills (Careers).
(2) Our memberships enable us to learn from others and share our *knowledge* (Business and sustainability organizations).
(3) The Supervisory Board's composition follows the profile, which aims for an appropriate combination of *knowledge* and experience among its members encompassing marketing, manufacturing, technology, financial, economic, social and legal aspects of international business and government and public administration in relation to the global and multi-product character of Philips' businesses (Composition and profile).
(4) At the same time, the supply chain is becoming increasingly specialized as *knowledge* is moving to different parts of the chain (Semi-conductor).
(5) Methods used for data and *knowledge* gathering included in (Design for a new study).
(6) creation cycles, and to develop a well-coordinated *knowledge mosaic* related to user experience factors (Ambient Intelligence).

Knowledge management researchers often utilize documents like these, with statements like these, to reconstruct how an organization

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conceptualizes knowledge and the way it can be managed. From the viewpoint of the identification of metaphor in language, which may function as an expression and signal of metaphor in the underlying conceptual system, these six utterances display a range of phenomena which are typical of metaphor identification. In particular, this small range of contexts shows that knowledge can be combined with something else (1) and shared with other people (2); it can be part of a combination (3) and the object of a gathering process (5); and it can even be a *mosaic* (6) or move to other places (4). Knowledge, it appears, is a versatile phenomenon, and this is clearly due at least in part to metaphor. But how can these metaphorical properties be described in precise detail when we look at these examples as linguistic expressions? And how can such descriptions be made reliable and valid?

At the end of his textual analysis of the notion of intellectual capital, which involves a similar exercise to the one we are pursuing here but on a slightly larger scale, Andriessen (2006: 106–107) notes that

> *More research needs to be done on refining the identification and classification of metaphors because some statements about knowledge can be classified under several metaphors and it is to some extent arbitrary which category is the best. Some statements may not be truly metaphorical but based on metonyms or proverbs.*

This is precisely what has happened in general metaphor research in the first decade of the new millennium, with the Pragglejaz Group leading the way to new approaches to metaphor identification in natural discourse (Pragglejaz Group, 2007; Steen *et al.*, 2010).

One crucial feature of this approach is that it separates linguistic metaphor identification from conceptual metaphor identification. The latter has to do with determining the underlying conceptual structure of the cross-domain mapping that a linguistic form is supposed to express. This is labelled as 'classification' by Andriessen in the citation above, but this does little justice to the fact that linguistic metaphor analysis is a different operation, dealing with a different phenomenon, than conceptual metaphor analysis. For instance, when knowledge can be 'shared', the use of this verb may be an expression of the underlying mapping across two conceptual domains called KNOWLEDGE IS A RESOURCE. However, it has become clear from the above-mentioned methodological research that the identification of the linguistic forms of metaphor is much more reliable if the analysis of the concomitant conceptual structures is deferred to a later stage, so that all of the potentially metaphorical linguistic forms can be surveyed as a new data set needing their own and independent conceptual analysis. This approach may now be illustrated by the above examples.

From a linguistic perspective, all of the above uses of the word *knowledge* itself are not metaphorical. This is because the word *knowledge* is used to activate the related concept, KNOWLEDGE, which in turn is needed to function as one entity, one referent, in some intended mental model for the text; the latter clearly needs the entity 'knowledge' to be part of the state of affairs that is represented. The first sentence, for instance, is about a prospective applicant and the knowledge and skills they need for a particular job: there is nothing metaphorical about this use of the word *knowledge* or the concept KNOWLEDGE—they posit the entity 'knowledge' as one referent in the representational model of the text, even though it is an abstract as opposed to a concrete entity (for more information about discourse representation, see e.g. Schmalhofer and Perfetti, 2007).

At the level of language, metaphor potentially comes in when we consider the other words used in the same sentences. Thus, consider the idea that knowledge is moving to different parts of the supply chain to build a semi-conductor. The description of the action that knowledge is involved in by means of the verb *move* is metaphorical. There is no concrete, physical movement in the state of affairs designated by this sentence. Instead, the word *moving* activates the concept MOVE, but this should not lead to positing a referent 'move' in the mental model of the text, if that referent is taken in the physical sense of *move*. This is where a cross-domain mapping is postulated to take place by cognitive linguists and their followers, from the physical

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concept or referent to some abstract concept or referent. This is needed to make the sentence intelligible and the text coherent—if this does not take place, language users are left with a physical concept of movement which they cannot integrate into their developing text representation which is about some abstract phenomenon, i.e. knowledge. (It should be noted that the cognitive–linguistic model is not precise enough to say which of the two options above, mapping between concepts or referents, is the case.)

At the level of language analysis, the Pragglejaz Group (2007) have shown that the judgement whether a word is related to a metaphorical mapping can be reached as follows: the analyst first needs to determine that the contextual sense of the verb differs from the basic sense of the verb, and then needs to decide that the contextual sense can be understood by comparison with the basic sense. In this case, the contextual sense is something like 'is concentrated'. The basic sense is 'change position'. This could also be paraphrased as: the contextual sense has to do with an abstract change of positions, whereas the basic sense of the verb has to do with a concrete change of positions. The abstract sense can therefore be understood in comparison with the concrete sense. The use of the verb may therefore be concluded to be metaphorical.

A similar argument can be made for knowledge gathering, since the basic sense of gathering typically involves concrete objects. It should be noted, however, that this is an intuition which may vary between language users and analysts. This variability is precisely one of the reasons why metaphor identification and analysis has long remained a matter of interpretation which had a large degree of subjectivity as well as biased expertise in it. As has been shown by Steen *et al*. (2010), however, in their development of the Pragglejaz Group method, this sort of intuition can be made explicit and be systematically and consistently checked by turning to a modern language users' dictionary. There, such basic senses can be found described in linguistic detail. What is more, this has happened for the entire contemporary language system for purposes that have nothing to do with metaphor identification and analysis. Using such a tool dramatically increases the replicable nature of the research, in particular because it relates metaphor identification to one consistently utilized unit of analysis, the word. (There are many technical difficulties about the precise demarcation of words, or lexical units, from a linguistic perspective, but Steen *et al*. (2010) provide a detailed manual for addressing these.)

For *gathering*, the *Macmillan English Dictionary for Advanced Learners* (Rundell, 2002) shows that the verb has a concrete meaning pertaining to tangible things which may be taken to be more basic than the contextual meaning that is applicable in our target sentence. Whether such an argument can also be made for *combine* and *combination*, however, is a moot point, and offers a nice test case for this exposition. Thus, the *Macmillan Dictionary* shows that the verb *combine* basically has only one sense, in which it is equally possible for the verb to apply to both concrete and abstract objects. This would suggest that the verb has one general sense in which it is not possible anymore to make a contrast between concrete and abstract processes of combining. The latter is a prerequisite for deciding that the verb *combine* is metaphorical when it is used with abstract entities, such as knowledge: if there is no contrast, there is no metaphor.

In this case, then, (1) would not display a metaphorical expression about knowledge. For language users, according to this dictionary and the team of linguists who wrote it, *combine* is a more encompassing term which does not conceptualize the abstract in terms of the concrete, but which sees both abstract and concrete uses as similar applications of the same more general, relatively vague meaning. If metaphor analysts wish to make connections with what goes on in people's minds, some ostensibly metaphorical words may work differently (and not even metaphorically) than others, as judged by professional linguists, and metaphor analysts then need to take these differences seriously.

A comparable picture emerges when we look at the related noun, *combination.* That too, at first glance, looks like a potentially metaphorical word when it is applied to knowledge and experience. But a close check of the dictionary shows that combinations can literally be of all

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kinds, both concrete and abstract, so that example sentence (3) would not count as metaphorical either. This is true even though related nouns and verbs often display different behaviours when it comes to their potential for metaphorical use (Deignan, 2005). This observation is to be opposed to what happens with *share*, which clearly does have distinct concrete and abstract senses that can be contrasted and understood by comparison. And the metaphorical status of knowledge as a kind of *mosaic* is probably not problematic at all: the basic meaning of *mosaic* is 'a pattern or picture made of many small coloured pieces of stone, glass etc'. This is the basis for judging that the use of *mosaic* in the phrase *a knowledge mosaic* is metaphorical.

In all then, our six examples represent a range of linguistic phenomena which could do with much more discussion, but which space forbids further engagement with. These phenomena have been addressed at length in recent methodological work in linguistics that knowledge management researchers might well profit from (Steen *et al*., 2010). This is particularly so when the attempt is made to connect these observations about 'metaphor in language' to 'metaphor in thought', as we shall now see.

FINDING THE CONCEPTUAL STRUCTURES OF KNOWLEDGE METAPHORS

Data analysis of metaphor in language is only the first step in the analysis of metaphor in discourse concerning knowledge management. Its purpose is to set up an inventory of all linguistic forms that are potentially related to underlying mappings between distinct conceptual domains, with knowledge always being the target domain. Subsequent conceptual analysis then aims to re-construct such underlying cross-domain mappings, to the extent that the domain of knowledge is seen as structured by the domains of water, see, soil, ships, resources and so on (cf. Andriessen, 2006). Such a reconstruction can hence lead to a series of 'conceptual metaphors', to which the linguistic data can then presumably be related as material expressions. One of the interesting tenets of this approach to metaphor is that metaphor is regarded as a conceptual phenomenon, a way of thinking, which may be expressed in other codes than language too, including visuals, gesture and so on (e.g. Cienki and Müller, 2008; Forceville and Urios-Aparisi, 2009).

The advantage of the independent linguistic analysis of the data may now be thrown into relief. First of all, it is much more superficial than conceptual analysis. Often it is sufficient to establish that a word has a concrete and an abstract sense that are somehow similar. Conceptual analysis, however, has to explain exactly how two senses and their related concepts are similar; it also has to reconstruct the precise nature of the conceptual domains to which the metaphorical and non-metaphorical senses and concepts are related.

And this is where all trouble begins. For it makes a difference whether one assumes that a conceptual analysis needs to be set up for just the words *gather* and *share* plus a number of similar lexical items, or whether that analysis should depart from a set including *gather, share* and *combine/combination*. The conceptual problem space for which we need a solution in the form of a cross-domain mapping is changed considerably between these two variants, which are minimally different. In particular, gathering and sharing seem to allow for a scenario in which knowledge can be treated as a natural resource, comparable to berries and so on. However, when the action of combining is included (as another allegedly concrete activity which, as we have seen, may be incorrect), then the level of abstraction for the source domain may need to be raised, to the height of physical objects or substances. The inclusion or exclusion of even one word may alter the nature of the cross-domain mapping that is supposed to be expressed in the language.

By way of aside, we do need a coherent solution; this is the premise and attraction of all conceptual metaphor research. However, that starts out from the other end and postulates conceptual metaphors that are held to explain the use of specific linguistic expressions. For analysts of natural language use about knowledge and its management, it is therefore important to decide

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which expressions require explanation, and whether they require explanation by one or more than one underlying mapping.

This is a general problem for the reconstruction of cross-domain mappings, which has been discussed by for instance Vervaeke and Kennedy (1996). It raises methodological questions about the reliability and validity of conceptual metaphors as postulated in cognitive linguistics. If the reliability issue may seem self-evident, the validity issue has to do with the stability and permanence of conceptual metaphors in more encompassing conceptual systems. More generally speaking it is not clear at all how specific conceptual metaphors can be identified and demarcated from others in large-scale empirical research. This is true even though hundreds of conceptual metaphors have been proposed and used in linguistic research on metaphor in discourse.

OUTLOOK AND CONCLUSION

The preceding discussion of the linguistic forms and conceptual structures of metaphor in language use has been concerned with meanings. It presents some of the semantic issues that have been addressed in various studies of metaphor in linguistics and discourse analysis. These studies are typically or predominantly focused on words and concepts as symbols in encompassing systems of language and thought. These can also be connected to their use in human behaviour, but that would take us into the psycholinguistics and psychology of individual behaviour and the sociolinguistics and sociology of interaction between people. Of course, many linguists and discourse analysts have attempted to make this connection in their own work, too.

The distinction between a semantic and a behavioural approach to metaphor is important, though, because, as noted in the introduction, it is not true that all metaphor that can be semantically identified in the linguistic forms and conceptual structures of discourse can be found back in the concomitant psychological or social processes of language use. Yes, the linguistic forms of metaphor may appear as such in the language data collected from natural text and talk, but this does not mean that the people who used these linguistic forms in fact used cross-domain mappings in their minds and in their co-ordinated interaction. What counts as a metaphor in document and transcript analysis does not necessarily count as a metaphor in individual or interactive behaviour—only behavioural research with behavioural data can address that issue.

This raises the question when knowledge is in fact truly conceptualized and expressed metaphorically. It may be the case that most of our metaphorical terms for knowledge are traces of old metaphorical mappings, which, however, have lost their conceptual and even linguistic potency for nonliteral comparison on most occasions of use. This naturally changes when some of these metaphors are used deliberately, for rhetorical purposes of persuasion, explanation or modelling. But recent findings suggest that this type of deliberate metaphor use in natural discourse is fairly exceptional in comparison with the regular, conventional use of metaphor typical of all abstract topics, including knowledge and its management (Steen *et al*., 2010). (Deliberate metaphorical cognition might of course be exploited in pointed interventions in applied research such as Andriessen (2008), but that is another matter.)

In the six example sentences from the Philips site, it might as well be that all uses but one, *knowledge mosaic*, are not deliberate. They would hence not be perceived as metaphorical by most users of the site. This might also lead to a lack of processing by comparison. The *knowledge mosaic* metaphor might consequently be the only metaphor qualifying as a metaphor in the psychological and social processes of verbal interaction. As for the other five cases, whether they could still qualify as metaphorical in the psychological processes of individual language users depends on whether unconscious metaphorical mapping takes place in individual people's minds. But under which conditions that happens remains a matter of unresolved debate in psycholinguistics.

In all, then, the role of metaphor in knowledge management is potentially powerful. It certainly

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presents an intriguing puzzle with lots of ramifications. However, about the genuine effect of metaphor in knowledge management we do not know much that is empirically reliable or valid yet. There is, hence, a large and exciting research agenda for the near future, in which knowledge management researchers can team up with metaphor researchers to produce useful new insights about when metaphor is used in which ways to think about knowledge and its management.

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