Metaphor in Use

*Context, culture,
and communication*

Edited by
Fiona MacArthur
José Luis Oncins-Martínez
Manuel Sánchez-García
Ana María Piquer-Píriz

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Acknowledgements

Introduction

Metaphor in use

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1. Background

Although metaphor, or the human drive to 'see' or understand one thing in terms of another, is probably a universal, even perennial phenomenon, its manifestations most certainly are not. Even if we were only to consider the way that metaphor is used in communication among speakers of English, one of the most striking facts to emerge from research in recent years is how variable metaphor use is and how its production and interpretation in context depends on the interplay of many different factors. Among these is the means people use to convey a metaphorical idea, for it must be borne in mind that metaphors are not realized solely in language: gesture, visuals (whether static or moving), and other modes of expression are also vehicles that publicly display the way that people conceive of one thing in terms of another. In turn, these different modes of metaphorical communication may also interact with each other and with language in various different ways (Chuang, this volume; Cienki 1998, Cienki and Müller 2008, Forceville 2007, Forceville and Urios-Aparisi 2009), which adds further complexity to the use of metaphor in context.

Apart from the different modes employed (speech, writing, gesture, or visuals, for example), another factor that has been shown to influence metaphor production and comprehension is the time scale in which it is used. Since metaphor use occurs in real time, attention to its presence and absence as discourse unfolds reveals the variability and unevenness of this phenomenon both within and across discourse events. Several researchers have noted that metaphors are not evenly distributed in discourse events such as conversation or lectures, but tend to occur in bursts, or cluster in response to different factors, such as management of the ongoing discourse, the topic, or even interpersonal relations (Cameron 2008, Cameron and Stelma 2004, Corts and Pollio 1999). Cameron (2008: 200), for example, has observed that "when one speaker uses metaphor, other speakers seem more likely to adapt their own talk and become metaphorical in response".

Even though the primary site for human communication is conversation, speakers of English do not appear to use linguistic metaphors as frequently when they are chatting to each other face to face as they do in the written medium (Steen et al. 2010), so another factor that contributes to metaphor variation is the discourse contexts in which it is used. Furthermore, certain written registers display a much greater density of metaphor use than others. Steen et al. (2010) have found that metaphor is used much more frequently in academic discourse than in fiction, a perhaps somewhat surprising finding given the traditional emphasis on metaphor as a trope peculiar to poetry and fictional prose. But even within academic discourse, for example, metaphor use varies: different academic discourse communities use metaphor in different ways. The metaphors used by economists, for example, when writing and talking about their discipline are not the same as those used by architects when dealing with theirs (Alejo 2010, Caballero 2006), for the metaphor systems or models that constitute particular theories or frame the problems that disciplines seek to explore and resolve (Kuhn 1993) vary across different areas of enquiry. Indeed, major paradigm shifts may be marked by changes in the metaphors conventionally used in a field of scientific enquiry (see, for example, Aitchison's [2003] discussion on competing metaphors for understanding linguistic change), which recalls the importance of the diachronic dimension as one more factor that contributes to metaphor change and variation.

When studied in a historical time scale, metaphor has been revealed to play an important role in motivating semantic change in English (e.g. Allan 2008, Kay 2000, Sweetser 1990), and research adopting a diachronic perspective on metaphor use has not only provided details about the processes involved in how word meanings change in the course of time, but has also shed light on the status of particular utterances as "metaphors" for speakers of earlier and later generations (Alm-Arvius, this volume; Geeraerts and Grondelaers 1995, Oncins-Martínez 2006), for consideration of metaphor in various time scales reveals that what might count as a metaphor at one time and in one context might be regarded somewhat differently in another. For example, one of the time scales in which metaphor has been widely researched – the ontogenetic – has further revealed the complexity of this phenomenon and how difficult it may be to decide on whether the unconventional 'metaphor-like' utterances of children should be considered metaphors at all (Cameron 1996). Piaget (1962) reported his daughter between the ages of 3 : 6 and 4 : 7 saying that a winding river was like a snake and comparing a bent twig with a machine for putting in petrol. While Piaget himself regarded these as 'child metaphors' as opposed to 'real metaphors' (describing them as nothing more than products of the symbolic, imagistic type of thinking that characterizes the pre-operational stage), other researchers have used different criteria to distinguish metaphors and pseudo-metaphors in children's speech (e.g. Billow 1981, Nerlich et al. 1999, Vosniadou and Ortony 1983, or Winner 1988), reaching different conclusions about what distinguishes a child's use of metaphor from an adult's, and how the changes in children's use and understanding of metaphor at different ages can be accounted for.

The complexity of the task of researching metaphor is perhaps most apparent when we move away from a consideration of metaphor solely in relation to English speakers or even speakers of other standard European languages. As Leezenberg (2001: 15) has pointed out, there are certain "cultural prerequisites for a notion of metaphor". A similar point is made by Goddard when he notes that the term 'metaphor' lacks precise equivalents in many of the world's languages, and warns of the dangers of uncritically adopting the category as a starting point for cross-cultural comparison (2004: 1212). Both authors discuss the issue in relation to A is B (active or expository) metaphors, and Leezenberg (2001: 15) cites the disagreement over interpretations of the much debated utterance of the Bororo Indians of Brazil *pa e-do nabure* ('we are parrots'). Early accounts (e.g. Durkheim and Mauss 1963: 6–7) suggested that the Bororo did not distinguish between the categories of people and animals, and this expression could not therefore be classed as a metaphor. However, close attention to the linguistic form of the utterance (Turner 1991: 135–136) has provided grounds for thinking that it should not be regarded as a 'literal' statement or a conflation of the categories PEOPLE and BIRDS/ANIMALS, because it can only be used to refer to men and the verb is marked for 'customary form' rather than 'permanent state' (Leezenberg 2001: 16). In the light of close linguistic analysis, then, the utterance can be regarded as instantiating the metaphorical mapping PEOPLE ARE ANIMALS. In fact, as numerous studies over the years have shown, there appears to exist a very widespread tendency to 'see' people as animals, although the instantiation of the mapping varies considerably across different language-speaking communities. The use of the same animal names to refer to people may be similar or quite different in different languages (e.g. Hines 1999, Hsieh 2006, López Rodríguez 2009, Talebinejad and Dastjerdi 2005), as are the preferred ways of instantiating the metaphor in everyday speech (Deignan 1999). Similarly, while it seems true that "the existence of the semantic prime BODY invites people to theorise about the other parts of a person" (Goddard 2003: 122), the way that speakers of different languages establish these relations varies considerably. The head, the heart, the liver, the ear, and the stomach are some of the body parts and organs associated with 'thinking' or 'feeling' in different languages (Goddard 2003, Wierzbicka 1992, Yu 2007, 2009) but although BODY PART FOR THOUGHT/FEELING might be a common pattern, the type and value of the thoughts or emotions associated with each body part is often different across languages. Goddard (2003: 124) describes, for example, the *hati* (liver) concept in Malay as:

> very 'feeling-oriented' but focused primarily on interpersonal feelings. [...] the *hati* is viewed as an inner domain of experience, but there is a heightened emphasis on its motivational consequences, along with a certain moral ambivalence. On account of the *hati*, a person may have an urge to do bad things as much as good things (hence one ought not unthinkingly or impulsively follow one's *hati*; as the saying goes, *ikuthati mati* 'follow the hati, die').

Likewise, although several languages instantiate a HAND FOR CONTROL metonym, the way that it is realized and used by different language-speaking communities can also vary. Yu (2000), for example, finds that English and Chinese highlight different sub-parts of the hand in expressing this relation. More importantly, perhaps, the evaluation conveyed by the expressions that instantiate this metonym may be quite dissimilar: Charteris-Black (2001) notes that Malay expressions with *tangen* imply interference or meddling while English equivalents with *hand* evaluate this control positively. Researchers may be content to note that socio-cultural factors cause such cross-linguistic and cross-cultural differences or seek to find more detailed explanation for them (e.g. MacArthur 2005). However, this should not cause us to lose sight of the possible consequences that such differences may have for cross-cultural communication, where more applied metaphor research is still needed. For instance, misunderstandings or miscommunication may result when speakers whose languages differ from each other in these subtle but important ways communicate with each other, as happens when native speakers of English interpret Japanese figurative expressions using body part terms when these are translated into English (see Azuma, this volume).

In short, although metaphorizing may be "a natural function of the human mind" (Morgan 1993: 132) and metaphor may be used by people all over the world, the metaphors found in different linguistic communities are subject to the contextual variation observable in a single language, and a search for universal patterns may thus detract attention from the diverse and variable ways that metaphor is employed by speakers in different cultural contexts.

In an increasingly globalized world, where communication between different cultural groups is not only facilitated by media such as the Internet but indeed made necessary by large-scale transnational migration or the federation of nation states, such as the European Union, the growing interest in the relationship between metaphor, culture, and context is to be welcomed. In recent years, various studies have done much to contribute to our understanding of cross-cultural and cross-linguistic differences in metaphor use worldwide and context induced variation (e.g. Kövecses 2005, 2010). For example, Kövecses (2000) describes how metaphors may be motivated by the culturally or physically salient experiences of particular language-speaking groups which may, in turn, vary quite substantially from one to another. This would account for the fact that certain source domains motivate a large number of metaphorical expressions in certain languages but not in others (e.g. Boers 1999). This would explain why a speaker of Spanish might use a metaphor such as *echar un capote a alguien* (lit. 'to throw someone a cape') in order to express the notion of helping another person, while a speaker of English would not, for bull-fighting is not an everyday, familiar area of experience for those from outside the Spanish-speaking world. However, it does not explain why an English speaker (and not a Spaniard) might use a maritime metaphor like 'bail someone out' to express the same idea, because the sea is salient not only for people from the British Isles: Spain, along with other countries, also has a long sea-faring tradition. Indeed, the difficulty of establishing a direct relationship between metaphor and culture

(Deignan 2003, Deignan and Potter 2004) has led Deignan to propose that the relationship is indirect, and that many metaphors may survive in languages as "cultural relics" (Deignan 2003). This conclusion is not altogether surprising or unusual. After all, as Tomasello (1999) has pointed out, one of the important functions of language is to preserve the cultural lessons of the past, and to ensure their transmission – even when some may have become irrelevant or obsolete. Language can be seen as the prime means for communicating cultural ideas and beliefs (Sperber 1996). Language is both a part of a people's culture and a vehicle for its transmission,

It is tempting to see culture as a set of ideas and beliefs shared by a community that influence in relatively predictable ways the actions and behaviour of that group (e.g. Hall 1981, Hall and Hall 1990, Kövecses 2005). However, it may be more helpful to understand cultural conceptualizations as more variable and dynamic than this. For example, Sharifian (2011) considers culture as one type of complex adaptive system, which is, in turn, nested in other complex adaptive systems, including individual people, the language they speak, or the physical environments they inhabit. In this view, cultural cognition – or the shared views of a community of people – is a complex system in that an individual's cognition does not capture the totality of his/her cultural group's cognition (Sharifian 2011: 23). Furthermore, cultural cognitions – just like individual cognitions – have their own unique history of interactions that constantly construct and reconstruct the system. And among the history of interactions of individuals or groups that are of particular interest in an era of globalization are those that involve contact with other groups, a phenomenon that has always been of interest in diachronic studies of individual languages, but less so to metaphor researchers (but see Trim 2007, this volume). An example of how contact between different cultural groups may bring about changes in metaphor use is provided by Goddard (2004). He describes how speakers of the Western Desert language Pitjantjatjara/Yankunytjakjara now employ a certain number of expository metaphors in non-traditional discursive domains (for example, in talk about Christianity), which Goddard attributes to contact between the aboriginal peoples and speakers of English, particularly through missionary efforts (Goddard 2004: 1218–1219). New metaphorical language may emerge from such situations of contact and, on occasion, become entrenched in the language used by a group of speakers. Thus, a regional variety of a standard language may show traces of prolonged situations of language contact. For example, the interlanguage of Irish Gaelic speakers of English resulted in the coinage of the metaphorical idiom used in Hiberno-English: 'to put something on the long finger' (from Irish Gaelic *chuir ar an méar fada é*) (Odlin 1991). In this regard, then, studies of metaphor use in the interlanguage systems of learners of a foreign language, like those of Golden and Johansson Falck in this volume, are relevant not only to applied linguists interested in making pedagogical use of such studies, but also for understanding the processes involved in the emergence of new metaphorical uses of language and the short and long-term consequences for the varieties of languages that emerge from such contact. Sharifian (2010) rightly states that "it would be naive to expect a speaker to become a

culturally and emotionally different person when speaking a second language", so it is not surprising that culturally induced ways of 'seeing-as' should lead to new metaphorical language uses, an area of study of particular relevance to the phenomenon of global Englishes. At present, non-native speakers of English far outnumber those who speak it as a first language (Kirkpatrick 2010). The spread of English is resulting in the rise of varieties that are different from native speaker norms, and these differences are also apparent in metaphor use in different varieties. For example, Polzenhagen and Wolf (2007) have described the culture-specific conceptualization of corruption in African English and how this is reflected in the linguistic metaphors speakers of this variety use when talking about this topic.

2.   The contributions to this volume

As these introductory remarks have aimed to show, metaphor is a complex and multi-faceted phenomenon. Indeed, it seems well-nigh impossible for any one theory of metaphor to account fully for the complexity of metaphor as used by human beings in communication with each other, as Gibbs (2006: 435) has pointed out. It is thus not surprising to find that the sixteen chapters in this volume should not adhere to one single method or approach, but range from the computational (Veale or Berber Sardinha, for example) to more traditional, philological approaches (Alm-Arvius or Trim) through research guided by the precepts of conceptual metaphor theory or CMT (Johansson Falck or Aksan and Aksan). What they all have in common, however, is their focus on the situated use of metaphor in different contexts and their use of real data to underpin the research they report, whether this comes from very large, commercially available corpora (for example, Johansson Falck or Dorst and Kaal), data gathered with the help of Internet search engines such as Google (Alm-Arvius or Veale), specially compiled corpora (for example, Golden, Trim, Chapetón-Castro and Verdaguer-Clavera, or Aksan and Aksan), or smaller amounts of real world data gathered for the specific purposes of the research being carried out (Van Mulken and Le Pair, Chuang, or Azuma). Indeed, one of the charges made against CMT is that the linguistic data used to illustrate conceptual mappings has often been the result of the analyst's introspection and that the examples used to support their proposals often do not fully account for the way that metaphors may be realized in language (Ritchie 2003, Semino 2005, Stefanowitsch 2006). In this regard, one of the contexts of research that has revolutionized the way that metaphor may be studied in the last 30 years or so is the availability of large electronic corpora that allow researchers to have access to much larger amounts of linguistic data than was formerly possible. This new research context has contributed to providing more robust descriptions of the way that metaphors are realized in everyday discourse (for example, Deignan 2005, Gries 2006, Hanks 2006, Stefanowitsch 2006). At the same time, the task of identifying and quantifying metaphors in large corpora poses a number of challenges to metaphor researchers and

raises a number of questions. Among these are: how can metaphors be identified and retrieved in very large corpora? How can they be quantified? Is it necessary to have identified metaphorical language uses in advance or is it possible to mine large corpora in a data-driven way? Are the methods that have been developed for identifying metaphors in English applicable to other languages as well? The four chapters that make up the first part of the book address these issues.

2.1   Part 1: Contexts of research

In the first chapter, "An assessment of metaphor retrieval methods", **Tony Berber Sardinha** evaluates a number of different techniques and tools for retrieving metaphor in large corpora, explaining in detail for researchers who are not experts in computational linguistics themselves how each can be used and how reliable each procedure is in terms of the number of metaphors retrieved. As Berber Sardinha's work in this field has shown, the methods and techniques he explores are applicable to both English and Brazilian Portuguese.

The second chapter, "Metaphor in discourse: Beyond the boundaries of MIP", by **Aletta G. Dorst** and **Anna Kaal**, two researchers in the MIPVU project at the Free University of Amsterdam, is similarly concerned with the identification and accurate quantification of metaphor in discourse, but takes a much closer look at the decisions that must be taken by researchers when identifying metaphorical uses of language. Dorst and Kaal describe some of the problems that arise in applying the Method for Identifying Metaphors (MIP) (Pragglejaz Group 2007) to direct metaphors and metaphorical comparisons, explaining in detail how decisions can be taken in order to provide robust and replicable methods of metaphor identification in discourse, which is important, above all, in quantifying such uses of language for comparative purposes.

Chapter 3, "Metaphor identification in Dutch discourse", is by another researcher in the MIPVU project, **Trijntje Pasma**. Unlike her colleagues, the author discusses MIP in relation to Dutch and illustrates how the method, originally conceived to deal with English discourse, can be used to identify metaphors in another European language when appropriate modifications are made for the morpho-syntactic peculiarities of the language involved.

The last chapter in this section – "Locating metaphor candidates in specialized corpora using raw frequency and keyword lists", by **Gill Philip** – is concerned with the automatic retrieval of metaphors from large corpora. However, unlike Berber Sardinha, Philip deals with corpora made up of homogeneous texts (that is, texts that all deal with the same topic), a characteristic that allows the researcher, with the help of keywords and raw frequency lists, to distinguish between metaphors and 'terminology' (i.e., words and expressions that appear metaphorical to people from outside the discourse community that uses them, but that may not be regarded as such by members of the discourse community that uses them with particular fixed or stable meanings). Philip is also concerned with explicating a method for automatically retrieving

metaphors from large corpora without the need for a researcher to have advanced command of corpus linguistics methodology or tools, and one that uses commercially available software. And, in line with Pasma's chapter, she explains how this method can be applied to another language, in this case, Italian.

The four chapters in this first section, then, explicate ways of identifying and retrieving metaphorical language uses that can be applied by metaphor researchers with no background in computational linguistics or by those who do not have access to the specialized software that has been developed for these purposes. Furthermore, the various methods described extend the contexts in which metaphor identification may be reliably carried out, by considering their use with languages other than English. Although the focus here remains on standard European languages (but see Chuang, this volume, for an illustration of how MIP was applied to Mandarin Chinese), they may suggest ways of developing methods of metaphor identification and retrieval applicable to other, typologically different languages, in order that future research into metaphor use in these contexts may contribute to similarly robust findings that can be compared with each other and with studies that have been carried out into English.

2.2   Part 2: Contexts of production

The three chapters in this section all examine how metaphorical language is used by non-native speakers (NNS) of a language, comparing this with native-speaker (NS) norms as found in the control corpora used. In this regard, one thing that all these studies reveal is the importance of the appropriate choice of the NS corpora, depending on the research questions the analyst is seeking to answer.

The study reported in Chapter 5, "Metaphor variation across L1 and L2 speakers of English: Do differences at the level of linguistic metaphor matter?" by **Marlene Johansson Falck**, focuses on the linguistic realization of motion metaphors (ACTIONS ARE SELF-PROPELLED MOVEMENTS, PURPOSES ARE DESTINATIONS or AN ACTIVITY IS A JOURNEY) in 'path', 'way', and 'road' expressions. It offers a detailed analysis of how these are used by advanced learners of English with Swedish as their mother tongue in comparison to how these expressions are used by NSs of English in the texts contained in the British National Corpus (BNC). Johansson Falck's study is specifically concerned with discovering to what extent the linguistic means for expressing motion metaphors in Swedish influence these learners' use of similar metaphors in English, as Swedish has only two forms, *stig* and *vag*, to describe the different types of routes that can be taken – literally and metaphorically – from one place to another. The very detailed analysis offered of the use of 'path', 'way', and 'road' in English in these two contexts reveals that, while the Swedish speakers of English as a second language with advanced competence in the language did not produce any erroneous or incomprehensible utterances, there were interesting quantitative and qualitative differences between their uses of these expressions and that of NSs, suggesting that even when two languages share primary and complex metaphors, the precise way that these are expressed in the

first language subtly alter the way that these mappings are conceived. These findings have implications not only for foreign language teaching, but also for cross-cultural metaphor research, because they show the importance of language in shaping culture-specific conceptualizations.

Like Johansson Falck's, the study reported by **Anne Golden** in Chapter 6 – "Metaphorical expressions in L2 production: The importance of text topic in corpus research" – focuses on one specific area of language use: in this case, the high frequency Norwegian verb *ta* (roughly equivalent to English 'take') as used by NNSs with three different mother tongues (L1s): German, Spanish, and Russian. Golden compares these learners' uses of this verb with that of Norwegian students' in order to explore the differences between the way these groups of speakers employ the verb in its basic or metaphorical sense, but distinguishing also between the use of *ta* in fixed collocations or as 'bridge terms' (Kittay 1990). Among the findings that emerge from this study is that, although differences in metaphorical uses of *ta* can be observed among the three different NNS groups, related both to their L1 and to their command of the second language (L2), the topic of the written discourse proves the most important variable: in the control corpus employed, the NSs of Norwegian were found to use *ta* with metaphorical senses *less* frequently than the NNSs. The conclusions drawn echo Cameron's observation (2008: 203) that the absence of metaphor is as significant as its presence in discourse, and the density of metaphor use is often related to what is being talked about. In this regard, Golden's chapter sheds light on some of the problems that are involved in attempting to relate competence in a foreign language with metaphoric competence (Danesi 1993, Littlemore and Low 2006). Context or the topic a NNS needs to talk about also influences L2 learners' use of metaphor.

Unlike the preceding two chapters, in "Researching linguistic metaphor in native, non-native, and expert writing", **Claudia Chapetón-Castro** and **Isabel Verdaguer-Clavera** do not start from consideration of the metaphorical use of any particular lexical items when comparing NSs and NNSs writing, or how the first language may influence metaphor production in the second language, but rather seek to discover more general patterns in the different corpora they examine. In order to do so, their study involved identifying all potentially metaphorical uses of language. In their chapter, they describe in detail how the combination of two different methods of identifying metaphors in discourse (through the identification of vehicle terms, as developed by Cameron [2003] and MIP [Pragglejaz 2007]) enabled them not only to reliably identify the metaphors in the texts they examined, but also to point out how this painstaking approach to metaphor identification obliges the researcher to engage closely with the linguistic form of the metaphors used. Using this combined procedure, Chapetón-Castro and Verdaguer-Clavera carry out a three-way comparison between the use of metaphor by undergraduate Spanish learners of English with that of NS undergraduate students and that of NS expert writers. The findings provide interesting detail about the similarities and differences between the three groups of writers, not only as far as the linguistic forms of the metaphors used are concerned, but also as

regards the density of the metaphors employed. The most significant differences were not to be found in the writers' L1 but rather in their age or expertise: both groups of undergraduate students used metaphors less frequently than the expert writers.

2.3   Part 3: Contexts of interpretation

The three chapters that make up the third section all present cross-linguistic and cross-cultural analyses of metaphor interpretation, and shed light on some of the factors that give rise to similarities and differences in metaphor interpretation and appreciation across different cultural groups. In "Appreciation and interpretation of visual metaphors in advertising across three European countries", **Margot van Mulken** and **Rob Le Pair** consider how advertising campaigns that target consumers in different European countries may employ visual metaphors in their advertisements, on the assumption, it seems, that they will be understood and appreciated in similar ways by consumers with different cultural backgrounds. These researchers investigated this assumption by gathering data from French, Dutch, and Spanish informants in response to different types of visual metaphors used in advertising, whose visual 'syntax' may encode a metaphor more or less explicitly. They found that the three cultural groups appear very similar in their preference for certain types of visual metaphors; however, subtle differences in interpretation across the three groups were detected, although these did not correspond to the division of the groups of informants as belonging to a high or low context culture. According to Hall and Hall's (1990) classification of low and high context cultures, the interpretations of the Spanish and French informants should have borne a similarity to each other, as their communication has been claimed to rely on a specific situational context for interpretation, while the Dutch informants' interpretations would be different, as members of this low context culture would be more dependent on clear and explicit articulation of an idea in order to interpret it successfully. These results did not obtain, however, suggesting that further cross-cultural research of this type would be very valuable for understanding the relationship between metaphor and culture.

Researchers may confuse the effects of language knowledge with the effects of the shared cultural beliefs and values of different communities that are expressed through linguistic metaphors, and yet knowledge of one's own language is very important when interpreting metaphors, as the study reported in Chapter 9 by **Masumi Azuma** shows. In her contribution, "English native speakers' interpretations of culture-bound Japanese figurative expressions", Azuma examines the way native speakers of English interpret culture-bound figurative expressions when they are translated literally from Japanese, pointing to some of the different factors that influence the way they may be interpreted by NNS of Japanese. A particularly interesting finding that emerges from this research is that the interpretation of familiar and unfamiliar metaphorical language uses relies heavily on knowledge of the mother tongue (a finding in line with Johansson Falck's), for the participants in this study came from different parts of the

English-speaking world (the U.S., Britain, and Australia) and yet interpreted the Japanese metaphorical expressions in very similar ways, despite differences in their social or cultural background.

The distance that separates the speakers of English and Japanese that took part in Azuma's study is not just geographical. The two languages are typologically different, and the cultural traditions of each have developed independently of each other. This is not the case of the situation considered in Chapter 10, "The limits of comprehension in cross-cultural metaphor: Networking in drugs terminology", by **Richard Trim**, where a comparison is made across different European languages. The common cultural heritage of Europeans is evident in many of the metaphors shared by speakers of different Western European languages, inherited, for example, from such influential texts as the Bible or Æsop's fables. However, the various languages spoken in Europe also display culture-specific metaphorical language uses. In the last chapter in this section, Trim explores the linguistic and conceptual features of metaphors that may make them more or less transparent to non-native speakers of a language in a European context, focusing on metaphors used to talk about drugs in English, German, French, and Italian. The author finds that various factors cause the metaphors used to talk about the same topic to converge or diverge. These factors may contribute to making some metaphors reasonably transparent for speakers of other standard European languages, while other metaphors will be more difficult to understand. For example, shared conceptualizations give rise to similar – and hence reasonably transparent – metaphorical language uses across Europe, although they may not be realized or used in exactly the same way in each language. In contrast, individual languages may recruit metaphorical expressions from other discourse contexts to extend the range of metaphors used to talk about a topic like this. That is, the emergence of unfamiliar – and possibly opaque – metaphorical language uses may be influenced by the entrenched metaphorical meanings associated with certain linguistic forms used in talk about other topics in that particular language.

2.4   Part 4: Metaphor, topic, and discourse

Part 4 contains two chapters that further explore the importance of topic and context in cross-cultural metaphor research. In Chapter 11, "Conceptual types of terminological metaphors in marine biology: An English-Spanish contrastive analysis from an experientialist perspective", **José Manuel Ureña** examines metaphors in the field of marine biology from a cross-linguistic perspective, analysing terms in Spanish and English for designating different kinds of sea creatures. This metaphor-driven cross-linguistic analysis reveals that multiple correspondence metaphors give rise to virtually identical metaphorical names in both languages, while metaphors based on resemblance in shape (or image metaphors) tend to be subject to greater variation and are, the author suggests, more susceptible to cultural influence.

In Chapter 12, "Gestures, language, and what they reveal about thought: A music teacher's use of metaphor in Taiwan", **Ya-Chin Chuang** explores the metaphors used for explaining music in a secondary school classroom in Taiwan. The close analysis of a single class session allows Chuang to examine the interaction of metaphor realized in language and in gesture and to relate these to the different phases of the class and the different functions they fulfil, finding that, although overall the gestures used by the teacher showed a tendency to cluster at different points, this clustering was not a feature of the metaphorically-used gestures. In line with earlier findings (e.g. Cienki 1998 or Cienki and Müller 2008), Chuang's study shows that a metaphorical gesture can express the same metaphorical idea expressed in language at the same time in the on-going talk or a different one. Likewise, a gesture can express a metaphorical idea that is not accompanied by a corresponding metaphorical use of language uttered at the same time. Chuang even found instances of metaphorical mappings expressed by gesture that are never instantiated in linguistic form in Mandarin Chinese. This study thus replicates earlier work focusing on gesture that has been able to locate metaphor in thought, and – perhaps most importantly – provides evidence that this is not a consequence of any ethnocentric bias on the part of previous researchers, and that the phenomenon is not restricted to Indo-European languages, for the language used in this classroom is typologically different from those that have been the focus of attention when examining the relations between metaphor in speech and gesture. Chuang describes how MIP (Pragglejaz Group 2007) was applied to Mandarin Chinese, discussing the issues raised by this methodological decision, and also discusses the problems associated with accurately identifying metaphorical gestures. This chapter thus illustrates the importance of finding robust and replicable methods for identifying metaphors in discourse, whatever the language or the mode in which they are expressed.

2.5   Part 5: Metaphor and culture

Although many of the preceding chapters have touched obliquely on the relationship between metaphor and culture, a fuller exploration of this relationship and its manifestation in language is offered by the chapters in Part 5. In Chapter 13, "Armed with *patience*, *suffering* an emotion: The conceptualization of LIFE, MORALITY, and EMOTION in Turkish", **Yeşim Aksan** and **Mustafa Aksan** describe in detail the cultural models expressed by the Turkish lexemes *çile* (very roughly, English 'suffering') and *sabir* (very roughly, English 'patience'), tracing the root of these culturally salient concepts to centuries-old religious practice and values (*çile*, for example, referred to the institutionalized practice of Sufi ascetics of observing a 40-day period of fasting). These words, and the specific concepts they express, metaphorically extend their meaning to other realms of experience (life, morality, and emotion), and both constitute and reflect the cultural beliefs of speakers of Turkish. The linguistic evidence provided shows that the cultural models of *çile* and *sabir* underlie contemporary speakers' beliefs about morality, emotion, and, in general, how life should be lived, and testify to the stability

of a metaphorical idea across centuries in a particular language-speaking community. In contrast, although in Chapter 14 – "Trolls" – **Christina Alm-Arvius** finds that the Scandinavian cultural complex *troll* has likewise survived the passage of time, and indeed changes in ideology (for speakers of Swedish no longer believe that *trolls* really exist), metaphorical uses of *troll* in contemporary language uses reveal contradictory senses and evaluations. The primarily negative evaluations of both conventional and novel metaphors with *troll* are employed side by side with others with positive connotations, such as when they are used as terms of endearment or to refer to a child. Nevertheless, Alm-Arvius finds that all instances of *troll* metaphors are attitudinally coloured in Swedish, a feature that is lost when the term is adopted by another language such as English.

As can be seen in the studies offered in these two chapters, language – and in particular, metaphorical language – may preserve the enduring cultural values of a language-speaking community and prove a prime vehicle for propagating them (Sperber 1996, Tomasello 1999). However, language must also provide the means for the expression of new ideas and relations. In his chapter "A computational exploration of creative similes", **Tony Veale** considers what linguistic signals are necessary for the identification and interpretation of creative *as ... as* similes in English. Using a large corpus of this type of simile in contemporary English, he describes how the word 'about' or the length of the metaphorical vehicle may function as scaffolding structures used by speakers and writers in English to alert listeners and readers to the humorous or ironic intent of a metaphorical simile. In this regard, Veale's study proves an important complement to earlier chapters in this volume (Chapters 2 and 7, in particular) by showing how a computational approach to similes in English can supplement more qualitative approaches, and further add to our knowledge of their pragmatic function in discourse.

2.6   Part 6: Afterword and prospects for future research

The final chapter, "Metaphors, snowflakes, and termite nests: How nature creates such beautiful things", by **Raymond W. Gibbs, Jr.**, provides an afterword to the various strands explored in the different chapters. The complexity and variety of metaphor as used and interpreted in context can best be understood, he argues, if we regard this phenomenon as one type of complex dynamic or self-organizing system. The focus of Gibbs' chapter is on the role of multiple attractors, the hierarchy of time-scales, and the dynamics of processing, global emergence, and top-down causality in self-organizational processes of metaphor use. His approach is thus very much in line with other theories of complexity emerging from the natural sciences (e.g. Holland 1995, 1998) that are having a profound effect on the social sciences and arts. For example, a major paradigm shift seems well under way in second language acquisition research in accordance with complex dynamical systems theory (e.g. de Bot et al. 2007, Larsen-Freeman 2006, The Five Graces Group 2009). Moreover, the value of this

perspective has also been advocated by Cameron and her colleagues in relation to researching metaphor in discourse (Cameron et al. 2009).

Although none of the contributors to the volume would necessarily espouse the views put forward by Gibbs, his analysis nevertheless sheds light on many of seemingly intractable problems in metaphor research and the on-going debates about it – particularly on the disagreements among psycholinguists about the status of conceptual mappings in people's minds and how they may or may not be activated in online processing. In this regard, this important chapter sets an agenda for future research and offers a glimpse of exciting new ways of approaching many of the complex, variable, and sometimes troublesome facets of metaphor as used in communication between human beings.

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PART 1

Contexts of research

An assessment of metaphor retrieval methods*

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This chapter offers a quantitative assessment of different techniques and tools for retrieving metaphors from large electronic corpora. These are (i) reading parts of a larger corpus in order to find candidates that are then sought for in the whole corpus; (ii) searching for metaphors using different search terms; (iii) looking for metaphor clusters; (iv) finding metaphor candidates through keywords; (v) finding metaphor candidates through the Metaphor Candidate Identifier; and (vi) finding metaphor candidates by computing semantic relatedness between neighbouring words.

Keywords: automatic retrieval, corpora, metaphor identification, procedures, tools

1. Introduction

Metaphor identification is a vast field that encompasses a large array of procedures, techniques, and tools. It involves at least two distinct phases: retrieval and analysis. During retrieval, occurrences of potentially metaphorical strings are extracted from the corpus and stored, and during analysis, these occurrences are actually evaluated in terms of whether they are cases of metaphor or not. Hence, when researchers refer to identifying metaphors, they normally mean determining which textual units (usually words) are metaphors and which are not, and not simply finding candidates, or possible metaphors. In this chapter, the focus is on the retrieval part of metaphor identification.

We can further break down retrieval procedures into two basic groups: sampling techniques and census techniques. Sampling is "the selection of a fraction of the total

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number of units of interest to decision makers for the ultimate purpose of being able to draw general conclusions about the entire body of units" (Parasuraman et al. 2004: 333). A sampling technique for corpus-based metaphor research would then involve selecting a pool of units (normally word types or lemmas) to represent the totality of words in the corpus. Census techniques, on the other hand, are those in which "every population unit is examined" (Parasuraman et al. 2004: 359), and therefore in metaphor research this would ultimately mean that researchers would have to analyse each token in the corpus.

Sampling techniques are more common in corpus-based metaphor research than census ones, probably because of the fact that current electronic corpora are normally too large to analyse unit by unit (e.g. word by word). Examples of sampling techniques include determining search strings ahead of time, using a corpus to determine a pool of strings, choosing keywords or words with marked frequency, choosing words associated with a particular semantic field via automatic semantic tagging, focusing on metaphor clusters or words near a previously-identified metaphor, obtaining a list of candidates through specialized metaphor detecting software, and selecting words based on semantic distance, among others.

Census techniques include the Metaphor Identification Procedure (MIP) (Pragglejaz Group 2007), its variant MIPVU (referring to Vrije University, where it was developed) (Steen et al. 2010), and Metaphor Identification through Vehicle Terms (MIV) (Cameron and Maslen 2010). Each of these encompasses a number of specific steps for metaphor identification, which are detailed in their respective publications. These are not reviewed here, as they are not relevant to sampling and accuracy issues, which are the focus of this chapter.

The promise offered by machine identification of metaphor is that computers will take a census of the metaphor population in a corpus and present researchers with only and all of the metaphors in the corpus. In this way, the burden of analysing each word token is lifted off the researchers' shoulders, and the whole issue of sampling adequacy is gone, since the output would be the actual set of metaphorically used units in the data. However, machines do make mistakes – even part-of-speech tagging inevitably incurs error, even though assigning parts of speech is far more straightforward than spotting metaphor uses. Consequently what metaphor retrieval software can do in reality is to provide a sample of the data that will hopefully be as comprehensive and precise as possible, containing most of the metaphors and few non-metaphors. Therefore the issue of sampling adequacy remains.

The focus in this chapter is on sampling techniques because error is inherent in all of them. Just as all words in a corpus are not metaphorically used, all words in a sample are not metaphors either. Ideally, in a sample, only metaphors and all the metaphors in the source corpus will be included. In reality, though, error is introduced in samples, and so a larger proportion of non-metaphors may be included as a result of sampling error. The question is then: how reliable are samples obtained by different techniques? In this chapter a partial answer will be provided by comparing different sampling

techniques with respect to how accurate they are in terms of offering good samples (i.e. with minimal error) for researchers.

Unlike sampling techniques, with census techniques a question that arises is how reliable the identification is, that is, whether the steps were correctly followed by all coders involved. In census projects, usually more than one person is responsible for doing the coding, and in order for the coding to be reliable, there must be a high degree of agreement among coders (see Dorst and Kaal, this volume; Chapetón -Castro and Verdaguer-Clavera, this volume).

As can be seen, the methodological issues surrounding sampling and census techniques are markedly different. Because census techniques involve questions related to coder agreement and not sample adequacy, they are not examined here.

Pre-defining a search string or pool of string is perhaps the most frequently used sampling technique in corpus-based metaphor research. It consists in determining ahead of time one or more search strings based on particular research goals. A number of different researchers have applied this technique. For instance, Deignan (2005) chose words such as 'hunt' (8) and 'warm' (68), and expressions like 'hot under the collar' (21) and 'in the running' (28), and then searched for them in a large corpus (Bank of English). Her choice of each of these terms was motivated by theoretical considerations, including the link between linguistic and conceptual metaphor, the relationship between metaphor and metonymy, patterning of linguistic metaphor, and frequency of metaphor compared to literal senses.

Stefanowitsch (2006) also defined a set of words to focus on, independent of the corpus to be analysed, with the primary purpose of detailing the procedure known as Metaphor Pattern Analysis (MPA), which is aimed at finding metaphorical expressions in corpora. A metaphorical pattern was defined as "a multi-word expression from a given source domain (SD) into which one of more specific lexical items from a given target domain (TD) have been inserted" (66), and lexical items included content words (nouns, verbs, adjectives, adverbs). In Stefanowitsch (2006), MPA was used to identify metaphorical conceptualizations of emotions, such as anger, happiness and sadness. It involved the following steps. First, a target domain, for example, anger, was selected based on the previous literature on metaphors and emotions. Second, a lexical item was chosen to represent that domain, for instance 'angry'. Third, a corpus (the British National Corpus [BNC]) was searched for that lexical item and a sample of up to 1,000 concordance lines was retrieved. Fourth, these lines were analysed by hand to determine whether each occurrence was a metaphor or not, and if so, what conceptual metaphor motivated it; a metaphor was counted when the chosen lexical item and other lexical items nearby expressed a source-target domain mapping, for example, 'angry' and 'boiling' were considered to express the conceptual metaphor ANGER IS HOT FLUID IN A CONTAINER. MPA and introspection were compared as to their ability to find metaphorical mappings. Results showed that MPA found well over 90% of the mappings identified by introspection, and that it also spotted mappings that were not arrived at introspectively.

In terms of the techniques involved, MPA is a concordance-based procedure that relies on the choice of appropriate candidates: ("choose the lexical items wisely" [Stefanowitsch 2006: 66]), which in turn depends on the selection of particular domains that are of interest to a researcher. Hence, it is not suited for the analysis of a whole corpus, because it would mean having to analyse each word in the corpus, and therefore was not included for testing here. It must be said, though, that the idea of metaphorical patterns can be used to automate metaphor retrieval in corpora, according to Stefanowitsch (2006: 102–103):

> [W]e might even envision a lexical database containing a large number of lexical items and the metaphorical patterns they occur with (analogous to the FrameNet project at the UC Berkeley), which would allow easy retrieval of all metaphors associated with a particular lexical item (or semantic field) and vice versa.

In fact, such databases were used by the Metaphor Candidate Identifier (MCI), the metaphor detecting tool reviewed in Section 7.

In both of these techniques, the set of strings to be searched for was defined in top-down mode, that is, the selection arose from theoretical or methodological concerns. Some researchers, though, have used bottom-up approaches as means for determining which words to investigate.

One such procedure is that developed by Cameron and Deignan (2003). These researchers point out problems with both small and large corpora. With small corpora, the main issue is a lack of generalizability: "the frequency and metaphorical use of a particular word form is inevitably influenced by the collection of data from a limited number of discourse events" (Cameron and Deignan 2003: 151). And with large corpora, there are two main problems, the first being a lack of information about the context, which may make at least some of the data difficult to interpret, and the second, the very issue being discussed in this chapter:

> [A] problem in searching large corpora is that patterns may be missed, because the researcher usually begins by searching for particular linguistic forms. If he or she has not identified a particular form as worthy of study, it may not emerge from the data during the analysis, and an important metaphorical use may be missed. This reflects a fundamental difficulty in researching linguistic metaphors through a corpus: We are trying to trace patterns of meaning but can only begin our analysis by looking at forms. (Cameron and Deignan 2003: 151)

Their goal was to find "tuning devices" ('just', 'sort of', 'actually', etc.), or words and expressions normally referred to as hedges or vague language, and to look at how they were used in conjunction with metaphor. In order to find a good sample of tuning devices to search for in the large corpus, without predicting them by either introspection or examples from the previous literature, they decided to read a small corpus (28,285 words) and note down any relevant search terms. These were then searched for in the large corpus (9 million words of the Bank of English), which contributed further

information about frequency and patterning that illuminated several aspects of the use of tuning devices in English.

Charteris-Black (2004) identified metaphors in a number of different corpora with the aim of developing Critical Metaphor Analysis, an approach that "supplements the cognitive semantic view by accounting for particular metaphor choices in different types of discourse leading to a discourse model of metaphor" (243). Like Cameron and Deignan (2003), search terms were not chosen ahead of the actual corpus analysis, but, unlike them, he did not use a different corpus as source. Instead, search words were chosen through "extensive reading" (117, 178), that is, by reading a number of texts in the corpus and selecting any relevant terms that were then searched for across the same corpus.

In her analysis of metaphors in business media discourse, Koller (2004: 48) defined search terms by combining a number of sources, including her previous knowledge of the field, reading some texts in the corpus, and looking up thesauri and glossaries as means to corroborate the relevance of the terms to the field of business.

A further technique involves sampling based on word frequency. This can be put in place by simply choosing from the most frequent words in the corpus, or by choosing from words with marked frequency, or keywords. Keywords are words whose relative frequency is statistically higher in the corpus in comparison with a reference corpus, and software programmes such as WordSmith Tools and WMatrix calculate these (see Philip, this volume). Notice that in both these cases, sampling is initially carried out by machine, and subsequently by hand and eye, as the researchers pick some of the words out of the computer generated lists. Deignan and Semino (2010) used both methods as entry points into a corpus of speeches by former British Prime Minister Tony Blair. They examined the most frequent words in the corpus and then chose some that were "potentially of interest" (165), such as 'back', 'forward', and 'cuts'. They then perused the keyword listing and noticed some overlap with the word frequency list, but they also spotted less frequent keywords such as 'backward', 'delivered', and 'fight' that seemed worth investigating for metaphor.

Semantic tagging is another sampling technique used in the literature. It consists in using specialized software that adds a code (a tag) to each word in the corpus that identifies the semantic field to which each word belongs. After that, researchers select one or more particular semantic field(s) and retrieve all occurrences of words tagged for that semantic field. One advantage of this technique over string based sampling is that with semantic tagging a pool of different words related by a common sense field can be automatically identified. This technique has been used by Deignan and Semino (2010) in the analysis of the Blair speech corpus, and it was put in place through WMatrix, which incorporates USAS, a semantic tagger developed by Rayson (2008). Their analysis revealed a number of semantic fields that seemed worthy of closer investigation, like "Movement, location, travel and transport" (176). This field was immediately noticeable given its frequency and incongruence with the general topic of the speeches, which is politics and not movement. Several semantically related words were

part of this field, including 'route', 'journey', and 'gone', which were then searched for and analysed for metaphor.

2.   Metaphor retrieval procedures examined in this chapter

There has been growing interest in using corpora in metaphor research in recent years, and as a result a number of tools and techniques have been proposed and used for metaphor identification. However, very little is known about their ability to retrieve all and only metaphors from corpora. The aim of this chapter is to report on a quantitative assessment of methods for metaphor retrieval. Out of the many different techniques and instruments reported in the literature on metaphor, corpus linguistics and Natural Language Processing, three procedures and three computer tools have been selected for assessment.

The procedures are: (i) reading parts of a larger corpus in order to find candidates that are then sought for in the whole corpus through a concordancer; (ii) searching for metaphors using different search terms, such as single words, collocates and lexical bundles; and (iii) looking for metaphor clusters. The second item requires a concordancer, which is a computer tool, but it was classified as a procedure because the point of the section is not to discuss concordancing *per se*, but the effect of different search term types (used not only with concordancers, such as grep[1], but also with tools) on metaphor retrieval. Just as with the first procedure, a computer tool of some sort is assumed, but the tool itself is not the focus.

The three computer tools are: (i) finding metaphor candidates through keywords, or words whose frequencies are statistically higher in a corpus than in a comparable reference corpus; (ii) finding metaphor candidates through the Metaphor Candidate Identifier, an online tool that looks for metaphorically used words by matching single words and patterns drawn from hand-coded training data; and (iii) finding metaphor candidates by computing semantic relatedness, more specifically, by computing a measure of the difference in meaning between neighbouring words. These tools were chosen because they are free and publicly available[2]. Another tool that has been used in the literature for choosing metaphor candidates is WMatrix (Rayson 2008), but it requires a paid subscription (even though a free password for research purposes can be obtained for a limited period of time), and that is why it was not included in this assessment.

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1.   Grep is a command line utility that enables users to search text material. It is widely available on Unix, Linux, and Mac systems.

2.   WordSmith Tools 3.0 is free from Mike Scott's website at www.lexically.net; AntConc is freely available on Laurence Anthony's webside at http://www.antlab.sci.waseda.ac.jp/software. html; the MCI is a free online tool at www2.lael.pucsp.br and www.corpuslg.org/tools; and semantic relatedness is implemented in the free Perl package WordNet::Similarity, available at http://wn-similarity.sourceforge.net.

Other tools such as Cormet (Mason 2004) and TroFi (Birke 2005), which are reported in the Natural Language Processing literature, are not available for installation.

The order of presentation of procedures is from most to least conventional, with partial corpus reading as arguably the most traditional technique, and clustering as the most experimental. For computer tools, the order of presentation is from least to most demanding of computer and programming skills. Keywords is the least demanding because it is implemented in relatively easy to use, point-and-click programmes with graphic interfaces (such as WordSmith Tools and AntConc). The MCI is much simpler to get started with than either WordSmith Tools or AntConc, but it is more challenging because it requires some understanding of how it operates "under the hood" in order for researchers to make sense of its output. And WordNet::Similarity is undoubtedly the most difficult tool to install and operate, as it has no graphic interface and requires programming skills and familiarity with command line interfaces.

Most methods tested here are bottom-up, because they are meant to mine corpora for metaphor candidates, rather than seeking predefined candidates. The exception comes under our assessment of search terms for concordancing, which presupposes that a set of candidates has already been determined, and therefore may be a case of top-down methodology. As regards the corpus-driven/corpus-based dichotomy (Tognini-Bonelli 2001), these methods can be either, because researchers may use them to test particular theories of metaphor, in which case they may be classed as corpus-based, or they may be used to explore how metaphors present themselves lexically in corpora, in which case they may be seen as corpus-driven.

It must be stressed that this assessment is not a final evaluation, since performance of any one of these methods may be altered by different test corpora.

The data used here were:

–   Conference Call Corpus: A corpus of conference calls, or meetings held over the phone, between investment banks, shareholders, and the press, in Brazil, in Portuguese. It contains 14 different conference calls, 82,881 tokens, and was fully annotated for metaphor by hand. It is a slightly modified version of the corpus used in Berber Sardinha (2008). It was selected because it was the only metaphor annotated corpus available at the time of writing. Recently, the English MIPVU corpus has been made available, containing excerpts from the BNC Baby that were fully coded for metaphor by hand. The Conference Call corpus was used to examine the following procedures: reading portions of the corpus, search term choice, clustering, and keywords.
–   MCI test corpus. An English corpus containing five texts and 1,313 tokens, all hand-coded for metaphor, used to test the Metaphor Candidate Identifier. More details in Table 9.
–   BNC Concordance. A set of 7,524 concordance lines drawn from the BNC and hand-coded for metaphor used to test the semantic relatedness procedure.

Metaphors were identified in the data broadly following the Metaphor Identification Procedure (MIP) (Pragglejaz Group 2007):

1. The whole corpus was read to gather an understanding of the topics covered in the texts.
2. For each word in the text, both its contextual and basic meanings were established.
3. If the word had a more basic current-contemporary meaning, a decision was made as to whether the basic meaning contrasted with and contributed to the meaning of the word in the text.
4. If it did, then the word was marked as metaphorical; if not, then it was not.

The most important differences between the identification procedure applied to the data in this study and that proposed by MIP were:

–   MIP recommends that the texts be segmented in terms of lexical units, and that decisions be made in each case as to whether a word should be analysed on its own or as part of a larger lexical unit. In this study, segmentation was at word level, and so metaphor coding was done word by word. A word was defined as a string of at least one letter surrounded by regular delimiters such as blank spaces, line endings, and punctuation marks.
–   MIP suggests a corpus-based dictionary and an etymological dictionary be used to aid "researchers' intuitions about any difficult cases" (17). In the case study presented in the Pragglejaz Group article (2007), out of 28 lexical units, four were looked up in dictionaries (representing 14% of the total units, or 1 every 7 units), which can be rather time-consuming with larger datasets. In the data analysis reported here, no dictionary was consulted, and both basic and contextual meanings were determined by the researcher using his own background knowledge.

The following sections focus on the techniques and tools examined.

3.   Reading portions of the corpus for candidates

As has been said, one technique commonly employed by metaphor researchers is to read a sample of the corpus texts, noting down any metaphors encountered and then searching the corpus for these. There are a number of questions raised by this method, motivated by the concern that there might be a substantial number of metaphors left undetected in the corpus because they did not occur in the sample that was read. The main questions seem to be then of whether one can retrieve the totality of metaphors from the corpus by reading just a portion of it, and if not, what is the proportion of metaphors retrieved, and whether this proportion rises as the amount of text read increases.

The corpus used was the conference call corpus. In order to put this technique to the test, different size samples were experimented with. For sample size 1, the

texts in the sample were each an individual text (1, 2, 3, etc. up to 14). From then on, each sample size was made up of all possible text combinations for that particular sample size. Therefore, for sample size 2, the texts were pairs of individual texts (1 and 2, 2 and 3, 3 and 4, etc. up to 13 and 14). For sample size 3, the texts were triplets (1, 2, 3; 2, 3, 4; 3, 4, 5; etc.). And so on, until sample size 13, in which case the texts in the sample were a group of 13 texts (1 through 13, 2 through 14, 3 through 14 plus text 1, 4 through 14 plus texts 1 and 2, etc.). These combinations were used in order to prevent bias, which might occur if particular texts were read that had far more metaphor cases than the others. In this way, all texts are considered for reading.

For each of these situations, recall was computed. In this investigation, recall is the number of metaphor types in the corpus retrieved by reading any one sample size. It was computed by dividing the number of metaphor types found in a text portion by the total number of metaphor types found in the corpus (multiplied by 100). By metaphor type is meant a unique instance of a metaphorically used word; subsequent appearances of the same metaphorically used word were not computed. The higher the recall, the more metaphors were retrieved by reading a particular portion of the corpus. Afterward, the average recall was calculated for the whole sample size. To illustrate, Table 1 shows the figures for text portion 1.

Table 2 shows, for each size sample, the average recall, recall increase and the ratio of recall to sample size (as a percentage). This ratio is a basic measure of effectiveness: the higher the number, the more effective the sample is, in the sense that more

Table 1. Recall for text 1

Texts in sample	Metaphors retrieved (A)	Metaphors in corpus (B)	Recall (A/B * 100)
1	123	414	29.7%
2	95	414	22.9%
3	106	414	25.6%
4	134	414	32.4%
5	74	414	17.9%
6	125	414	30.2%
7	95	414	22.9%
8	106	414	25.6%
9	43	414	10.4%
10	105	414	25.4%
11	132	414	31.9%
12	109	414	26.3%
13	64	414	15.5%
14	105	414	25.4%
Average recall for sample size 1			24.4%

Table 2. Recall for reading portions of corpus

Sample size	Average recall	Average increase	Recall/sample size
1 (7%)	24.4%	–	3.4
2 (14%)	37.8%	13.3%	2.6
3 (21%)	47.4%	9.7%	2.2
4 (29%)	55.2%	7.7%	1.9
5 (36%)	61.6%	6.4%	1.7
6 (43%)	67.3%	5.7%	1.6
7 (50%)	72.4%	5.1%	1.4
8 (57%)	77.2%	4.8%	1.4
9 (64%)	81.7%	4.5%	1.3
10 (71%)	85.8%	4.1%	1.2
11 (79%)	89.7%	3.9%	1.1
12 (86%)	93.3%	3.7%	1.1
13 (93%)	96.7%	3.4%	1.0
14 (100%)	100%	0%	1.0

metaphors will have been retrieved with less reading input. On the other hand, if the ratio is low (the minimum is 1), then more effort will have been spent by going through a large reading sample to find metaphors.

These figures show that recall increases as more texts are added to the reading sample, but the increase is not steady: the effect of adding more texts to a smaller sample is more striking than adding to a larger sample. If recall increased at a steady rate, it would increase by 7.1% with each portion (since 100/14 = 7.1). The point of diminishing returns for recall is where the expected average increase drops below 7.1%, which is at sample size 5. This is also the point at which more than half of all the metaphors will have been found. This suggests that a corpus portion consisting of four texts (or 29% of the whole corpus) would be the optimal sample size, beyond which the rate of finding new metaphors would perhaps not justify the effort involved in reading more texts. The effectiveness of the technique, as measured by the ratio recall/ sample size decreases as samples get larger. Effectiveness seems to have been undercut after sample size 3, or 21% of the whole corpus, since up to that point the ratio of metaphor retrieval was over 2, meaning twice as many metaphors were found than text material was read.

However, these figures show that there are new metaphors in each text, no matter how big a reading sample is. Even a reading sample consisting of all texts but one (13) does not yield all of the metaphors in the corpus.

On the whole, these results indicate that reading a few texts of the corpus for candidates is an effective sampling technique, which enables researchers to retrieve a large portion of the metaphors present across the whole corpus. Reading just 7% (1 text) of

the corpus retrieves about a quarter of the metaphors. The majority of the metaphors are found by reading 29% (4 texts) of the corpus.

Again, this conclusion is based on the rationale that researchers will not read an entire corpus in the first place, and that they give some consideration to the amount of text that they will read. The practical advice drawn from these results would then be that researchers should strive to read all of the texts in their corpus, but if that is not possible (as is often the case with electronic corpora), then they should read at least about 30% of them.

4.   Concordancing: Search term choice

Techniques such as the previous one generally presuppose researchers will depend on a concordancer in order to search for the candidates noted during reading. But there are different kinds of search terms that can be used, such as single words, multiple word sequences, and word plus a collocate, to mention a few. The question then arises as to whether different kinds of search words are more reliable than others in retrieving metaphors. In this section, answers to this question will be pursued, but this experiment rests on the assumption that researchers would have an attested set of search terms, obtained, for instance, by reading portions of the corpus. In other words, the results presented here do not apply to situations in which researchers make up a list of search terms by guesswork, intuition, or similar methods.

Different search term types have distinct advantages and disadvantages. Single words are an obviously easy search term to formulate, but they can be ambiguous and therefore retrieve instances of non-metaphor along with metaphors ('waste' would pick up both 'waste time', which is metaphorical, and 'waste money', which is not). Word sequences, on the other hand, can be trusted to retrieve more unambiguous cases of metaphor ('waste time', 'waste efforts', 'waste our lives', all of which are metaphorical uses of 'waste'), but they can be difficult to formulate, because the exact word sequences that appear in the corpus may be hard to predict. Node plus collocate searching may be seen as having an advantage over single word searching ('waste' followed by 'time' at two words to the right will probably not retrieve any cases of non-metaphor), but it also has the major drawback of predicting collocates. Given the problems associated with formulating both bundles and collocations, then it is likely that most researchers would prefer to search their corpora for single words anyway, at least at first, and then probably move on to bundles or collocations, when they have a better idea of the linguistic metaphors in the corpus. But the issue still remains of how reliable single words are as search terms. Less reliable search terms mean extra work for researchers, who will have to read and judge more cases, a situation which may be critical when dealing with large corpora yielding thousands of citations of particular search terms.

The main variable in this investigation is search term type, which is one of the following: single word, bundle, or collocation. For bundles, three subtypes were identified, depending on how many words are in the bundle: two words, three words, and four words. For collocations, the following subtypes were determined, depending on the position of the node: node + 5L (five words to the left of the node), node + 4L (four words to the left of the node), and so on up to node + 5R (five words to the right of the node). The position in which the metaphorically used word occurred did not matter. For bundles, the metaphorically used word(s) could be any of the words comprising the bundle. For collocation, the metaphorically used word(s) could be either the node or the collocate.

The question addressed in this section is how precise each of these search term types is when used to retrieve metaphors from the corpus. Precision was calculated by dividing the number of metaphors retrieved by the total number of instances retrieved (multiplied by 100). For instance, if a word retrieved 100 citations from the corpus, and 50 of those were metaphors, then precision would be 50% (50/100 * 100).

This investigation was carried out as follows. First, all instances of metaphor from one text in the corpus were retrieved and turned into single words, bundles (formed by sequences of two, three or four words) and collocations (node plus collocates at positions five, four, three, two and one words to the right and left of the node). These were not mutually exclusive: the same single word was part of a bundle and of a collocation, and collocations of the kind node + 1L and node + 1R were both two-word bundles. The decision to extract the search terms from the corpus itself and not to make up the search terms was taken because the intention was not to test our intuition but rather to test the retrieving power of real search terms. If we had made up a list of search terms, some of them might not match any metaphors in the corpus, thus interfering with the results. By drawing the search terms from the corpus, we ensured a level playing field for all search terms, making sure all of them could achieve 100% precision. Secondly, all of these instances were matched against all of their respective metaphor units (single words, bundles and collocations) in the corpus; each time a match was found, a hit was scored. If more than one metaphorically used word occurred in a bundle or collocation, then hits were scored accordingly (a bundle with two metaphorically words received two hits, etc.). Finally, all hits were computed and precision was calculated for each search term type.

Table 3 shows the results for precision for each search word type and subtype. The figures show the most precise search units are fixed word sequences, such as bundles and collocations formed by neighbouring collocates, which is not surprising, since fixed patterns normally express a specific meaning. They also show there was no difference among the subtypes of bundles, all of which were 100% precise, unlike collocations, which varied from 97.1% to 100%. The least precise search term type was the single word, as predicted, at 73.2%.

This study suggested a number of interesting findings. Firstly, single words were surprisingly precise, yielding only about one quarter of false positives (non-metaphors

Table 3. Precision for different search terms

Search term type	Precision
single word	73.2%
2-word bundle	100%
3-word bundle	100%
4-word bundle	100%
node + 5L	97.9%
node + 4L	97.3%
node + 3L	97.2%
node + 2L	97.7%
node + 1L	100%
node + 1R	100%
node + 2R	98.6%
node + 3R	98.0%
node + 4R	97.0%
node + 5R	97.1%

instead of metaphors). This is probably due to the fact that the Conference Call Corpus is highly controlled for genre (conference calls) and topic (investments), and so from a probabilistic standpoint, metaphorically used words are generally used to express that one sense only, in a particular phraseology (Berber Sardinha 2008; Philip, this volume). With genre, register and/or topic diversified corpora, this figure would probably be lower, as single words take on different meanings in different contexts, expressing a metaphorical use in one context and a non-metaphorical use in another. The practical advice that emerges from this is that starting with single words is probably a good working strategy for researchers. Later on, as they become acquainted with the phraseology of metaphors in the corpus, they may formulate more precise searches with either bundles or collocations. Secondly, bundle subtypes were equally precise, at 100%, which in practical terms means that with a corpus like this researchers do not need to worry about predicting long fixed word sequences to make precise searches, as a simple two-word sequence will retrieve metaphors only. This again may be a consequence of the tightly controlled vocabulary used in the corpus, and this is expected to change somewhat with diversified corpora. Overall, these results corroborate Deignan's (2005) findings that indicated that metaphorically used language tends to exhibit a tight phraseology, whereas non-metaphoric language is more freely combining. Finally, there was not much difference among collocate positions, all of which scored above 97%. One might have expected collocates to become less precise the further away they were from the node, but this was not corroborated here. The practical suggestion arising here is that with corpora like this, researchers should not restrict

searches to patterns formed with near collocates, since metaphor phraseology often stretches a long way away from the node.

5.   Clustering

Clustering is a property of metaphor distribution in texts, according to which metaphors are distributed unevenly within texts, in such a way that many form groups of metaphorical units occurring near each other. A number of studies have shown clustering as a feature of metaphor distribution. According to Cameron (2008), one of the reasons for clustering is topical, since developing a topic in discourse sometimes requires users to repeat metaphors that are being employed to express a particular topic. Another reason for clustering in speech has to do with the tendency for speakers to repeat, reformulate and pick up on each others' points, thus re-using groups of words within a short period of time. To my knowledge, clustering has not been employed so far as a technique for retrieving metaphors. However, it appears as though it could be, perhaps as an awareness raising tool for researchers to apply during metaphor coding. If researchers become aware of clustering, once they spot one case of metaphor in a text, for instance, they may decide to look more closely for other instances of metaphor nearby. The aim here is to assess clustering from a quantitative standpoint. A metaphor cluster is defined here simply as an occurrence of two metaphors within a variable stretch of text.

In order to explore clustering quantitatively, the starting point is to assume that there is a textual window around a metaphor where one can find other instances of metaphor, thus forming a cluster. The problem, of course, lies in determining the extent of that window. In this investigation we then look at the issue of finding an optimal window that would allow us to retrieve as many metaphors as possible from the corpus.

The first step was to determine a figure that represented the average distance between metaphors in the corpus. This average distance was calculated by dividing the number of word tokens (82,881) by the number of metaphor tokens (3,800), yielding 21.8, meaning that metaphors are on average about 22 words away from each other. This figure represents the expected distance between metaphors if they were distributed evenly across the corpus. Therefore, a criterion for clustering was set according to which the maximum window size would not exceed the average distance between metaphors across the corpus.

Next, the following window sizes were tested: 5, 10, 15 and 20 words, and recall was calculated for each window size. Recall was computed for each text by dividing the number of metaphor tokens occurring within the window by the total number of metaphor tokens in the text multiplied by 100. Finally, mean recall for each window size was computed by averaging out the individual recall figures for each text. To illustrate, Table 4 shows the results for window size = 5.

Table 4. Clustering retrieval for window size = 5

Text	Metaphor tokens within window	Metaphor tokens in text	Retrieval
1	106	395.0	26.84%
2	68	254.0	26.77%
3	65	274.0	23.72%
4	77	383.0	20.10%
5	27	210.0	12.86%
6	85	357.0	23.81%
7	59	285.0	20.70%
8	62	256.0	24.22%
9	12	75.0	16.00%
10	50	293.0	17.06%
11	63	289.0	21.80%
12	62	308.0	20.13%
13	28	133.0	21.05%
14	66	288.0	22.92%
Average			21.28%

Results indicate that with a window of size 5, an average 21% of the metaphors fall within a cluster. This was repeated with the other window sizes, and the results appear in Table 5.

Table 5 presents a couple of interesting findings. The first is that, as would be expected, recall rises as the window size expands. Wider windows pick up more metaphors, whereas narrower windows miss out on more metaphors. The second is that none of the window sizes returned recall rates near 100%; even a generous window size such as 20, which is near the average distribution (22), recall is only about 2/3 of all metaphors. With a window size this wide, there is not much point in looking for metaphors within clusters, as windows would be so large that there would be very few gaps between them, thus essentially forcing researchers to read the whole corpus.

The practical advice that could be gleaned from this would be to stick to narrow window sizes such 5 and 10, which, in corpora similar to ours, would help retrieve up to 40% of the metaphors. In addition, window sizes such as these normally fit

Table 5. Clustering recall

Window size	Average recall
5	21.28%
10	41.14%
15	55.83%
20	65.25%

within the length of most concordances. This may enable researchers to spot metaphors in the vicinity of node words on concordance lines.

6.   WordSmith Tools keywords

Keywords are words whose frequencies are statistically higher in a corpus in comparison to a reference corpus. Keywords is also the name of an application that is part of the corpus analysis package WordSmith Tools (Scott 1997) that extracts keywords automatically. Keywords can be extracted by a number of different tools besides WordSmith Tools, including AntConc, WMatrix, and the CEPRIL Keyword Tool (www2.lael.pucsp.br/corpora). Keywords have been used in metaphor research (Berber Sardinha 2009, Partington 2006, Philip 2008, this volume) for the general purpose of selecting candidates for close inspection.

As with the other techniques, there are questions surrounding the reliability of keywords as a means of metaphor retrieval, not least because little is known about the relationship between metaphor and marked lexical frequency, the guiding principle behind keywords. The specific goals here are to find out what proportion of metaphors can be retrieved through keyword extraction, and how precise this method is. These seem important issues surrounding keywords, even if metaphor researchers employ keywords for purposes other than retrieving the majority of metaphors from their corpora.

To investigate this issue, the following procedures were followed. First, the keywords were extracted in WordSmith Tools version 3, by comparing the word frequency of the corpus to that of the Banco do Português (version 1), a large register-diversified corpus of Brazilian Portuguese comprising over 230 million words of spoken and written language. The settings for keywords were as follows: max keywords 500,000, max p. value .05, keywords procedure log-likelihood. These settings enabled all keywords to be extracted, and not just the default 500. A total of 2,532 keywords were produced, including both positive and negative ones. Secondly, all metaphorically used words in the corpus were listed. Thirdly, positive keywords were separated from negative words. Positive keywords are the default keywords, that is, their frequency is marked in the main corpus; negative words are the reverse of these, in the sense that their frequencies are statistically higher in the reference corpus. Negative keywords, if available in a particular corpus, appear in red at the bottom of the screen in WordSmith Tools version 3. The keyword lists were split into samples that started with the top 100 keywords and were incremented by 100 keywords; samples were then 100, 200, 300, and so on up to 2,044 for the positive keywords and up to 488 for the negative ones. Finally, metaphorically used words were then matched against the keywords, the number of exact matches was recorded, and performance metrics were computed (precision and recall). Precision was calculated by dividing the total matches for a particular sample by the size of that sample; recall was computed by dividing the total matches for a particular

sample by the total metaphorically used words in the corpus (414). Results for positive keywords appear in Table 6.

As can be seen in Table 6, the best precision score was for the 600 keyword sample, which amounts to 29% of the keyword output. The best recall mark was for the whole list, with 42% of the total metaphors retrieved. Results for negative keywords appear in Table 7.

Table 6. Precision and recall for positive keywords

Sample	Matches	Precision	Recall
100	7	7%	2%
200	16	8%	4%
300	26	9%	6%
400	38	10%	9%
500 (default)	46	9%	11%
600	64	11%	15%
700	70	10%	17%
800	75	9%	18%
900	85	9%	21%
1000	88	9%	21%
1100	92	8%	22%
1200	103	9%	25%
1300	110	8%	27%
1400	119	9%	29%
1500	125	8%	30%
1600	129	8%	31%
1700	142	8%	34%
1800	147	8%	36%
1900	160	8%	39%
2000	170	9%	41%
Whole list (2044)	172	8%	42%

Table 7. Precision and recall for negative keywords

Sample	Matches	Precision	Recall
100	8	8%	2%
200	13	7%	3%
300	19	6%	5%
400	23	6%	6%
500	24	5%	6%
Whole list (588)	24	4%	6%

Table 8. Overall recall by keywords

Total metaphors retrieved	Whole list		Portion of list			
			Corresponding to highest precision		Default 500 keywords	
By positive keywords	172	42%	64	15%	46	11%
By negative keywords	24	6%	8	2%	–	–
Total	196	47%	72	17%	46	11%

Results indicate that the best precision score is for the top 100 negative keywords, at 8%, and the best recall is for the whole list, at 6%. Topmost negative keywords are those bearing the most marked frequencies, meaning they are the rarest words in the corpus. This suggests some metaphorically used words are unusual in the corpus.

Table 8 shows the overall recall achieved by the keywords procedure. The keywords procedure retrieved less than half of the metaphors, if we include both positive and negative keywords. About 53% of the metaphorically used words were not keywords at all, that is, their frequency was statistically similar in the comparison corpus. This suggests metaphorically used words are neither particularly frequent nor rare, otherwise they would have been keywords, positive or negative. The highest recall was reached with the whole list of keywords (including positive and negative), but it would be unusual for researchers to consider the full list of keywords in their analysis, not least because the list extracted here was obtained with the least stringent criteria possible for keyword extraction in WordSmith Tools. Normally, researchers use the default criteria, which produce a 500-keyword list, and for that list, recall was only 11%. Recall for the point on the list where precision was highest was slightly better at 15%, but in practice such a point is hard if not impossible to determine, given that researchers will not know which keywords are metaphorically used before running Keywords.

In conclusion, keywords do not seem to be a particularly effective retrieval technique, at least with the data used here. That does not mean, however, that selecting words with keyword status is not relevant for metaphor research. The fact that words have a marked frequency may be important in a number of ways, as pointed out in the literature, as keywords may signal important textual properties such as aboutness, style, and textual salience, among other attributes, all of which may be relevant to particular metaphor research projects. These findings pertain to metaphor retrieval only, and not to the relevance of keywords *per se*. One further point that we must remind ourselves of is that Keywords was not designed to retrieve metaphors, and therefore cannot be criticized for not doing particularly well at a job it was not intended to do.

7.   Metaphor Candidate Identifier

The Metaphor Candidate Identifier (MCI) is a computer programme developed by Berber Sardinha (2007), which aims specifically at retrieving metaphorically used words from corpora. It works by matching each word in a corpus, its patterns and its part of speech to a set of five metaphor databases, and then calculating the average probability of that word being metaphorically used. These databases were compiled from hand-coded concordances (the "training data"), where each node word was judged as metaphorical or not based on principles similar to those proposed in MIP (Pragglejaz Group 2007). Each database holds specific information about single words, 3-word bundles preceding and following each word, the immediate collocates to the left and right of the word (called 'framework'), and the part of speech assigned to that word by a tagger (Tree-Tagger). The output of the programme is an ordered list of candidate words, sorted by its probability of metaphorical use. The MCI is an online tool that is available in two versions, one for analysing Portuguese corpora and another for English corpora; both versions can be accessed for free on the web at the CEPRIL (Centre for Research, Resources and Information on Language, Sao Paulo Catholic University) website at www2.lael.pucsp.br.

To illustrate how the programme goes about identifying metaphor candidates, let's take the following sentence from the "Ozone" text in Cameron (2003: 168), where 'made' is a metaphorically used word:

(1)   But not all the energy made by the Sun is safe.

The MCI would check each word in that sentence, and for 'made', processing would be carried out in the following way:

–   made:
    –   Check single word database, which stores each word that was found to be metaphorically used in the training data, together with its probability of metaphor use. 'Made' is found on the database, with a probability of .6000. This value is grabbed and stored in the programme's memory. If this word were not on the database, this would mean it was never found in the previously hand-coded texts to be metaphorically used, either because it appeared in the training data in its basic sense or it never appeared at all in the texts. Either way, the programme would store the value of .00001 for it.
    –   Extract 3-word bundle preceding it: "all the energy"
    –   Check that bundle in the 'left bundle database', which stores all 3-word bundles that preceded each metaphorically used word in the training data, together with its probability of metaphor use. The bundle is not found there, and so the programme stores the value of .00001 for it.
    –   Extract 3-word bundle following it: 'by the Sun'

- Check the 'right bundle database', which stores all 3-word bundles that followed each metaphorically used word in the training data, together with its probability of metaphor use. The bundle is not found there either, and so the programme stores the value of .00001 for it.
- Extract the lexical framework around it: 'energy … by'
- Check the 'framework database', which stores such patterns occurring around each metaphorically used word in the training data, together with its probability of metaphor use. The framework is not found there either, and so the programme stores the value of .00001 for it.
- Assign a part of speech to it: verb
- Check the probability for verbs in the 'part of speech database', which stores the probability of each part of speech being metaphorically used in the training data. The probability for verbs is .2061.
- Average out these probabilities and assign this value to the word: .1612.

This score of .1612 is low, given that final scores can range from .0001 to 1[3]. But it is not the absolute score that matters, but its rank. As it turns out, this was the 7th highest ranking score for that particular text, and therefore it is likely that this word would have been considered for analysis.

In order to evaluate the performance of the MCI, I first looked for texts or corpora that had been previously coded for metaphor use, so that the analyses were independent and did not necessarily reflect my own, but at the time I found only two texts, both in Cameron (2003). This shortage of publicly available datasets highlights the difficulties involved in producing and testing programmes to detect metaphors, because it leaves it to developers to hand tag their own corpora.

In addition to these two texts, three others were added to the test sample, resulting in a five-text sample. After they were hand analysed, they were submitted one by one to the MCI, and finally the computer and the hand analyses were compared. The five texts were the following: (i) Atmosphere text: a text about the Earth's atmosphere, from a book on the ozone layer, included in Cameron (2003); (ii) Heart text: a text on the human heart, from a book on the human body, again included in Cameron (2003); (iii) Obama text: a news story on the US President Barack Obama's visit to the Middle East, published on *The Boston Globe*, accessed on Google News; (iv) Fed text: A news story on the efforts by the US Federal Reserve to end the recession, posted by Reuters, accessed on Google News; (v) Lobby text: A news story about left-wing lobbying

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3.   Averaging out probabilities is not the right way to determine the joint probability of words being metaphorically used given the individual probabilities determined by the program, hence the final score is not meant to be an accurate representation of its actual joint probability, but simply a figure that represents the average score obtained by a particular word. This score is needed for ranking the word in the program output, which is sorted in reverse order, with the highest scoring words on the top. In other words, the final score should not be interpreted as a true probability, but is simply a means for ranking the words in the output.

groups in Washington, DC, published by *The Washington Post*, accessed on Google News. The first two texts were chosen because they had already been analysed for metaphor in a major publication in the field. The other texts were picked at random to complete a 5-text sample. Table 9 displays the length of each text in (valid) word tokens and metaphorically used words. Figure 1 is a snippet of the MCI output for the heart text.

As said above, the MCI analysed all of the word types in each text, and therefore if an analyst were to check each word in its output, he/she would end up finding all of the metaphors in the text. But that is not the point of the MCI: the programme was conceived of as a tool for screening texts and bringing to sharp relief the most likely metaphorically used words, which appear at the top of the output; the further away from the top, the least likely it is a word will be a metaphor. Consequently, it is not wise to consider the whole output for each text, but just samples with the top *n* words in the output.

This was taken into consideration in this evaluation of the MCI. Recall was the number of correctly identified metaphorically used words in the output sample as a proportion of the total metaphors in the text, where "correct" means matching the human analysis. Precision, in turn, was measured by dividing the number of correctly identified metaphorically used words by the number of words in the output sample.

Table 9. MCI test corpus

Text	Tokens	Metaphorically used word types
Atmosphere	120	16
Heart	122	19
Obama	268	38
Fed	218	34
Court	585	74

#	Word	Score	Single	Left Bndl	Right Bndl	Framewk	Part of speech
000001	back	.2135	.8461	.0001	.0001	.0001	.2214
000002	body	.1943	.8000	.0001	.0001	.0001	.1713
000003	every	.1756	.5500	.0001	.0001	.0001	.3278
000004	with	.1747	.5500	.0001	.0001	.0001	.3235
000005	without	.1747	.5500	.0001	.0001	.0001	.3235
000006	years	.1743	.7000	.0001	.0001	.0001	.1713
000007	brought	.1675	.6315	.0001	.0001	.0001	.2061
000008	run	.1579	.5833	.0001	.0001	.0001	.2061
000009	strong	.1517	.5714	.0001	.0001	.0001	.1868
000010	long	.1483	.2820	.0001	.0001	.2727	.1868

Figure 1. Portion of MCI output

Table 10. Portion of MCI output

Output sample size	Candidate	Score	True metaphorically used word?
000001	back	.2135	Yes
000002	body	.1943	No
000003	every	.1756	No
000004	with	.1747	No
000005	without	.1747	No
000006	years	.1743	No
000007	brought	.1675	Yes

To illustrate, Table 10 is a portion of the output for the heart text, with an extra column indicating if the candidate is indeed a metaphorically used word.

Recall: In this text, there are 19 metaphorically used words. With output sample size = 1, the only candidate is 'back', which is correctly identified as metaphorically used. Hence, recall = 1/19 = 5.3%. With sample size = 2, there are two candidates, but only 1 is a true metaphor, and so recall is still 1/19 = 5.3%. Finally, with sample size = 7, recall is 2/19, or 10.5%.

Precision: With sample output = 1, only one candidate was offered by the programme, and this single candidate is a true metaphorically used word, hence precision = 1/1 = 100%. With sample output = 2, two candidates are provided, but only one is correct, therefore precision = ½ = 50%. Finally, with sample output = 7, 7 candidates were given, but only two were correct, hence precision = 2/7 = 28.6%.

The results for precision appear in Table 11. Results are presented for output sample sizes from 10 to 50 and for an output sample size that captured the majority of the metaphors in each text (identified as Recall > 50%).

The results indicate that precision varies considerably across texts, ranging from 12% to 78%. The text on which MCI performed best was the Obama text, the likely reason being that the vocabulary and phraseology of this text must be more

Table 11. MCI precision

Text	Output sample size					Recall > 50%
	10 candidates	20 candidates	30 candidates	40 candidates	50 candidates	
Atmosphere	14%	15%	17%	17%	12%	13%
Heart	29%	20%	20%	15%	12%	12%
Obama	78%	61%	52%	42%	36%	30%
Fed	43%	33%	30%	30%	27%	19%
Lobby	30%	30%	30%	26%	31%	16%
Average	*39%*	*32%*	*30%*	*26%*	*24%*	*18%*

similar to the training data. Performance also varies with output sample size, with bigger output sizes yielding generally lower precision values, and this is because with larger output samples there are more opportunities for the programme to suggest unsuccessful candidates, as there are more non-metaphors than metaphors in each text. Overall, the average precision of the MCI ranges from 18% to 39%.

The results for recall are shown in Table 12. The central columns in the table show what size output sample is required to achieve 25%, 50%, 75% and full recall of the metaphorically used words. Sample size is shown as the number of candidates provided in a portion of the MCI output (starting at the top of the output) and as a percentage of the full output length; for instance, for the Atmosphere text, 25% recall is achieved with 21 candidates, taken from the top of the list, and these 21 candidates represent 18% of the total output of 120 tokens.

As can be seen, recall figures vary according to text. As with precision, the Obama text is the one where the MCI did best; compared to the other texts, it is easier to retrieve a larger proportion of metaphors in this text than in the others. The explanation for this is the same as for precision, that is, this text must contain more of the single words and patterns that MCI has been trained to recognize. On average, in order to retrieve ¼ of all metaphors (25% recall), researchers would need to analyse the top 13% of the output list; in order to retrieve ½ of the metaphors (50% recall), they would have to look at three times as much output (39%); for 75% recall, 64% of the output must be considered, and for full recall, almost all of the output (96%). The best performance is for 25% recall, because analysts can achieve this with about half of that length of the output (13%); for higher recall, analysts must tackle longer portions of the output; full recall can generally only be achieved by analysing the whole output.

These figures suggest the MCI is only modestly reliable, with precision ranging from 13% to 39% on average, and 50% recall achieved by analysing about 39% of the list of metaphor candidates provided by the tool. These figures may seem disappointing,

Table 12. MCI recall

Text	Output sample needed to reach recall level, starting at the top of the output								Full output length in tokens
	25% recall		50% recall		75% recall		100% recall		
Atmosphere	21	18%	69	58%	77	64%	111	93%	120
Heart	33	27%	82	67%	108	89%	116	95%	122
Obama	17	6%	52	19%	150	56%	248	93%	268
Fed	30	14%	76	35%	150	69%	205	94%	218
Lobby	64	11%	236	40%	358	61%	579	99%	585
Average	*33*	*13%*	*103*	*39%*	*169*	*64%*	*252*	*96%*	*263*

but if we take into consideration the fact that human metaphor analysts also disagree a great deal among themselves, then they do not look so frustrating. Cameron (2003: 169) reports rater decisions for the Ozone text (the "atmosphere" text analysed here), which indicates that the 25 raters working on that text agreed all the time on just two of the 14 metaphors in the text (2/14 = 14%). Beigman et al. (2008) calculated inter-rater agreement across nine annotators, working on metaphor identification in 2,364 newspaper paragraphs, and found out that agreement was between 1.7% and 4%[4]. Such levels of disagreement can be lowered by having discussion sessions among raters, in which they discuss differences in coding and try to reach a consensus (Pragglejaz Group 2007). MCI precision, at 18% to 39%, exceeds these figures for human raters working on the same texts. It is probably unfair to compare results on such different tasks, but the point is that it is just as unrealistic to expect human analysts to be in full agreement in their judgement of metaphor, as it is unwise to expect machine identification of metaphor to be fully reliable.

8.   Semantic relatedness

Semantic relatedness means the degree of "closeness" in meaning between two or more words. For instance, 'elephant' and 'violin' may be considered "distant" in meaning because, among other reasons, one word refers to a large animal, the other to a small musical instrument; by contrast, 'cat' and 'dog' may be seen as "closer" in meaning, because both refer to animals that share several characteristics, among which the fact that they are mammals, furry, and are normally raised as pets.

Semantic relatedness has been explored as a metaphor identification tool by Berber Sardinha (2007), who suggested some metaphors could be spotted in corpora via a specific programme that would automatically assign a relatedness value for each word pair in the texts. The rationale was that word pairs formed by a metaphorically used word and a non-metaphorically used word would show low scores for relatedness, compared to other word pairs in the corpus. Such low relatedness scores would in turn be a reflection of incongruity, which underlies linguistic metaphor. As Cameron (2003: 9) explains:

> [T]he linguistic presence of metaphor is signalled by a lexical item that can have an interpretation that is incongruous with the discourse context, or with the meaning created by the co-text. [For example, in], "the atmosphere is a blanket of gases", the lexical item 'blanket' links to a different semantic field or conceptual domain from that intimated by (...) 'gases' (...). The lexical item 'blanket' is the focus of the metaphor, or the Vehicle term, and the rest of the phrase of sentence, against which it appears incongruous, is called the frame of the metaphor (Black 1979)

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4.   The paper does not provide information on the conditions under which the coding task was carried out, and so we do not know if annotators were trained in or familiar with metaphor identification, whether clear guidelines for metaphor identification were made available to them, or if they were allowed to discuss their coding with other raters.

Semantic relatedness can be implemented in many different ways, but the best known software for this is perhaps WordNet::Similarity (similarity.pl), developed by Patwardhan and Pedersen (2006), which is actually a Perl package that uses WordNet, a lexical database, to compute the semantic similarity between pairs of words. Word-Net is an electronic lexicographic database, containing thousands of words and their definitions hierarchically structured. The actual computation of semantic relatedness is carried out by a range of different methods, identified by acronyms such as lch (after Leacock and Chodorow, the proponents of one such method), resnik, lin, and lesk. Each method uses a different algorithm, but all of them are based on the idea that words are searched for on the WordNet lexical database, their positions are stored and compared, and a score is given to represent how close these positions are. Words that are semantically related tend to appear closer to each other in the WordNet hierarchy than words that are unrelated.

Since my aim with this technique was in a sense to try and reproduce human judgement during metaphor analysis, I decided to choose a relatedness measure that also approximated to human judgement in semantic relatedness tasks. Luckily, semantic relatedness measures have been tested empirically for their ability to match the judgements made by human raters evaluating relatedness between words. Seco et al. (2004) calculated the semantic relatedness for a list of noun pairs that had been rated by humans in Miller and Charles (1991), and found out that the measure that had the strongest correlation with the raters' judgements was Leacock and Chodorow (.82 correlation). Consequently, Leacock and Chodorow was selected as the measure for relatedness for this investigation. Interestingly, Resnik (1995) replicated Miller and Charles's experiment and found that his group of raters did not agree 100% with the previous one; rather they correlated at .89. Warin et al. (2005) consider this to be the upper-bound for a computer programmeme to achieve, meaning that the best we can realistically expect from software analysing the relatedness between words is that it match human analysts 89% of the time. This level was also taken to be the highest possible level for the metaphor identification trial carried out here.

Returning to the example above of 'blanket' and 'gases', I made up a test list of word pairs, consisting of this incongruous pair and of two more congruous pairs deriving from it, namely 'blanket' and 'bed', and 'gases' and 'oxygen', both consisting of words that are intuitively related. I then ran the list through similarity.pl with measure lch, and got the following results (decimals rounded off):

> blanket gases 1.5
> blanket bed 3.0
> gases oxygen 3.0

As can be seen, the incongruous pair received the lowest relatedness score, out of a maximum possible of 3.7.

Next, I ran a larger test on a set of 7,524 concordance lines from the BNC that I had previously hand-coded for metaphor, following the basic principles laid out in the

MIP (Pragglejaz Group 2007) and presented in Section 2. This set was built from a selection of search words taken from the 500 most frequent words in the BNC. Each concordance line node was coded as either metaphorically or non-metaphorically used. The aim here was to verify to what extent semantic relatedness would capture these metaphorical node words, and to do so I ran a Unix shell script through the corpus that did the following. For each concordance line: (i) pick the node word and the word occurring at position 1R (one word to its right) and produce a word pair, then do the same with word occurring at position 2R and produce a second word pair, so that, for instance, for search word 'bank' on a concordance line such as 'the bank invested millions' the resulting word pairs would be 'bank invested' (bank + 1R) and 'bank millions' (bank + 2R); (ii) compute relatedness for each of these word pairs. The reason for restricting the span to positions 1R and 2R was that it would be enough to retrieve cases such as 'waste time' (waste + 1R) and 'blanket of gases' (blanket + 2R). Other cases where the incongruous pair is further removed than 2R ('blanket of deadly gases', 'waste a lot of our time', etc.) were not picked up, and this is a limitation of the procedure. The goal here was to try it out and see if it looks promising, and if it does, extend it to capture a wider span of collocates in further research. It must be stressed that having concordance lines is not a requirement for running this procedure; in fact, similarity.pl is meant to be used with regular running text.

Relatedness was computed with Leacock and Chodorow, with the 'all senses' option activated, which makes similarity.pl display all of the senses related to the words in the pair that are featured in WordNet. This was necessary because the exact WordNet sense of every word in the word pair set was not determined. In order for that to be possible, the whole corpus should have been sense disambiguated, which was not feasible at the time. But even if it had been, there is no guarantee that the disambiguation would have been perfect, and the remaining problems would have to be hand corrected, which may be more time consuming than hand coding the texts for metaphors in the first place. The side-effect of the "all senses" option was that it multiplied the number of word pairs. Hence, instead of 12,055 unique word pairs, the word pair count was 343,347!

After the calculation of relatedness was completed, a second script went through the output, sorted it by similarity score in reverse order (with the least related pairs at the top), and counted how many word pairs contained a metaphorically used word in samples of the most unrelated word pairs. Results appear in Table 13.

The results show that the most unrelated word pairs retrieve metaphors only, which in turn underscores the usefulness of this technique in metaphor retrieval. There were only metaphorically used words among the top 10,000 least related pairs, yielding 100% precision. As we go down the list, though, non-metaphors begin to crop up, reducing precision gradually down to 34% when all pairs are considered. However, the number of actual metaphorically used word types retrieved is very small compared to the total word pairs; for a 1K word pair sample, only 7 unique metaphorically used word types are retrieved, and for a 10K pair sample, only 41 distinct cases of metaphor

Table 13. Semantic relatedness recall

Sample of least related word pairs	Pairs containing a metaphorically used word		Pairs not containing a metaphorically used word		Precision	Recall
	Total	Unique metaphors retrieved	Total	Unique false positives retrieved		
Top 1,000 (.3%)	1,000	7 (4%)	0	0	100.0%	3.9%
Top 10,000 (3%)	10,000	41 (23%)	0	0	100.0%	22.8%
Top 50,000 (15%)	41,152	154 (86%)	8,848	27 (8%)	85.1%	85.6%
Top 100,000 (29%)	41,152	154 (86%)	58,848	134 (39%)	53.5%	85.6%
Top 150,000 (44%)	41,152	154 (85%)	108,848	259 (75%)	37.3%	85.6%
Top 200,000 (58%)	46,376	177 (98%)	153,624	340 (98%)	34.2%	98.3%
All 343,437 (100%)	76,593	180 (100%)	266,844	346 (100%)	34.2%	100.0%

are retrieved. This was caused by the multiplication of word pairs triggered by the 'all senses' option, as mentioned above. This in turn affects recall, which is very low with smaller samples and gradually improves as more word pairs are taken into account.

The best scenario seems to be with a 15% sample of the output, which reveals about 85% of the metaphors in the corpus with 86% precision. This is very close to the upper-bound of 89% suggested by Warin et al. (2005) for semantic relatedness tasks.

In conclusion, this technique seems to have some potential for metaphor retrieval, in that it appears to tap into incongruity, an important feature in metaphor deployment and interpretation. Incongruity seems to be manifested to a certain degree by the use of semantically unrelated word pairs near each other in text. However, more research is needed before it can be ascertained that this is a reliable tool for metaphor detection. One aspect of the output that drew my attention was the fact that the lowest scoring word pairs received a score of –1,000,000, which is assigned to comparisons of words of different parts of speech, such as 'case' (noun) and 'is' (verb). WordNet::Similarity does not "cross part of speech boundaries", and so whenever such a pair is submitted to it, it gives a warning and assigns this lowest relatedness value to the pair. Interestingly, many such cases involved metaphorically used words. More trials are needed, then, to see if this is a regular feature of semantic relatedness. Apart from this word of caution, the practical suggestion that can be drawn from this exploration is that researchers may use this technique to retrieve some candidates for analysis, but in order to do so they will need to learn some fairly advanced programming skills in Shell and Perl. These are needed for a range of tasks from simply installing the Perl WordNet::Similarity package to writing scripts for preparing the word pairs, submitting them to the package, and handling its lengthy output (depending on the corpus in question).

9.   Conclusion

To summarize, here are the best performance indicators of each procedure and tool assessed here:

–   Reading a portion of the corpus for candidates: reading 30% of the texts yielded more than 50% recall.
–   Concordance search terms: fixed word sequences achieve 100% precision, whereas single words reach 73% precision.
–   Looking for metaphors in clusters: a span of 5 to 10 words around metaphors retrieves about 40% of the metaphors.
–   Keywords: 9% precision and 11% recall for the default listing, or 47% recall for the longest possible listing.
–   MCI: up to 39% precision, and 50% recall when 39% of the candidates are considered.
–   Semantic relatedness: 85% recall and 86% precision with a 15% sample of the output.

According to these figures, the most reliable procedure is using lexical bundles as search terms for concordancing, and the least reliable procedure is clustering. As regards the tools, the most reliable is semantic relatedness, and the least reliable is Keywords.

Nevertheless, each technique has its own merits and demerits, which must be pointed out in relation to other techniques. Reading corpus portions is fine for small corpora, but with larger corpora a reading portion of 21% may translate into a sample that is too big to handle. For instance, for a 10 million word corpus, this would mean a 2.1 million word reading load. Likewise, concordancing with bundles works well, but it requires a reliable set of search terms to start with. If getting these terms depends on reading large portions of a corpus, then one may not be able to obtain the reliable terms in the first place. Clustering was shown to work with larger windows, but this might lead to a large reading load, as wider windows mean more text to read around each metaphor found. In addition, many of these windows will partially overlap, and as they add up, they will cover larger and larger stretches of text, which in turn may undermine efficiency. Keywords are relatively easy to obtain, but they are not particularly reliable and require a reference corpus, which may not be available for particular languages. The MCI has a simple interface, and it's the only one (in this study) dedicated exclusively to metaphor retrieval, but it is only available for English and Portuguese. WordNet::Similarity proved to hold some promise for metaphor detection, but metaphor researchers in Humanities departments may find it hard to install and operate, and it works with English data only.

In general, procedures that depend on reading a corpus for candidates may break down with larger corpora, and this is where automatic retrieval techniques can come in and prove their worth. Researchers may have to forego some reliability by using

automatic retrieval methods, but a loss of reliability is made up by a gain in volume, as larger corpora can provide a richer variety of metaphor instances than smaller ones.

To conclude, the choice of method will always depend on the goals of particular research projects and thus it does not make sense to single out 'the best method'; rather researchers must bear in mind the advantages and drawbacks of different methods for metaphor retrieval, and if possible use more than one method to improve efficiency and coverage.

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Metaphor in discourse

Beyond the boundaries of MIP

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The lack of a reliable methodology for identifying metaphor in discourse prompted a group of metaphor researchers to create the so-called MIP (Metaphor Identification Procedure; Pragglejaz Group 2007), which aims at identifying metaphorically used words. In our research project at VU University Amsterdam, four analysts have applied the MIP to language data from four different registers in the BNC-Baby. Since the MIP only caters for indirect metaphor use, one important goal of this project was to determine how to annotate directly used words that express cross-domain mappings. This chapter presents examples from our analyses to illustrate some salient methodological issues concerning the application of the MIP to different manifestations of metaphor in natural discourse, suggesting possible additions to the MIP.

Keywords: direct metaphor, indirect metaphor, metaphor identification, methodology, register

1. MIP and linguistic metaphor identification

After Lakoff and Johnson (1980) proposed their Conceptual Metaphor Theory, the analysis of the linguistic dimension of metaphor seemed to become secondary to the conceptual and cognitive dimensions of metaphor, leading to theories on how language users actually process metaphors (Fauconnier and Turner 1998, Glucksberg and Keysar 1990, Bowdle and Gentner 2005). However, more recent corpus-linguistic approaches to metaphor (see, for example, Caballero Rodríguez 2006, Cameron 2003, Charteris-Black 2004, Deignan 2005, Goatly 1997, and Koller 2004) have put linguistic metaphor identification back on the map. This type of research advocates a bottom-up model for metaphor analysis, proceeding from examples to theory instead of the other way around and points out the need to distinguish between different levels of metaphor analysis – linguistic forms, conceptual structures, and cognitive processing – encouraging analysts to clearly state their area of research in order to make comparison across analyses feasible. As Steen

(2007: 23) stresses, " 'converging evidence' [...] is exciting and attractive, provided the same norms of data collection and analysis are adhered to in evaluating the evidence obtained with one type of method as with the other type of method".

Corpus-linguistic approaches to metaphor have also focused attention on the lack of a solid and reliable methodology for identifying *linguistic* metaphor in discourse. Within discourse, researchers can adopt different criteria for metaphor identification (focusing, for example, on the word level or phrase level), which may generate results that are not comparable. As Heywood et al. (2002: 51) point out, there is a need for "principled solutions if an annotated corpus of metaphors in texts is to be produced for research purposes and if a clear relation between linguistic metaphor and conceptual metaphor is to be arrived at". Instead of pointing out metaphor on the basis of intuition and subjective criteria, analysts require a more systematic method for both quantitative and qualitative research. The desire to develop such an explicit, reliable, and flexible tool prompted a group of metaphor researchers named the Pragglejaz Group (after *P*eter Crisp, *R*ay Gibbs, *A*lan Cienki, *G*raham Low, *G*erard Steen, *L*ynne Cameron, *E*lena Semino, *J*oe Grady, *A*lice Deignan, and *Z*oltán Kövecses) to create the so-called MIP (Metaphor Identification Procedure, Pragglejaz Group 2007). This method aims to identify metaphorically used lexical items in natural discourse, i.e. those words that refer indirectly to their referents in a text world on the basis of some form of non-literal similarity/comparison.

The MIP requires metaphor analysts to work through four systematic steps. First, they should read the entire text in order to understand the topic. Secondly, they should determine the lexical units within this text. Lexical units often consist of only one word, but they can also be multi-word units, such as phrasal verbs (e.g. 'go on then'), compound nouns (e.g. 'stock market') or so-called polywords (e.g. 'of course') (note that Cameron 2003 has developed a different method of analysis, the so-called MIV, which focuses on metaphor vehicles as units of analysis, which can consist of phrases and expressions as well as simple lexical units). In step 3 of the procedure, the analyst should specify the contextual and basic meaning of each lexical unit. The contextual meaning of a lexical unit is its meaning in context; the basic meaning of a lexical unit tends 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); [and] historically older. Basic meanings are not necessarily the most frequent meanings of the lexical unit (Pragglejaz Group 2007: 3).

In order to specify the basic and contextual meanings, analysts can adopt different dictionaries or reference works; for their own case study, the Pragglejaz Group used the *Macmillan English Dictionary for Advanced Learners* (Rundell and Fox 2002) as their reference work, since this is a recent corpus-based dictionary quoting examples from many different registers of language use. Moreover, the Macmillan dictionary "includes notes specifically addressing the issue of metaphor, implying that there was an awareness of the importance of this during the process of analysis" (Pragglejaz Group 2007: 16). After having established the basic and contextual meaning of a

lexical unit, the analyst should determine in step 3b of the MIP whether the contextual meaning contrasts with, and can be understood in comparison with the basic meaning. If so, the lexical unit is metaphorically used.

Thus, the MIP is a method for identifying lexical units that *indirectly* express metaphors, meaning that a more basic sense is used to describe a contextual one. A straightforward example of the MIP applied to language data is the following sentence from the BNC-Baby corpus, a four-million word subset of the British National Corpus, containing various spoken and written language sources of contemporary British English (all of the example data in this chapter have been taken from the BNC-Baby and references have been added to specific texts):

(1)   That girl is a dog!   (BNC-Baby: BMW)

In example (1) a girl is derogatively described as 'a dog'. The contextual meaning of 'dog' that can be found in the Macmillan dictionary (step 3a of the MIP) is: "someone who is not attractive, especially a woman" (sense description 2; see Table 2 below). The basic meaning of 'dog' (step 3b of the MIP) is: "an animal kept as a pet, for guarding buildings, or for hunting" (sense description 1; see Table 2).

In this case, the contextual and basic meanings are distinct: the basic meaning concerns the animal domain, the contextual meaning the human domain. At the same

Table 1. Basic explication of the MIP (see also Pragglejaz Group 2007: 3)

MIP
1. Read the entire text-discourse.
2. Determine the lexical units in the text-discourse.
3.
    a. For each lexical unit, establish its meaning in context.
    b. For each lexical unit, determine if it has a more basic contemporary meaning in other contexts than the one in the given context.
    c. 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.

Table 2. Example of Macmillan sense description – 'dog'

1. an animal kept as a pet, for guarding buildings, or for hunting.
    a. a male dog or a male animal that belongs to the same group of animals as dogs, such as a male WOLF or FOX
2. OFFENSIVE someone who is not attractive, especially a woman
    a. OFFENSIVE an unpleasant man
    b. AUSTRALIAN INFORMAL someone who gives information about people to the police or to another authority
3. MAINLY AMERICAN something that is of bad quality or very unsuccessful

time the contextual and basic meaning can be compared on the basis of non-literal similarity. As a result, we can say that the word 'dog' is a metaphorically used lexical unit. Note that this is the level of analysis where the MIP stops, i.e., it does not move beyond determining that the lexical unit is used metaphorically on the *linguistic* level. The MIP deliberately steers clear of any specification of the exact nature of the underlying mapping, or the specific domains and entailments involved. As Steen (2007) has stressed, a separate stage of analysis is required to move from the written or spoken linguistic forms to the underlying conceptual structures. Such an analysis has been done in our own research project at VU University Amsterdam by applying Steen's Five-Step Method (1999, 2007, 2009). Yet another matter is whether the metaphorically used lexical units are also understood as metaphors during discourse processing. This is an issue for analysts focusing on metaphor processing, not metaphor identification. Many different considerations apply to this kind of research since mappings are often highly influenced not just by a specific context, but also by individual cognition.

Moreover, as Miller (1993) has pointed out, in the case of symbolic mappings, people can use metaphors without actually knowing which features are mapped from source to target simply because they are highly conventional in the language system. In a similar vein, Bowdle and Gentner (2005) argue that at a conceptual level each metaphor lives through a so-called "career of metaphor"; the more conventionalized a metaphor becomes, the more readily available the general meaning of a metaphoric comparison is and the less thought people pay to its actual mapping. Consequently, "multiple figurative comparisons can lead to the creation of abstract metaphoric categories as secondary senses of the base terms" (Bowdle and Gentner 2005: 208). Thus, in the girl-dog example, we know that the conventional mapping yields a negative evaluation of the girl even though there is nothing inherently bad or ugly about dogs. At this stage, however, it is not necessary to spell out how the mapping works and which features would be mapped from the dog to the person.

2.   MIP and metaphor in discourse

In the research project *Metaphor in discourse: linguistic forms, conceptual structures, cognitive representations* at VU University Amsterdam, four analysts have applied an elaborated version of the MIP (the so-called MIPVU, Steen et al. 2010a) to a 200,000-word corpus consisting of everyday language data. A detailed operationalization of the MIP and its application to data from different registers is given in Steen, Biernacka et al. (2010) and Steen et al. (2010a).

The natural discourse data used in our project originate from four registers in the BNC-Baby, namely conversation, fiction, news, and academic texts. Thus, in addition to looking at linguistic and conceptual metaphors in general, the project's focus is on their specific manifestations and usage patterns in different types of discourse. One first observation is that although metaphor is indeed ubiquitous, by far the greater part

of our data was not metaphorical, namely 86.4 per cent. Furthermore, statistical analyses show that there is a significant three-way interaction between the number of metaphorically used words, register, and word class. The distribution of metaphorically used words per register shows that academic writing has the highest proportion of metaphor (17.3%), conversation the lowest (6.7%), and that news (15.4%) and fiction (10.8%) are in between. Another observation concerns the extremely infrequent occurrence of novel metaphors as well as explicitly signalled forms of metaphor, such as simile; both occur in less than one per cent of the data. This is a particularly interesting finding considering the amount of attention that is given to the metaphor-simile distinction and the novel-conventional distinction in psycholinguistic metaphor research. An extensive discussion of these usage patterns in the four different registers is given in Steen et al. (2010a, 2010b).

For our current purposes, however, it is essential to point out that the application of the method to our data proved the MIP to be a straightforward and reliable method for analysing metaphorically used words. Reliability tests amongst the four analysts consistently yielded unanimous agreement percentages around 90 per cent before discussion and Cohen's Kappas of around 0.80. This means that inter-case agreement was extremely high. It should of course be noted that these high agreement percentages, which contrast sharply with percentages reported elsewhere (see Berber Sardinha, this volume), are the result of the analysts in the project receiving special training in the use of MIP/MIPVU and being actively involved in developing an explicit annotation protocol and annotation principles and guidelines to minimize disagreement between analysts as much as possible (for details, see Steen et al. 2010a). At the same time, Cochran's *Q* was often significant, indicating that analysts sometimes did show individual tendencies in their coding, but these differences could generally be attributed to the occurrence of irregular language data, such as unfinished utterances or unclear context, for which coding rules had not yet been fully specified at the time. A full description of these reliability tests is given in Steen et al. (2010a: 149–166). The remainder of this chapter will focus on more general methodological problems concerning the application of the MIP. We will highlight complexities and ambiguities that blur the boundary between metaphorical and literal language and need to be dealt with explicitly if one wishes to engage in reliable metaphor identification.

3.   MIP and other manifestations of metaphor

The *Metaphor in discourse* project is innovative in its shift from invented examples to natural discourse and the use of large text samples from different registers (4 x 50,000 words). This is, however, not the only novel aspect of the programme. In applying the MIP to the data from the BNC-Baby corpus, it became apparent that cross-domain mappings in conceptual structure can be expressed in different ways at the linguistic level. Consider the following example from BNC-Baby text J54 (the relevant parts have been italicized):

(2)   It was very late. Matthew had gone to his flat, James had gone to bed. Only Jenny and Sara were still up, sitting in Sara's room. Sara was undressed and ready for bed but Jenny was fully clothed, moving about the room in her harlequin dress *like some angry restless dragonfly*.
      "You encouraged him," she said for the tenth time.
      "I would never have believed you could be so mean. Sara, my own sister. You encouraged him!"
      "Jenny darling, Matthew Preston was *having his own back*. You teased him with poor James. *What is sauce for the goose –* " Sara sighed wearily.
      [...]
      "I love him," Jenny said passionately, "and I know he loves me. We've had so many wonderful times together – "
      "But wonderful times aren't always a good basis for marriage," Sara suggested gently.
      "What do you know *about* it?" Jenny asked. "You've never been *in* love. I know Matthew doesn't want to get married – he once said *marriage was a trap* – but I know he loves me."

While there tends to be a bias in metaphor research to discuss A IS B metaphors, such as 'marriage was a trap', the above text illustrates the richness and variety of metaphor manifestations. In 'marriage is a trap' the word 'trap' is a metaphorically used lexical unit – indirectly expressed metaphor as can be identified by MIP – with both the source domain (trap) and target domain (marriage) mentioned explicitly. As noted before, this is called indirectly expressed metaphor, since the word 'trap' has an indirect meaning, i.e., it refers indirectly to its referent in the text world. The fact that both the source-domain and target-domain terms are expressed does not affect this indirectness. In the case of 'What do you know *about* it?' and 'You've never been *in* love', on the other hand, we are also dealing with indirect metaphor as identified by the MIP, but unlike the case of 'marriage is a trap' the target-domain equivalents of 'about' and 'in' are implicit. The MIP still identifies such cases as metaphorically used, since in the case of 'in' the contextual meaning refers to states (emotions), while its basic meaning is concerned with containment (space).

   It is important to keep in mind that although 'about' and 'in' are the metaphorically used lexical units at the linguistic level of analysis, the underlying conceptual mapping is not necessarily from the individual words 'about' and 'in' to a literal target-domain equivalent. While 'trap' has a target-domain equivalent 'marriage', and 'about' could possibly be replaced by the target-domain equivalent 'concerning', there simply is no other way to say '*in* love'. Following traditional Conceptual Metaphor Theory it can be argued that the underlying conceptual metaphor is LOVE IS A CONTAINER, which manifests itself via the linguistic expression 'been in love'. The underlying conceptual metaphor is therefore not necessarily IN IS B. The comparison here is between being in a concrete container and being in an abstract state. The target equivalent of 'in'

is therefore irrelevant, since its function is to conceptualize 'love' as a container. We do not have to understand 'in' itself in terms of something else, as is the case for 'marriage is a trap'. This clearly illustrates the distinction existing between metaphor on a linguistic and a conceptual level.

Similarly, but involving a combination of lexical units, idiomatic expressions such as 'Matthew Preston was *having his own back*' (which we took to be a variation on the idiom *to get your own back*, meaning "to get some kind of revenge") and proverbs such as '*What's sauce for the goose [is sauce for the gander]*' indirectly express a metaphorical comparison between situations as a whole rather than between individual source-domain and target-domain words. Although some analysts prefer a vehicle-based approach and treat the idiomatic expression as one whole (e.g. Cameron and Maslen 2010), we follow the approach proposed by Pragglejaz and code each content word within the idiomatic expression as a separate lexical item. This decision is based on "psycholinguistic evidence showing that people can find metaphoricity at the level of word [...] (Gibbs 1994) [and that] most, if not all, idioms are decomposable to some extent for speakers" (Pragglejaz Group 2007: 27). It should of course be emphasized that the fact that people *can* find metaphoricity at the word level does not mean that they necessarily *must* find it; this is why MIP and MIPVU speak of finding words that are *potentially* metaphorically used/metaphor-related.

Not all metaphors are expressed indirectly though (i.e. via indirect meaning). Metaphors can also be expressed by direct language use, such as in the case of the simile 'like some angry restless dragonfly' in example (2), where a girl (the domain of humans) is compared to a dragonfly (the domain of insects). The difference here is that the word 'dragonfly' refers directly to a referent in the text world; that is, the word 'dragonfly' actually refers to a dragonfly. These different linguistic realizations of metaphor cannot be treated and analysed in the same way. For example, an analysis of the dragonfly-simile in terms of the MIP would fail, because the contextual meaning of 'dragonfly', "an insect with a long narrow brightly coloured body and two pairs of transparent wings", is exactly the same as the basic meaning. This entails that the contextual meaning and the basic meaning are not distinct, and contrasting and comparing them is therefore not possible (step 3c of the MIP). The conclusion in step 4 would have to be that 'dragonfly' is not a metaphorically used word.

One important goal for our project was to determine how to annotate and analyse these other manifestations of metaphor. Even though a MIP analysis of the simile above does not work, there is definitely the potential for a cross-domain mapping between the concept of the girl 'Jenny' and the insect 'dragonfly' in the underlying conceptual structure. Yet the words are all used to designate their referents in the text world directly. This means that there is no referential incongruity, as we saw for 'in' and 'trap', but an incongruity in the discourse topic. Where the MIP decides not to treat similes as metaphorically used, "because no different senses are evident from the context" (Pragglejaz Group 2007: 32), it is exactly this topical incongruity that is used in the MIPVU to identify metaphorical language use expressed in a direct way. Thus, our "definition of

metaphor is not located in language use but in conceptual structure" (Steen 2007: 319). Moreover, we decided to take note of the fact that the kind of directly expressed metaphor mentioned here is often signalled by words such as 'like', 'as a', 'remind', or 'compare' (see Goatly 1997 for an extensive list of words signalling metaphor).

To capture these phenomena in our annotations, we have made a distinction between three kinds of Metaphor-Related Words (MRWs), namely, indirectly expressed metaphors such as 'trap' and 'about' above (as identified by the MIP on the basis of semantic incongruity), directly expressed metaphors such as similes and non-literal analogies (as identified on the basis of topical incongruity), and words that signal or "flag" metaphors, such as 'like', 'as a', or 'compare'. Note that the issue of being a directly or indirectly expressed metaphor is a separate issue from whether both the source and target domain are explicit. In 'my boss is a pig' we are dealing with the indirectly expressed metaphor 'pig' and both the source (pig) and target (boss) are mentioned explicitly. In 'that pig fired me', on the other hand, we are still dealing with an indirectly expressed metaphor 'pig' but now only the source (pig) is explicit while the target (boss) is left implicit. Finally, in 'my boss eats like a pig' we are dealing with a directly expressed metaphor 'pig' with both the source (pig) and target (boss) explicitly mentioned again.

4.   Issue 1: Source or target domain?

The addition of a coding method for directly expressed metaphor (such as similes) seems rather straightforward. However, there are some problems in its application. One issue concerns the annotation on a word-by-word basis, which leaves the question which lexical units to include in the coding. So far, this decision has been fairly easy: for indirect metaphor (e.g. 'my boss is a *pig*'/'that *pig* fired me') the basic meaning of a word is the source domain and therefore this "alien" word is coded as the basis for the mapping; for directly expressed metaphor ('my boss eats *like a pig*') the words that belong to the "alien" topic are part of the source domain and are therefore coded as the basis for the mapping. Though it is usually clear where such directly expressed metaphors begin, thanks to the presence of signals such as 'like', it is not always clear where the simile ends and whether all words following the signal should be considered part of the simile. Therefore different criteria need to be taken into account. Consider the following example (3) (*italics* added to relevant parts):

(3)   He paused, *reminding* Mcleish irresistibly *of a Labrador wondering how best to approach an acquaintance.*   (BNC-Baby: AB9)

In this case we can fairly easily determine that 'reminding of' signals a directly expressed cross-domain mapping between 'He' (the domain of humans) and a 'Labrador' (the domain of dogs). The next step is then to decide whether the additional information 'wondering how best to approach an acquaintance' belongs to either the domain of human beings or the domain of dogs. One of the criteria to take into account here is

topical incongruity, which takes place when there is a move from one domain into another, and the situation model as created by the text. In this case, the activities of 'wondering' and 'approaching an acquaintance' seem to be most applicable to the source domain of the Labrador, since the action of the person in the text world hesitating to mention something (pausing) is as a whole compared to the dog wondering how best to approach an acquaintance. Thus, there is a contrast between the domain of the 'Labrador' and the domain of human beings and the additional information sets up a comparison between hesitating to bring something up in a conversation and hesitating to physically approach someone. The additional information is therefore coded as belonging to the source domain.

One question that remains then is whether all lexical units that are structurally part of the simile should also be individually annotated or whether only the content words should be considered for analysis. Though words like 'how', 'to', and 'an' are clearly part of the simile, coding these words for being directly expressed metaphors would increase the number of metaphor-related words in the text considerably, while content-wise they do not seem to be adding to the metaphorical mapping. Although one could also argue that similes should be annotated as one whole rather than as separate words, we can often (though admittedly not always) clearly see how individual words inside the simile map onto individual target-domain equivalents. Our decision has therefore been to simply annotate all individual words that add semantic content to the simile. This does, however, mean that the number of lexical units annotated as directly expressing metaphor does not reflect the number of similes, as several direct MRWs may be part of one simile. This makes it more difficult to compare how many metaphors and similes there are within and across texts. However, it should be emphasized that the same principle in fact applies to the metaphorically used words identified by MIP, as several words may combine to express one complex or extended metaphor. Essentially, the only way to reliably overcome such problems is to have several annotation rounds, with separate stages for annotating individual words and for annotating complex vehicles. This provides insight into the number of discrete metaphors and similes in a text as well as the number of individual lexical items involved in setting up these metaphors and similes.

Another important factor is the use of grammatical structure through punctuation and sentence structure to demarcate domains. If we regard punctuation marks as possible information boundaries (for example, they provide the difference between restrictive and non-restrictive relative clauses), then in this case we find no boundaries between 'Labrador' and the additional information 'wondering how best to approach an acquaintance', and the latter would be regarded as a restrictive relative clause or simply as part of the prepositional object (postmodifying the Labrador) belonging to 'remind of'. This corresponds to our analysis of the situation model set up by the text, which also suggests that 'wondering how best to approach an acquaintance' belongs to the source domain of 'Labrador' and should therefore be coded as part of that source domain. Now consider example (4):

> (4)   From there, *like a buzzard in its eyrie*, he would make forays round the US and
>   abroad in spite of his advanced age.   (BNC-Baby: A1H)

Here we see a mapping between a male person ('he') and a buzzard. One strategy for analysis is to be guided by punctuation. Here the comparison between 'he' and a 'buzzard' is demarcated by commas. Since this demarcation normally signals an information boundary we could then code 'like' as a metaphor flag and 'a buzzard in its eyrie' as a directly expressed metaphor, with the content words conveying the lexical information of the source domain. The rest of the sentence would then be considered as separate. However, when we look at the grammatical function of the clause this analysis becomes more complicated. Since the adverbial clause describes the verb in the main sentence ('make forays'), and the main clause here follows the direct comparison, the source domain conveyed through the adverbial clause also affects the continuation of the sentence. We cannot simply return to the target domain after the comma, but see a so-called "blend of two domains" (Steen 2007: 320): in this scenario we could code 'make forays', and perhaps even 'round' as part of the same source domain. In our annotation method we decided to be guided by punctuation and grammatical function as a more "objective" frame of reference than topical incongruity. In example (4), we would therefore mark 'a buzzard in its eyrie' as directly expressed metaphor and 'make forays' as indirectly expressed metaphor.

Now consider the dragonfly-example (2) again:

> (2)   Sara was undressed and ready for bed but Jenny was fully clothed, moving
>   about the room in her harlequin dress *like some angry restless dragonfly*.
>   (BNC-Baby: J54)

Here, the writer adds more information by specifying the way in which either the dragonfly or the human being acts, namely 'angry' and 'restless'. The word 'dragonfly' is clearly part of the source domain, and 'Jenny' part of the target domain. The question remains, however, to which domain 'angry' and 'restless' belong: to the target domain (Jenny) or the source domain (dragonfly), or to both domains at the same time? One way to solve this is by taking into account the construction of this sentence, with 'angry' and 'restless' occurring after the metaphor flag (like) introducing the source domain as modifiers to the most important word within the comparison, 'dragonfly'. Thus, 'angry' and 'restless' would then be coded as part of the source domain. However, people may feel that 'angry' and 'restless' are typical of human behaviour, not animal behaviour, and therefore belong to the target domain rather than the source domain, in which case we would have a layering of metaphor. This complex interplay between syntax and the situation model needs to be taken into account when it becomes unclear for individual words where the scope of either source or target domain ends. In our annotation method we again decided to be guided by syntax as a more "objective" frame of reference than topical incongruity, coding 'angry' and 'restless' as indirect metaphorically used words within the directly expressed simile.

5. Issue 2: Literal or metaphorical comparison?

Besides difficulties in determining the scope of source and target domains (which words belong to the source domain and which to the target), another difficulty lies in deciding whether or not a comparison involves enough contrast between the basic and contextual meaning. If the contrast is not clear enough, we move out of the realm of metaphor and into that of literal comparison. However, it is not always easy to determine where literal comparison ends and metaphorical comparison begins. Some comparisons seem to be located somewhere in between:

    (5)   Delaney took risks, plummeting feet first through the hatchways, and partly breaking his descent with the handrails, falling *like a parachutist*, rolling instantly deploying his Uzi.   (BNC-Baby: BPA)

    (6)   Poplar leaves have an elegant outline resembling that of an Arab minaret.
                                           (BNC-Baby: AMM)

    (7)   You wouldn't have recognized him, he looked like John the Baptist.
                                           (BNC-Baby: CDB)

In these cases analysts have to decide whether the two items being compared are literally or metaphorically similar to each other, i.e., whether the senses and the domains they belong to are distinct enough to be compared. In example (5) Delaney falling is compared to a parachutist falling; in example (6) the shape of leaves is compared to the shape of a minaret; in example (7) a person's appearance is compared to John the Baptist's appearance. All of these examples show a large correspondence between source and target domain, because they rely mostly on a mapping of physical appearance, a "one-shot" mapping (Lakoff and Turner 1989) or "mere-appearance-match" (Gentner 1989). Since "little beyond physical appearances is shared" (Gentner 1989: 207) it is difficult to approach these mappings as being metaphorical; Gentner (1989: 207) describes them as "the opposite of an analogy". However, in specific contexts, shape metaphors can be highly suggestive and creative. If someone's appearance is compared to that of John the Baptist, this entails a lot more than a purely objective physical description. Therefore, for our annotation purposes, we follow Cameron's suggestion (2003: 25) in saying that two distinct and incongruous domains, however weak, should be considered as expressing a cross-domain mapping:

> The category of linguistic metaphor will be established through the potential for incongruity between two domains to be interpreted from surface lexical content. Neither metaphorical intention nor metaphorical interpretation will be necessary conditions for membership. Adopting this broad category of linguistic metaphor allows a prosaic approach, as discourse is trawled for possible metaphor using a net with small holes.

A similar problem of contrast and comparison can be found in the analysis of idiomatic expressions where the meaning of the expression and its source domain seem to

be grounded in metonymy; in these cases the mapping often works both via contiguity and similarity (see also Steen 2007: 57). As the Pragglejaz Group mentions:

> Metonymy can at times lead to some confusion about coding for metaphoricity, but the use of procedures such as check the cotext or apply the 'like' test serve in most cases to solve the problem (e.g., if 'like' fits meaningfully in an 'A is B' statement, such as in *Lawyers are like sharks*, then the expression is metaphorical) (Pragglejaz Group 2007: 31).

However, deciding whether we are dealing with metonymy or metaphor is more complicated than the simple division between correlating and juxtaposing domains. On the contrary, "[a]ny set of two conceptual structures can be simultaneously judged as more or less contiguous *as well as* more or less similar. Finding metonymy therefore does not mean that the search for metaphor can be abandoned" (Steen 2007: 59). Two examples from our data that show this possible combination of contiguity and comparison are the following:

(8)   Ruth had no heart for it.   (BNC-Baby: CB5)

(9)   Many high-ranking Germans were out to save their own necks.
                                                                     (BNC-Baby: G0L)

In case (8), the idiomatic expression entails "to not be able to do something" (Macmillan dictionary). Here, the 'heart' stands for the abstract emotion (a mapping between abstract and concrete) and therefore might be coded as metaphorically used. At the same time, the heart is always present in a person's body, and emotional fear/pain often coincides with physical pain, so this may then be seen as a metonymic extension instead of a metaphorically used word. Alternatively, this expression could be taken to mean "not have the confidence or courage to do something" based on sense description 8 of the noun 'heart' in the *Longman Dictionary of Contemporary English* (2009). The metonymic connection between 'encouragement' and 'heart' is the old folk belief that the heart was the source of courage. As we no longer believe this in modern-day society, this metonymic sense relation has now become metaphorical (cf. Geeraerts 2002).

In a similar vein, depending on the context, sentence (9) may be interpreted in two ways. The definition of the idiomatic expression is a highly general and abstract one: "to do something that prevents someone from being in a difficult or unpleasant situation" (Macmillan dictionary). If the unpleasant situation, however, entails physical harm, analysts may consider this expression non-metaphorical because it involves metonymy. But again, we find ourselves involved in two different relations: contiguity (metonymy) and similarity (metaphor), which are each involved on "two independent scales" (Steen 2007: 59). Depending on context, the analyst should decide whether there is enough contrast between the situations in the source and target domain for the idiom to be coded as metaphorically used, regardless of the fact that it is also metonymically used. In other words, an analyst should decide whether "similarity between the two domains or spaces or categories or concepts [is] more salient than degree of

contiguity" (Steen 2007: 59). In this case, the MIPVU approach is that however weak the comparison may be (e.g. only based in an abstract is concrete comparison), the lexical units are still to be coded as metaphorically used.

6. Issue 3: Analysis of proper names

One methodological issue that seems particularly important when analysing fiction texts is the analysis of proper names. When we read names such as Freeman, Breakspear, Carpenter, or Black in a news report or academic article we would normally not want to analyse these names for metaphorical usage since these are simply people's actual names in the real world. It can be argued that these names have been used in a purely referential function, indicating a specific referent in the text world describing the real world. There seems to be no reason to look up 'carpenter' in the dictionary and ask ourselves whether this word has been used metaphorically when a news report reads that "John Carpenter announced that a new tax law will be passed today". In fiction, however, we are far more likely to consider the semantic content of characters' names since we know that authors often choose these names deliberately to reflect a character's personality or to signal symbolic meanings. These names may have a semantic function and the semantics of the name can be exploited in the text. The same principle applies to the names of companies, products, books, films, or objects. If an academic article mentions that Sylvia Plath's novel *The Bell Jar* was published in 1963, we would probably not analyse the name of the book for metaphorical usage, but if we were analysing the book itself then we would consider the title's meaning in light of the content of the book and consider the possibility that the 'bell jar' is a metaphor for something else.

One question that arises in light of this possibility of analysing proper names for their semantic function is whether each and every instance of the name should then be taken into consideration. Consider the following examples from a novel describing different boats (the relevant names have been italicized):

(10)   We decided that *Masquerade* would sail from the Bahamas to Panama, and thence to the Galapagos where we would find Darwin's giant tortoises.
(BNC-Baby: CCW)

(11)   She was moving back on board *Wavebreaker* in preparation for the next day's early departure.   (BNC-Baby: CCW)

(12)   This boat was called *Dream Baby*, and she was clearly an expensive infant for rods and whip-aerials and outriggers splayed from her upperworks like the antennae of some outlandish insect.   (BNC-Baby: CCW)

(13)   She swung lithely down to *Dream Baby's* gaudily painted deck and cushioned the two hulls.   (BNC-Baby: CCW)

All three of the names – Masquerade, Wavebreaker, Dream Baby – are obvious candidates for a semantic analysis, but only in the third example does the author seem to invite the reader to consider the meaning of the name by adding the description "she was clearly an expensive infant". The metaphorical use of 'infant' draws attention – in retrospect – to the meaning of the word 'Baby' and its application to the boat. In the other examples, however, the names seem to have been used purely in their referential function. The methodological issue at stake is whether each and every instance of a name like Dream Baby should be counted as a linguistic metaphor regardless of its usage in a specific context, or whether only those instances in which the context indicates that a semantic analysis is validated should be taken on board.

The same principle also applies to the use of nicknames. Both in fictional worlds and the real world nicknames are used to say something about people's personalities, making them prime candidates for metaphor analysis (see also Alm Arvius, this volume). Yet even though their semantic content is often clearly metaphorical, the question remains whether each individual occurrence should automatically be counted as a linguistic metaphor. Consider the nicknames in examples (14)–(16):

(14) "I shan't wait till Adam returns," Lewis said in that manner that had once led his daughter to call him the *Frog Footman*, "but I shall wait until tomorrow."
(BNC-Baby: CDB)

(15) "He's precisely what anyone would expect of a drop-out Phys Ed basketball-playing retard," Ellen said scornfully, "by which I mean that he's a jock with the brains of a dung beetle. He reminds me of your Neanderthal friend, the *Maggot*, except Rickie is a great deal more handsome."   (BNC-Baby: CCW)

(16) But at least, he thought as he gave a final wave, she hadn't asked him whether he had come to Norfolk to help catch the *Whistler*.   (BNC-Baby: C8T)

In the first two examples the reader's attention is drawn to the meaning of the nicknames 'Frog Footman' and 'Maggot,' in the first case by the addition "in that manner that had once led his daughter to call him" and in the second case by the preceding metaphor "brains of a dung beetle". In the third example, however, the meaning of the nickname and its relation to the character, though obvious, are not relevant to the meaning of the sentence. Considering the high number of occurrences that such proper names and nicknames will have in fiction – and other registers – the decision whether or not to analyse such names for metaphor usage will considerably influence the number of metaphorically used words in a text and their type/token ratio.

7.   Issue 4: Cultural references

Another issue that can become problematic during linguistic analysis is the occurrence of intertextual and cultural references and allusions. As Heywood et al. (2002) point out: "intertextual allusion can thus, on some (but not all) occasions, provide

additional schemas which can give rise to metaphorical readings" (2002: 42). This situation proves particularly complicated for metaphor analysts working with a method like the MIP when such references have been conventionalized in the dictionary. Take the following examples (relevant parts have been italicized):

(17)   The speed of descent must have cut down the exposure to any residual gas since he felt none of the earlier weirdness as he approached the still sealed engine room door. *Pandora's Box*.   (BNC-Baby: BPA)

(18)   Holt's child is actually the *Artful Dodger*; mercifully, not all children are.
                                                                                        (BNC-Baby: ECV)

When we look up such references in the dictionary, we find that Macmillan gives us a separate entry 'Pandora's box' with the following sense description: "something that could cause a lot of problems if you do it, use it, or say it". Checking another corpus-based dictionary as a second opinion, Longman also has a separate entry and gives one sense description: "*open a Pandora's box* to do or start something that will cause a lot of other problems." This means that in both of these dictionaries only the derived abstracted meaning is given, without any explanation of the original source domain. If a method such as MIP is used and the dictionary is considered the deciding factor in order to avoid annotator bias (as was done in the VU project), this entails that 'Pandora's Box' in example (17) is not a metaphorically used lexical unit since there is no more basic sense to compare the contextual sense to.

The situation for 'Artful Dodger' is slightly different. The Macmillan dictionary has a separate entry 'artful dodger' with the following sense description: "someone who is clever and manages to get out of difficult situations and avoid answering questions". Longman, on the other hand, has an entry for "Artful Dodger, The" with the following sense description: "a character in the book *Oliver Twist* by Charles Dickens. The Artful Dodger is a young pickpocket (=someone who steals things from people's pockets) who belongs to a group of thieves led by Fagin". In this case we are dealing with a clear difference in treatment between the two dictionaries. Macmillan only provides us with the derived abstracted meaning, while Longman only provides us with the original source meaning. This means that applying the MIP on the basis of Macmillan would lead to the conclusion that this is a conventional, non-metaphorical use of the compound 'artful dodger', while if we apply the MIP on the basis of Longman the decision would be that this is a non-conventional, metaphorical use of this lexical item.

The methodological issue is that most metaphor analysts would probably like to treat all such cases in the same way, with the original literary or cultural origin as the basic meaning of the lexical unit. Even when the abstracted meaning can be found in the dictionary, many analysts would still argue that the whole point of using such references is that people recognize the connection with the original meaning and context. Even if people have not read the original works, these references may still have metonymic overlays for them, as they may have come across references to these works in other books, films, performances, or television shows. Yet this is again a matter of

metaphor recognition and processing, not of metaphorical usage on the linguistic level. Whether individual readers recognize such references will depend greatly on their background knowledge. There is no reason to assume that someone without any knowledge of classical culture would realize that words like 'spartan' or 'colossal' are meant to confer more than their conventionalized meanings "very plain and simple, without the things that make life comfortable and pleasant" and "extremely great or large".

The problem for analysts working at the level of linguistic metaphor identification is whether the original source domain of the allusion can – perhaps even should – always be taken as the source domain for a metaphorical mapping, regardless of conventionalization in the dictionary. If we work purely on the basis of the dictionary, some of these references cannot be considered metaphorical since the dictionary only gives the derived abstracted meaning. As dissatisfying as this may seem, basing the decision on a method like the MIP and specifying which dictionary was used ensures that analysts do not only include such examples as metaphors when they themselves recognize the reference. It also ensures that anyone who disagrees with the analysis can immediately see why this decision was reached. In order not to lose these specific phenomena in the larger analysis, coding methods may be adopted to keep track of them and possibly identify specific patterns in their use.

8.   Conclusions

In coding metaphorically used words in natural discourse on a word-by-word basis, many obstacles need to be overcome. Whereas the MIP provides a good general framework for the empirical annotation of metaphorically used lexical units, it only caters to the annotation of indirect metaphor. The MIPVU has added directly expressed metaphor (i.e. simile) to the range of manifestations of metaphor in discourse to be coded. Whereas indirect metaphor is generally clearly demarcated and fairly straightforward to analyse on a word-by-word basis, dealing with directly expressed metaphor entails determining the scope of the comparison and the degree of contrast between the source and target domain. Punctuation, grammatical function, context, and an analysis of the situation model built up by the text can help overcome the difficulties involved in deciding, for individual words, whether they are part of the simile or not. In order to decide whether there is enough contrast between domains, specific guidelines will have to ensure systematic decisions. For idiomatic expressions, a decision has to be made on (i) whether to code the expression as one whole or only include the content words and (ii) how to deal with the interaction between metaphor and metonymy. If it is accepted that metonymy and metaphor are each involved on independent scales, then finding the one does not necessarily exclude finding the other. Finally, the application of the MIP raised the issues of proper names and nicknames and cultural references.

By pinpointing some of the problems related to linguistic metaphor annotation, this chapter has tried to point to the need to take methodological issues seriously. Different manifestations of metaphor in discourse may require different approaches, but when analysts maintain a transparent methodology, force themselves to pin down specific problems, and report on their ways to overcome these obstacles, clear procedures for metaphor analyses may prove reliable tools for quantitative research, enable a better identification of specific metaphor-related problems, and open up opportunities for relevant discussion and cross-research comparison.

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Metaphor identification in Dutch discourse

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This chapter describes the application of the Metaphor Identification Procedure (Pragglejaz Group 2007) to a corpus of Dutch texts. It explains how this method can be used for identifying metaphorically used words in natural discourse, and how it works for Dutch. Although the original method has been developed on the basis of the English language, it is also applicable to languages other than English. What has to be kept in mind when applying it to other languages, however, is that some language-specific features and tools have to be explicated in more detail. This chapter illustrates MIP in relation to Dutch, and describes Dutch language tools, as well as lexico-grammatical features relevant to the identification of metaphorically used words.

Keywords: corpus, natural discourse, peculiarities of Dutch, language-specific tools

1. Introduction

1.1 Studies in metaphor

The past decades have seen an enormous growth in the study of figurative language use. The bulk of studies on metaphor and language have predominantly dealt with the conceptual side of metaphor (e.g. Gibbs 1994, Lakoff and Johnson 1980) and on the underlying cross-domain mappings (Bowdle and Gentner 2005, Gentner 1983, Glucksberg and Keysar 1990). Results of these studies have often been based on largely invented language data that represented claims about metaphor in language and thought (for an overview, see Steen 2007). Recently, the growing field of metaphor research has seen an increasing use of natural language data that not only support earlier theoretical claims, but also offer descriptions of how metaphorical language appears in naturally occurring discourse (see Cameron 2003, Charteris-Black 2004, Deignan 2005). This development has led to calls for a more rigorous method of metaphor identification in language data. For example, Cameron (1999, 2003), in her study on metaphor in educational settings, has reported on the difficulties in generating comparable

figures, and has recognized the need for an operational procedure for metaphor identification. To be able to compare claims about metaphor in language use on an empirical basis, it is useful to adopt an explicit method of identifying metaphors in language, a method that can be replicated by different analysts. This has led to the development of a procedure known as MIP (Pragglejaz Group 2007), a metaphor identification procedure that allows researchers to analyse language on an explicit and systematic basis. Judging from the number of quotations during the Cáceres 2008 RaAM Conference, many researchers have adopted MIP for their own discourse registers and research methods.

Ideally, the procedure of linguistic metaphor identification, and any systematic method, should be workable for any language of interest. At the same time, language-specific issues should be taken into account when applying a method such as MIP. These issues include the kind of tools available (like dictionaries and corpora), and lexico-grammatical properties that need additional clarifications and exemplifications in the method applied. In what follows, I will outline how MIP has been applied to a sample of Dutch discourse, what problems have been encountered during the identification process, and why it is necessary to take into account language-specific issues that might be of influence for the identification of metaphorically used words (or lexical units).

Since MIP aims to find linguistically realized metaphors, it separates linguistic analysis from the conceptual analysis of metaphor. As Steen has put it, "the Pragglejaz method aims to find the linguistic forms of metaphor in usage in such a way as to be maximally compatible with research into thought operationalized as conceptual structure, but it deliberately does not cross the line into that area of research" (2007: 90). The method is designed to be applied to natural discourse, and to establish the status of words as either metaphorically used or not, without going into the identification of possible conceptual structures. Such a method is a practical starting point for research into the use of metaphors in natural language data, and could be the starting point of many studies into metaphorical language use, be it qualitative or quantitative.

The research project reported on in this paper is part of a larger project on metaphorical language use in naturally occurring English and Dutch discourse, carried out at the Vrije Universiteit (VU) Amsterdam. For the English language project, corpus materials from the BNC from four registers (news, academic, fiction, and conversation) were analysed for metaphorical language, on the basis of an extended and refined version of MIP. In parallel with the English language project on natural discourse, the same procedure was applied to a 100,000-word corpus of Dutch news texts and conversations. During the process of metaphor identification in the Dutch texts, we detected problematic matters where certain steps and explications in the procedure needed adjustment for language-specific issues, and where instructions on the use of the dictionary did not suffice for the Dutch dictionary tools available.

The original MIP procedure was developed with the aim of being flexibly operational in different situations, but it takes the English language as a basis. Although certain elements were adjusted overall when it was used for the two language projects

at the VU (see Section 1.3), the adjusted version was based on English as a target language as well. The remainder of the paper briefly outlines the procedure of metaphor identification and the adjusted version, but focuses mainly on the aspects in the procedure that differ for Dutch and English. It illustrates the method on the basis of Dutch, showing that an explicit method such as MIP can be easily applied to several languages related to English.

1.2   MIP Pragglejaz: An explicit method

Since more and more research is done on metaphor and metaphorical language, there has been a growing need for a procedure of metaphor identification. Such a procedure would make it possible to compare different metaphor studies, for different languages and different genres of discourse, for their use of metaphor in discourse, metaphor frequency, and all sorts of related things. This need on a linguistic level has been met by the so-called MIP, the Metaphor Identification Procedure (Pragglejaz Group 2007). The members of the Pragglejaz Group attempted to "create an explicit, reliable, and flexible method for identifying metaphorically used words in spoken and written language" (2007: 2). The procedure consists of a number of distinct steps for which the analyst has to make a clear decision, which looks like this (literally taken from Pragglejaz Group 2007):

1. Read the entire text/discourse to establish a general understanding of the meaning.
2. Determine the lexical units in the text/discourse
3.
    a. For each lexical unit in the text, establish its meaning in context, that is, 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.
    b. 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 units.
    c. 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. (Pragglejaz Group 2007: 3)

In addition to a case study in which the four steps are applied, the report on the method also elaborates on decisions made prior to using the method, and on particular linguistic elements that have raised questions in relation to the different steps. One of the decisions made prior to applying the method is related to the notion of lexical units. Although the procedure in essence analyses the unit of words, these units are referred to as lexical units to stress that in some cases a combination of more than one word in the orthographic sense should be seen as one semantic unit. The elaboration on certain linguistic elements includes the treatment of multi-word units, polywords, and phrasal verbs as lexical units, and the treatment of word class when carrying out all elements of step 3. Some of these elaborations are discussed in Section 2, when they are considered in relation to Dutch.

1.3   MIPVU: Additions and alterations

MIP has been used as a basis for a large corpus-based metaphor analysis project on naturally occurring language data in English, carried out at the VU University Amsterdam. The nature of the research – it was applied to naturally occurring discourse in use, it was carried out by a group of researchers, and it consisted of a qualitative as well as a quantitative element – asked for an explicit and more elaborate method, with specifications of analysis on different levels. As a consequence, the basic MIP was adjusted and altered slightly on different levels (Steen et al. 2010), and was termed MIPVU to point to the elements involved.

One major alteration on the level of words was that identical words belonging to different word classes were analysed separately. The original MIP ignores part of speech information when dealing with identical base forms, meaning that it is possible, for example, to compare the verb *squirrel* with the noun *squirrel* if encountering one of these in a text (Pragglejaz Group 2007: 27). For MIPVU, however, a verb and noun with identical base forms (or any other combination of word classes) are judged separately from each other. This decision is based on the relation between words, concepts, and referents; a word designates one referent in the text world and refers to one concept. In the case of *squirrel* (v) and *squirrel* (n), the verb refers to one concept, the act of "putting something away in a secret place" (*Macmillan English Dictionary,* Rundell and Fox 2002), and designates one referent, and the noun refers to another concept, the "grey or red-brown animal with a long thick tail that lives in trees" (*Macmillan English Dictionary*), and designates one referent. Even though the derivation may have metaphorical grounds, the basic meanings of the verb and the noun point to different concepts and referents, and are thus not compared with each other for metaphorical usage.

As pointed out in Section 1.2, the original MIP was designed to find metaphorically used language, focusing on the linguistic representations of metaphor. As step 3 of the procedure indicates, it is concerned with only those words where the meaning in the given context contrasts, but at the same time can be understood in comparison

with, a more basic meaning of the word. It thus focuses only on indirectly expressed metaphors. One major difference between MIP and MIPVU can be found in the treatment of indirect and direct language use that represents a cross-domain mapping on a conceptual level. Where MIP only looks at metaphorically used words, MIPVU also analyses similes; it finds direct language use indicating a cross-domain mapping by looking for topic shifts and textual flags (see Goatly 1997). Thus, in the following sentence from one of the English corpus fragments (from the BNC-baby, used in the English language project), MIPVU is able to filter out directly expressed metaphors such as similes.

(1)   For many years Thompson lived in New York in his apartment at the Chelsea Hotel. From there, **like** *a buzzard in its eyrie*, he would make forays round the US and abroad in spite of his advanced age.   (BNC-Baby: A1H)

The adjusted MIPVU method formed the basis of our research on Dutch language use, since we wanted to include both indirect and direct metaphorical language in the data set. However, several decisions and language issues inherently related to MIP and MIPVU had to be altered for the procedure to become workable for Dutch discourse. These issues involved the use of specific dictionary tools, but even more so the lexico-grammatical differences between English and Dutch. On the basis of some of the steps and explications in MIP and MIPVU, I outline the consequences for Dutch in particular in the sections below.

2.   Dutch discourse and metaphor identification

2.1   Dutch discourse

A total of 100,000 words of Dutch news texts and spontaneous conversation were analysed for the occurrence of metaphorically used words. This was initially done by applying the method that had been developed for English language data. As stated by the Pragglejaz Group, "applying the MIP requires that researchers make a variety of decisions on the structure and meaning of language" (Pragglejaz Group 2007: 23). In addition to making a decision about the particular point of view on language structure and meaning, it is also necessary to clarify certain linguistic structures in the target language of the data. This is what we did for the application of the procedure to Dutch discourse.

The metaphor identification method developed by the Pragglejaz Group includes information on how to work with certain English linguistic phenomena. Instructions are given on how to treat, for instance, polywords and phrasal verbs, and other multi-word units. These phenomena, however, do not necessarily have to occur in every language, and a language other than English can have other linguistic phenomena that may need special treatment in relation to metaphor identification. Since it has been stated that the aim of developing a clear method is "to provide metaphor scholars with

a tool that may be flexibly applied to many research contexts" (Pragglejaz Group 2007: 1), it is possible to take the basic procedure as a starting point and to add language-specific details, or register-specific details, whenever needed. In addition, the tool with which basic and contextual meanings are established needs to be explained as well, since this will be different for each language, and may have operational implications. For the Dutch research project, we made use of the *Van Dale Groot Woordenboek van de Nederlandse taal* (den Boon and Geeraerts 2005), the 14th edition of the Dutch dictionary (henceforth referred to as *Van Dale* dictionary). This dictionary can be seen as the most encompassing dictionary of Dutch, and as a standard work of reference. However, as Steen has pointed out, "dictionaries and corpora are obvious helps in this area, but even these tools require further attention when it comes to their optimal employment in practice" (2007: 101). This means that, for the method to be applied to a target language different from English, and to be replicable in other situations, issues about the dictionary tool also need to be clarified. The following sections show in detail what problems occurred when applying MIP to Dutch discourse, and illustrate the use of such methods with a language other than English.

2.2   Differences in deciding about words

In principle, MIP has taken as its basic unit of analysis the word, as becomes clear in the case study reported on (Pragglejaz Group 2007). Exceptions to this principle are made for multi-word expressions in English, which occur regularly in different contexts. The clearest examples where MIP deviates from the principle of words as units of analysis occur with the treatments of polywords and phrasal verbs (Pragglejaz Group 2007, Steen et al. 2010), which is explicated in the respective procedures. Polywords and phrasal verbs are lexical units that consist of more than one word, but that are nondecomposable and are thus analysed as a whole, as single lexical units. The phenomena of polywords and phrasal verbs, however, are somewhat different when it comes to Dutch.

In the case of polywords, these do exist in Dutch in much the same way as in English, but cannot be traced in the corpus in a simple manner. As regards the English language project, the constituent parts of a polyword have been coded as part of speech tags in the BNC-corpus as belonging together. Therefore, possible questions as to whether some combinations should be seen as polywords or not are eliminated. For the Dutch corpus texts, decisions regarding polywords are more complicated. First, and most significantly, the separate parts of a polyword are not tagged in the corpus as belonging together. Secondly, nearly all polywords in Dutch are described in the *Van Dale* dictionary only under the head word of the unit, and do not receive a separate entry. Thus, in contrast to the English language project, it can be problematic for analysts of the Dutch texts to come to a uniform decision about when a polyword occurs and how it should be analysed for metaphorical language.

One example of a Dutch polyword is *met name*, a frequently used expression in Dutch and in the corpus texts. The following example from one of the corpus texts shows the context in which *met name* can occur:

(2)   *...in de vorm van begrotingsoverschrijdingen, **met name** in de zorg.* (NRC-front page)
...in the shape of budget overspending, with name in the care.
'...in the form of overrunning the budget, particularly in the care sector'.

As the gloss translation indicates, the literal translation of *met name* would be 'with name', whereas the actual meaning comes close to the English 'particularly'. The original meanings of the two constituents *met* and *name*, 'with' and 'name', have been lost in this expression, and the combination has become a fixed expression that more or less functions as an adverbial of quantity.

However, as stated before, there are no technical indications that this combination should be analysed as a polyword. When you look up the two words in the *Van Dale* dictionary, it is difficult to find the exact meaning of the fixed expression *met name*; the dictionary does not give clear indications that this combination can be seen as a polyword, but basic meanings of *met* and *name* (the inflected form of *naam* 'name') and more functional uses are listed under the respective lemmas. In order to follow the MIP procedure accurately, then, the parts *met* and *name* should be analysed on their own. Interesting in relation to metaphor identification is the fact that the constituents do have a basic meaning and one or more derived meanings when used separately from each other, and which could in some contexts be analysed as metaphor-related.

Such problems of identification occur for a large number of possible polywords. Since there is no uniform indication in the corpus that a combination of two or more constituents form a polyword, and since the dictionary does not help in this respect either, the analyst must analyse the separate constituents of the polyword on the basis of MIP. Thus, in the Dutch corpus, polywords are not analysed as one unit of meaning; they are analysed for their constituent parts. In some cases, this results in judging a word as metaphorically used, and, in other cases, this results in judging a word as non-metaphor related. In the case of *met name* in example (2), for instance, it proved difficult to find a description of the contextual sense, and it was thus not possible to contrast and compare the contextual meaning with the basic meaning.

In addition to polywords, MIP explains the treatment of phrasal verbs as multi-word lexical units. Whereas phrasal verbs are pervasive in the English language, these multi-word units do not exist in the same way in Dutch. In contrast, the Dutch language has the phenomenon known as Separable Complex Verbs (henceforth referred to as SCVs). SCVs are compound verbs consisting of a preverbal part and a verbal part, like *ingaan* (in-go) and *opzoeken* (up-look) (Blom 2005: 6). The interesting thing about SCVs is that the two parts are separated from each other when used in specific syntactic contexts, for example, when used in the finite form. An example of an SCV occurs in the following sentence, taken from one of the corpus texts:

(3) **ingaan** ~ *Zondag* **gaat** *de dienstregeling* **in.**   (Volkskrant-national)
        in-go ~ Sunday goes the timetable in.
        'be effective ~ The timetable is effective from Sunday'.

In basic terms, SCVs are comparable to English phrasal verbs; they consist of a verbal part and a particle (often in the form of a preposition) that belong together. A Dutch SCV, however, is always written as one word in its infinitive form, and is only separated in some syntactic contexts.

SCVs can be distinguished from frequently collocating words on the basis of the dictionary and on syntactic grounds, where arguments and complements are clear indications. The *Van Dale* dictionary lists common SCVs as one unit, and gives definitions, both basic and derived, under the lemma entry of the SCVs. To be sure, though, that two elements belong to the same unit, the syntactic properties can give clear insights. The preverbal part, or particle, is part of the complex verb when it is an adposition, and when the verb is transitive. The particle cannot be a preposition since it does not function as the head of a prepositional phrase. Two examples of a combination of *draaien* ('turn') and *om* ('around') illustrate the major syntactic differences between an SCV and a prepositional verb (a frequently occurring combination of verb and preposition).

SCV *omdraaien* (around-turn; 'turn')
(4) *De man* **draait** *de knop* **om**
        The man turns the switch around
        'The man turns the switch'

Prepositional verb *draaien + om* (turn around; 'revolve around')
(5) *De aarde* **draait** *om de zon*
        The earth turns around the sun
        'The earth revolves around the sun'

In sentence (4) we are dealing with the transitive verb *omdraaien*, defined in the *Van Dale* dictionary as "*draaiendbewegen, wenden, van stand doen veranderen*" ('move while rotating, turn, change position'). *Draaien* and *om* are separated when the verb is used in a head clause, and together take two arguments, the subject *de man* and the direct object *de knop*. The word *om* should not be seen as a separate word, but as part of a complex verb or word combination. In the case of (5), the verb *draaien* is intransitive, and *om* functions as the head in the prepositional phrase *om de zon*. Together, they frequently occur as a prepositional verb.

The notion of SCV has been subject to extensive research in the area of construction grammar in Dutch (e.g. Blom 2005, Booij 2002, Verhagen 2005), but is also interesting in relation to metaphor identification. If you look at example (3), you will notice that *gaat* and *in* are separated. In principle, the metaphor identification method used works on the level of words, and may thus analyse *gaat* and *in* separately. In the context of (3) this can lead to two potential metaphor-related words; *gaan* is not used in its basic sense but in a more abstract, time-related sense, and the same seems

to be the case for *in*. If an SCV is not taken into account as being one lexical unit, the analyst may count two metaphor-related words, *gaan* and *in*. However, if *gaan* and *in* are seen as two separate constituents of one complex unit *ingaan* (which it essentially is), the contextual sense of the unit as a whole has to be compared with the basic meaning of the unit as a whole, and only one metaphor-related word will be counted in example (3). Thus, to keep the data set clean and representative, it is necessary when applying the steps of MIP to take into account SCVs in Dutch language data as multi-word lexical units at all times, and analyse them as such, despite spelling conventions.

Similar to SCVs in form and separability are words such as *ermee*, *daaover*, *hiervoor*, and so on, words which are called *voornaamwoordelijke bijwoorden* ('pronominal adverbs') in Dutch, but which do not exist to such an extent in English. They are difficult to classify, but could be described as adverbials with existential elements, with *er* and *daar* being equivalent to the English existential 'there'. The other part of these complex words is a preposition, often one of the frequent Dutch prepositions. An example of how these words occur in discourse as compounds can be found in (6):

(6) *Tot nu toe kregen zij **hiervoor** juridisch toestemming...*   (Telegraaf-world)
     Till now on received they here-for judicial consent...
     'Until now they received judicial consent *for this*...'

The same unit can be separated without changing meaning or becoming grammatically incorrect, as is illustrated in the variation of (6) in example (7):

(7) *Tot nu toe kregen zij **hier** juridische toestemming **voor**...*
     Till now on received they here judicial consent for...
     'Until now they received judicial consent *for this*...'

Again, the part of the pronominal adverbs important for metaphor analysis is the prepositional element. When analysing Dutch prepositions for their metaphorical meaning, we can take a similar approach to English prepositions. Research on the meaning of English prepositions has indicated that they are often involved in metaphorical language use, and that a great number of prepositions are used in both concrete and abstract senses (see Lindstromberg [1998] on the meaning of English prepositions, and Tyler and Evans [2003] on the semantics of English prepositions from a cognitive linguistic point of view). Some studies on certain Dutch prepositions reveal similar patterns of use (see Cuyckens 1991, 1995), and a quick glance at the meaning definitions in the *Van Dale* dictionary of some of the most common Dutch prepositions shows that to a great extent these have the same semantic structures as in English. The examples below show that some of the most common prepositions in Dutch, such as *in* and *op*, are used in similar contexts to their English counterparts (examples are taken from the Dutch corpus used for the research, and from the BNC-baby).

(8)   *De kleurrijke politicus ... werd midden **in** een bijzonder spannende verkiezing-scampagne doodgeschoten...* (AD-front page)
      'The colourful politician ... was killed in the middle of a particularly exciting election campaign...'

(9)   Landlords didn't acknowledge the writ, so *in* January Debbie's solicitor requested a judgment...   (BNC-Baby: AHB)

In examples (8) and (9), the preposition *in* is metaphorically used; it is not used in its basic spatial sense, but designates a temporal referent, referring to a specific point in time during which an event happened. These examples illustrate one of the most common uses of the preposition *in* in Dutch and English – that of a temporal point.

As regards the Dutch preposition *op* and its English counterpart *on*, these can also be used in a temporal sense, as illustrated in (10) and (11):

(10)   *ja ik weet ook niet hoe de situatie nu op 't moment is hoor.*   (CGN-fn000394)
       'yes I don't know either what the situation is like at the moment'.

(11)   The members, many of whom are unable to fulfil the latest £101m cash call due *on* March 2 ...   (BNC-Baby: A12)

In these examples, both *op* and *on* are used in a metaphorical way; they are not used in their basic sense of space but in the derived sense of time. Although the Dutch example is more general in time than the English example, which points to a specific time during the year, the uses of *op* and *on* are comparable. Examples (8), (9), (10), and (11) are clear examples of how common prepositions in Dutch and English are employed in similar ways.

Although prepositions on their own did not pose problems when it came to the application of the method, the relation of prepositions to complex lexical units like pronominal adverbs, SCVs, and polywords is important for metaphor analysis. If constituents of complex words in the form of prepositions are not recognized as such, they will be analysed as separate words, and may often be judged as metaphorically related (since prepositions often carry metaphorical meaning, as illustrated in examples 8–11). To keep the data set consistent and representative – the word is the unit of analysis, even when it is complex – it is important that the analyst recognize different elements of (separable) complex units. As far as SCVs and pronominal adverbs in Dutch are concerned, these can be found in the dictionary as lemma entries, with meaning definitions of the units as a whole.

2.3   A more basic meaning: The dictionary problem

In order to find metaphor-related words, the meaning of a specific unit in a particular context is compared to a contrasting, more basic meaning of the unit. In this step of the procedure, it is necessary to determine if the unit has a more basic contemporary meaning. One way to do this is to use a contemporary dictionary of the target language,

and preferably a dictionary based on a contemporary corpus, that has taken into account the current use of words. Our research is concerned with metaphor in contemporary language use, and means to disregard historical language use. We were thus interested in contemporary polysemy, as opposed to historical polysemy, when looking up a basic and contextual meaning of a word (Steen 2007: 96). A corpus-based dictionary takes into account contemporary polysemy, based on what uses of words are found in the corpus, and disregards archaic meanings of words on the basis of their not occurring in a contemporary corpus (see Charteris-Black 2004, Deignan 2005). Unfortunately, no corpus-based dictionary exists for Dutch, so we are forced to use a more general reference dictionary. For this particular project, we made use of the *Van Dale* dictionary (14th edition), an authority in the field of the Dutch lexicon.

There are some limitations to the use of a reference dictionary in relation to finding metaphor-related words in natural language. These limitations have to do with the nature of the dictionary, and the way words and senses are represented. It has proved important to explicate how to interpret information in the dictionary to establish an appropriate basic meaning for lexical units. Apart from the occasional intuitive differences between analysts on what they saw as the basic meaning of a unit, the issue of archaic senses provided some of the problems in this respect. Our research is aimed at finding metaphorical language in everyday talk and text, and looks at numerous linguistic and conceptual structures. Since we are concerned with Dutch in its present form, we want to base our analysis on this idea. For Dutch, we only have one reference dictionary at our disposal, in which archaic senses of words are also still listed. These have been labelled *verouderd* ('archaic'), so they are easily detectable, and can thus be easily by-passed in the search for the basic meaning of unit.

A second, and perhaps more pressing issue, which is related to the nature of certain reference dictionaries and the step of finding the basic meaning of a word, is the issue of defining word meanings in terms of nominalizations. Whereas usage-based dictionaries describe meanings of words on the basis of how the word is used in context, and explain its meaning in an elaborate way, reference dictionaries like the *Van Dale* dictionary regularly use synonyms in meaning definitions. In addition, nouns that have been derived from polysemous verbs are often described in terms of the action of the particular verb, and do not receive information on its specific use. In these cases it is often difficult to decide whether the noun, like the verb, has one clearly basic sense and several derived, possibly metaphorical senses, or if it must be seen as general and vague in use. An example of such a definition can be found for the noun *aanpak* ('approach'). *Aanpak* is used in the following corpus text (about shelter measures for drug addicts):

(12)   **aanpak** ~ *Zij kondigde een trapsgewijze **aanpak** aan.*(NRC-national)
        approach ~ 'She announced a step-by-step approach'.

The definition of *aanpak* in the *Van Dale* dictionary is simply the action of the verb *aanpakken*, namely "*het aanpakken, wijze van aanpakken*" ('the approaching, manner

of approaching'). It does not include information about possible concrete and abstract senses and uses of *aanpak* and *het aanpakkken*. The verb *aanpakken* in the dictionary has a clear basic meaning and clear derived meanings, which could be seen as metaphorical meanings in some contexts; the basic sense can be described as 'taking something with your hands' and an example of a derived sense is 'approaching a difficult task or situation'. It is difficult to make a decision on the uses and meanings of the noun *aanpak* if it is described in such a general way, disregarding the multiple senses of the verb. It could be said that it clearly refers to the verb, which has both concrete and abstract meanings, whereupon it can be concluded that the same then works for the noun. However, it is also possible to say that the noun has one general meaning, that it is monosemous, and that, according to the dictionary entry, we do not have to make a distinction between concrete and abstract use. The lack of meaning distinction in the dictionary could be interpreted as a reflection of the actual use of *aanpak* as a noun, with the idea that all uses fit within the abstract sense of the noun. Since the dictionary is not based on usage *per se*, however, a possible metaphorical meaning of *aanpak* may be lost when it is described in general terms.

The results of a number of reliability tests (tests to check the reliability of MIP, carried out with three trained analysts on Dutch discourse) show that the analysts are not always in agreement about how to deal with these nouns, which has to do with the confusion of the sense descriptions, but can also be influenced by native language intuitions. In the case of *aanpak*, for instance, the analysts may follow the one general meaning without going to the verb, because intuitively they judge that the noun is always used in an abstract way. For other nouns, for instance *vervolg* ('continuation') with the definition *het vervolgen* ('continuing', but also 'prosecuting'), analysts may say that the noun can be and is used frequently in different concrete and abstract contexts and meanings, and it is thus necessary to go to the verb meanings to establish a basic and contextual meaning. Regardless of what the decision is concerning the verb meaning for nouns such as *aanpak* en *vervolg* (there are arguments for and against either of them), it is important to explain it clearly in the procedure, and in the additional information on the dictionary tool. If the decisions and steps have been recorded properly, future research on similar subjects can copy the decisions, and data sets become comparable.

2.4   Other metaphor forms: Checklists in Dutch?

MIP has been designed to find metaphor in discourse in a systematic manner. As stated clearly by the analysts, it has not been designed to identify similes as metaphorical (Pragglejaz Group 2007: 32). The extended procedure used in our research project, however, is capable of finding similes and identifying the words that are part of it as metaphor-related. The formal steps to find similes, or directly used words representing

metaphorical mappings, include looking for topic shifts, but most importantly looking for lexical units that flag these words. Similes in English are characterized by the occurrence of markers like *as* or *like*. An extended list of markers has been identified by Goatly (1997), including clear instances of indications of metaphorical language. Goatly's (1997: 173–174) list, however, is designed for English discourse. The markers could be translated into the target language of the research, but this brings with it the risk of inaccuracy. A similar problem would occur as with polywords; there is no standard checklist for Dutch, so it is difficult to come to an agreement on this matter when working with multiple analysts and multiple interpretations.

The lack of checklists for polywords, metaphor markers, or related linguistic phenomena in languages other than English makes it more difficult to apply a method that has been developed on the basis of English. As regards Dutch, the problems lie less in finding similes on the basis of linguistic markers, and more on the remainder of the linguistic markers in Goatly's list. As far as similes in Dutch are concerned, these are typically introduced by *zoals* or *als*, the translations of *like* and *as* in this context. Example (13), from one of the corpus texts (about a performance of conductor Jaap van Zweden), illustrates a case of a simile with a clear marker:

(13) ***Als*** *een slangenbezweerder die niet een maar vele kronkelende gifslangen in bedwang probeerde te houden, hypnotiseerde Van Zweden de naar het afstandelijke neigende musici* (…) (NRC-arts)
'Like a snake charmer who was not trying to control one but many twisting snakes, Van Zweden hypnotized the musicians who were inclined to the detached (…)'

The translations of the most frequent English markers of a simile are also used in Dutch in the same contexts. These can thus be easily recognized. However, more complicated and obscure markers of metaphorical language from Goatly's list cannot be used as easily in translation for Dutch or for other languages. Examples of words flagging metaphorical language from the English language project that are also explained in Goatly (1997) are *as if* and *as though*, and *symbolically*, to name a few. These markers and their functions are explained in more detail in Goatly's list, and can be found systematically in the English corpora. However, since it is difficult to translate these into Dutch, it is also more difficult to find them systematically. The only lexical flags marked in the corpus are *zoals* and *als*, and it could be that, due to a lack of a systematic checklist, flags of metaphorical language (and thus metaphorical language use) have been missed. Methods and studies on metaphorical language in English are able to rely on extensively researched lists (and other previous research on English-language metaphors), but it becomes more problematic for such research in other languages. It has to be taken into account that lexical issues and lexico-grammatical matters are predominantly language-specific.

3.   Conclusion

The previous sections have shown that it is important to take into consideration language-specific issues when using a method like MIP or adjusted versions for Dutch, and to explicate adjustments in clear instructions. Such adjustments mainly have to do with the tools that are available for certain languages (e.g. large corpora, extensive dictionaries) and with lexico-grammatical differences between languages. Examples of the latter are the existence of SCVs and so-called pronominal adverbs in Dutch. In addition, the lack of research on metaphor markers, and the lack of extensive lists that could be applied and searched systematically, forces the analyst to describe additional instructions in the procedure. If this is taken into account, a general procedure like MIP can work satisfyingly well for Dutch, and generates data that can be methodologically compared and evaluated across languages.

The problems encountered with Dutch metaphor identification that have been spelt out here give an idea of what kinds of problems analysts come across when using methods based on another language than the target language. Similar issues will undoubtedly occur for other languages. What has to be taken into account with respect to the above illustrations, however, is the fact that Dutch and English are closely related in lexical and grammatical features. Both languages are relatively low in inflection, and share lexical and grammatical (or syntactic) features. Moreover, meaning is predominantly present in words, and morphemes and inflections are added for grammatical purposes. In this respect, other Germanic languages and Romance languages such as Spanish and French will, to a large extent, pose similar problems. Consequently, they will need similar solutions that have to be found in the lexico-grammatical field, and in contrastive grammars.

It has to be noted that languages that are more complex than English, Dutch or Spanish, for instance, may not directly benefit from a method such as MIP, which takes the word as the unit of meaning. There are many complex languages that have morphemes with meaning units, or that work with symbols that express multi-word phrases, clauses or other expressions, such as Asian languages. A method such as MIP, or any adjusted version of the method, will not work properly for Asian languages, since it is often impossible to take apart the meaning units of symbols. Making adjustments to MIP for Dutch or for Spanish, for instance, is relatively simple, but it has to be noted that it will be much more complicated for more complex languages and language systems.

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Locating metaphor candidates in specialized corpora using raw frequency and keyword lists

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This chapter explains one method that can be used to extract linguistic metaphors from a specialized corpus of Italian political speeches, using statistically-based measures incorporated into most standard corpus query software – in this case, WordSmith Tools (Scott 2004). This method can be used alone or in combination with existing manual or semi-manual analyses. While software has been developed for the automatic extraction of metaphors in English, minority languages, including Italian, lack tools for semantic annotation and probability measures that underlie such applications. The method presented in this chapter is intended for users who have no access to lemmatizers, semantic taggers, etc., and/or are working with under-resourced languages, for which no such tools are generally available.

Keywords: Italian, metaphor detection, under-resourced languages

1.   Introduction

When using corpora in metaphor studies, the question always arises as to how metaphors are to be located. Corpora are designed to facilitate the extraction of forms, but metaphors are not formally different from other words: they are merely words that are being used with a metaphorical sense. While it has been demonstrated that metaphorically used words tend to collocate differently from their non-metaphorical counterparts (see Deignan 2005, Deignan and Potter 2004, Partington 2003), unless the distinct collocational patterns have been identified in advance, the researcher cannot take advantage of the differences in formulating his or her search queries. A further complication arises when the metaphorical meanings are not common enough to appear in a reference corpus, making it impossible to analyse their patternings.

This chapter aims to offer researchers a method for locating metaphors in corpus data that does not rely on prior investigation of word forms and their collocates, nor

does it require extensive reading and annotation of the corpus texts. For reasons that are detailed below (Section 4), the success of the approach is dependent on the corpus being homogeneous as far as its topical content (subject matter) is concerned; it thus responds to the growing interest in domain-specific language in corpus studies and increasing use of corpora in metaphor research. It also responds to the pressing need for methods that are independent of dedicated software applications, which are not language-specific, and which can be used by the individual researcher using a PC concordance package to analyse an un-annotated corpus.

2. What is a metaphor?

Some metaphors are more metaphorical than others. This has less to do with the metaphorically used word than it does with the way that an individual interprets that word. In the approach taken here, some metaphors are treated as metaphorically motivated terminology rather than as metaphors proper, and it is necessary to explain the reasoning that lies behind this decision.

In a strict definition of metaphor, any word that is used to mean something different from its main, or core, sense, is being used metaphorically.[1] Determining precisely what the core sense of a word is not without its problems. If by *core* we mean *literal*, then all non-literal uses must, by default, be metaphorical. While this allows for a clear-cut differentiation between literal and non-literal to be made, it is not necessarily the most practical measure to adopt, not least because several definitions of literal co-exist (see Lakoff 1986, Gibbs et. al 1993). If, however, we choose to take *salience* as the benchmark against which to measure metaphoricity, the distinction between figurative and non-figurative blurs markedly. Salient meanings are those that are the "coded meanings foremost on our mind due to conventionality, frequency, familiarity, or prototypicality" (Giora 2003: 10). A salient sense need not be literal, as demonstrated by the morass of dead metaphors, in which the metaphorical sense, by force of linguistic habit, is used without regard to its figurative nature, but rather as if it were simply a homonym of its literal counterpart. In brief, a word can be used metaphorically without it necessarily being perceived consciously as *a metaphor*.

While the literature abounds with distinctions of metaphorical vitality (whether alive or dead, or somewhere in between), less attention has been paid to context- and usage- dependent classifications of metaphor. Metaphor is in the eye of the beholder, as it were, and there are some parameters that affect the perception of metaphoricity. One is the semantic parameter, which distinguishes between dead metaphors and their live counterparts, though this is not discussed here (see the classifications in Black 1993, Goatly 1997, and discussion of these in Deignan 2005; on dead metaphor in

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1. See, for example, the metaphor identification procedure outlined in Pragglejaz Group (2007); also see Section 3 and Dorst and Kaal (this volume).

particular, the reader is referred to Lakoff 1987). The dimensions that are considered here, because they are directly relevant to the metaphor location method to be outlined, are related to matters of familiarity operating on three interrelated planes: the pragmatic, the textual, and the personal.

The more conventional a metaphorically-used word or expression is, the less metaphorical it seems, because its conventionality acts as a buffer, weakening the elaboration of the metaphorical entailment and thus dulling the imagery invoked by the metaphor. This is true of the semantic dimension as well as the pragmatic one, but of particular importance to pragmatic meaning is the fact that a conventional metaphor is not used so much for the conceptual or visual correspondences that it sets up (as their freshness has waned), but rather for the pragmatic force that has come to be associated with that particular expression. That force is not inherent in the metaphorically used word, but is a result of its use in conventionalized collocational patterns. Similar to the concept of the "metaphoreme"[2] (Cameron and Deignan 2006), which is familiar to metaphor scholars, the pragmatic force associated with a metaphor in its lexical context is well-established in corpus linguistics, where it is associated with the term "semantic prosody" (Sinclair 1996)[3], the most abstract and intangible element of the "extended unit of meaning" (ibid). The conventionalized patternings associated with the metaphorically used word comprise lexical and grammatical features – respectively, in Sinclairean terms, "collocates" (words that repeatedly co-occur with the expression) and "colligates" (grammatical classes that repeatedly co-occur with the expression, including syntactic and textual positioning in addition to collocation of items belonging to the same word class: see especially Hoey 2005). Variety in collocates belonging to a particular semantic or lexical set lead to the identification of the "semantic preference" (Sinclair 1996). The semantic prosody, however, can be glossed as "what is really being conveyed by the use of this chunk", and is a complex combination of semantic meaning, attitude, and evaluation, and the circumstantial and contextual (extralinguistic) factors surrounding its use. So an established metaphor conveys not only an established (semantic) meaning, but also an established set of associative meanings and an established pragmatic force (see Philip 2009b). In contrast, a novel metaphor, which by definition is unconventional and therefore has not yet built up its own set of typical patternings, does not occur as part of a unit of meaning but, instead, as a free-standing element: it can thus only rely on the power of word meaning, and its pragmatic value is gleaned from extemporaneous features alone, not from established use.

Notions of conventionality are not absolute, however, and one of the most noticeable ways in which conventionality can be misinterpreted is in specialized discourses.

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2.   Editors' note: The term "metaphoreme" is "posited as a bundle of lexico-grammatical, cognitive, semantic, pragmatic and affective features around a phrase that has metaphorical meaning, and that has emerged over time from discourse" (Cameron 2010: 336). See also Gibbs, this volume.

3.   See also Aksan and Aksan, this volume.

Terminological, restricted, or domain-specific meanings attract patternings that are conventional in a particular discourse, but are not conventional in general language. Members of the discourse community adhere to its norms of usage: domain-specific vocabulary is acquired, used and interpreted in the form that is conventionalized for that discourse. Outsiders to that discourse perceive such discourse-conventional forms in a different light, however, effectively over-interpreting their meaning because the unit of meaning in operation is not conventional in the discourses with which they are familiar. As a result, the outsider is far more likely to notice that a word is being used metaphorically than a discourse community member is: while 'growth' and 'flow' are used metaphorically in economics discourse to talk about the generation of wealth and the exchange of money respectively, an economist uses these words as terms, not as metaphors, while linguists repeatedly fall into the trap of considering them as metaphors whose entailments require investigation. The stance taken in this chapter is the following: metaphorically motivated terminology is used as terminology, not for its metaphorical value. It is thus excluded from consideration in a study of metaphor, because although its meaning is metaphorical if judged with reference to an earlier, *original*, sense, it is not used metaphorically. Partington expresses the concept succinctly: a dead metaphor is "an item which has ceased to collocate, in a particular genre, with the set of items it collocated with in its earlier sense" (2003: 210).

This brings us to the final parameter, that of the individual's experience of the language. While conventionality is a fact pertaining to the language and its community of speakers, familiarity lies with the individual. A conventional metaphor is not necessarily familiar to all speakers; this is especially true for language learners, but it is equally the case for native speakers who have simply not come into contact with the metaphor in question. Irrespective of the reasons why a conventional metaphor is unfamiliar, the result is to opt for a salient-meaning-first strategy in determining its meaning (Giora 1999). Thus the word-meaning value of the metaphor is effective, with the pragmatic force of the semantic prosody remaining largely inaccessible. I say *largely inaccessible*, because it is not necessarily absent: when a conventional metaphor is being used, this is for its pragmatic meaning, as expressed through the semantic prosody, not for the surface wording (but see Philip 2011, Chapters 6 and 7 on creative uses and variation). Speakers are quite able to infer the intended pragmatic meaning from other contextual cues, and perceive the mismatch between the words used and the (presumed) intended meaning (ibid., Chapter 4).

While conventional use of metaphor is identifiable in corpus data, the same cannot be said for familiar use of metaphor. Although this aspect of comprehension should always be taken into consideration, it cannot be investigated empirically using corpus data because it deals with the personal rather than the collective, and it therefore does not affect the findings of corpus-based research. Conventional language use is realized in corpus data in consistent collocational patternings, making it possible for the researcher to distinguish those words that are used metaphorically from those that are metaphorical but used conventionally, such as metaphorically-motivated terminology.

This matter is particularly important when dealing with unfamiliar specialized domains, as it enables the researcher to filter out his or her own perceptions of metaphoricity (see Section 3), and instead measure it according to the norms of the discourse community in and for which the language concerned has been produced.

3.   Locating metaphors in text

The identification of metaphors in text is a time-consuming and labour-intensive business. There are various possible approaches that can be adopted, but all necessarily involve the close reading of the text(s) concerned, sometimes by more than one researcher, in order to identify metaphorically-used words as defined by the agreed classification criteria. The metaphor identification procedure (MIP), described in Pragglejaz Group (2007: 3), uses the following criteria to identify metaphorically used words:

> 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.

By following this procedure, both content and structure words may be classed as metaphorical, while it is common elsewhere to disregard apparently non-literal uses of structure words (for example, the prepositions 'in' and 'on') and focus exclusively on content words. This stringent method, while ensuring replicability, does not respond to the needs of all researchers, not least because it treats each word (i.e. a string of characters surrounded by white space) in isolation from those around it, and thus cannot account for multi-word units and meaning expressed over word boundaries. For this reason, some researchers prefer to use modified versions of this procedure, (see, for example, Low et al. 2008), while others still use the criterion of incongruity to identify metaphors (Cameron 2003, Charteris-Black 2004). In some cases, researchers do not specify their criteria for classifying uses as metaphorical (e.g. Partington 2003).

Reading texts in a linear fashion from beginning to end has its advantages and disadvantages: on the one hand, the sequential identification procedure makes it difficult for metaphors to slip through the net as each word is considered in turn, and borderline cases can be checked one at a time against the classification criteria. However, as with any activity requiring human concentration and judgement, errors, omissions, and misclassifications may arise, even if the work is being double-checked by another researcher. The study reported by Pragglejaz Group (2007) illustrates clearly both how metaphor identification can be carried out, and how even well-trained experts may differ in their judgements when following the same classification criteria.

If this procedure is carried out on all the texts comprising a corpus, that corpus can then be tagged for its metaphorical content and queries performed on these tags. However, it is not common for entire corpora to be tagged for their metaphorical

content. Scholars whose work focuses on metaphor in discourse and who use corpora for this purpose (Charteris-Black 2004, 2005, Partington 2003, Koller and Semino 2009, Semino and Koller 2009) inevitably encounter problems due to the sheer volume of data to be analysed. Corpora are generally too large for manual analysis to be considered feasible, so the problem of identifying metaphors tends to be overcome by combining such close reading with concordancing. The identification procedure in this case is generally performed in two stages, one manual, the other automated. The first stage involves close, word-by-word reading of a sample of the corpus texts, and then the findings obtained from this analysis are used as the basis for the corpus analysis proper, in which concordances of the identified words and expressions are called up (see Berber Sardinha, this volume). In addition to the actual words found in the manual analysis, the researcher may choose to include others that s/he believes are likely to occur, for example, synonyms and semantically related forms, as well as co-inflected forms of the identified lemmas, e.g. including the plural form of a word that has been identified in the singular as being metaphorical.

Charteris-Black reports the following procedure:

> My approach to metaphor identification has two stages: the first requires a close reading of a sample of texts with the aim of identifying candidate metaphors. [...] These candidate metaphors were then examined in relation to the criteria for the definition of metaphor specified in Chapter 1. It will be recalled that these were the presence of incongruity or semantic tension – either at linguistic, pragmatic, or cognitive levels – even if this shift occurred some time before and has since become conventionalized. Those that did not satisfy this criterion were excluded from further analysis. Words that are commonly used with a metaphoric sense are then classified as metaphor keywords and it is possible to measure the presence of such keywords quantitatively in the corpus. The second stage is a further qualitative phase in which corpus contexts are examined to determine whether each use of a key-word is metaphoric or literal. (2004: 35)

Partington (2003: 198–210) takes a very different approach to metaphor identification, eschewing any manual analysis whatsoever. He extracts keywords from his data (a genre-specific corpus) then computes n-gram clusters (consecutive strings of 4–5 words) featuring these keywords. Different meanings are characterized by distinct phraseological patternings, so metaphorical uses can be distinguished from non-metaphorical ones (ibid: 199). Koller and Semino (2009) and Semino and Koller (2009) use a combination of these two approaches. In the first instance, they manually analyse a core sample of the data – around 25% – following the MIP procedure (Pragglejaz Group 2007) to identify the metaphors used. They then compare the metaphors to a keyword list to see whether any of them were key in the corpora studied. Concordancing is carried out on both the keywords and the metaphoric expressions, and an n-gram tool is used to extract the phraseological patternings associated with the metaphorical words and expressions (Koller and Semino 2009).

Even if partial manual analysis plus corpus querying makes it possible for metaphors to be studied in large data sets, it is more problematic than manual analysis alone. Recurrent metaphors, or groups of lexically or semantically related metaphors, inevitably predominate in such analyses, because corpus searches for the identified words (and any related ones that the researcher wishes to include) will result in the retrieval of further instances of those words in the remainder of the data. In contrast, any metaphors (whether one-off or recurrent) not found in the part of the corpus that was processed manually remain invisible. The metaphors are present in the data, but are hidden.

4.   Locating metaphor candidates

4.1   Background

How can the problem of retrieving metaphors be solved? For the researcher working on English language data, there are ways of getting round it. English is probably the best resourced of all languages as far as text processing tools are concerned, with lemmatising part-of-speech and semantic tagging easily available even for researchers working with corpora that they have compiled themselves. The situation for researchers working with other languages can be quite different. For example, Italian – the language used to illustrate the method in this chapter – has no national corpus, and the only true general reference corpus is somewhat limited in its functionality; annotation tools such as lemmatizers and part of speech (POS) taggers exist but are not made available outside the research teams that have developed them, meaning that outsiders cannot benefit from them. The individual researcher who has compiled a corpus can only rely on the data in its raw form, and the statistical calculations that come as an integral part of many PC concordance packages. It is with these resources in mind that a method for locating metaphor has been developed.

4.2   Preliminaries

This is an approach that can be used with specialized corpora, as specified both in the title to the chapter and in the introduction. Specialized here refers to the domain, i.e. the thematic or topical content of the texts that make up the corpus, not to their genre or register. This point must be stressed, as the method used hinges on there being a clear distinction between the subject matter of the discourse and the remaining, unrelated lexis. Metaphor rests on there being incongruity between the topic/target domain and the vehicle/source domain. The incongruity arises because a word that does not belong to the subject matter being discussed is used when discussing that subject matter.

The procedures for identifying metaphors in corpora described in Section 3 were all adopted for research based on genre-specific corpora. In such a data set, there is no clear-cut division between the subject matter of the data and incongruous subject matter (which may turn out to be metaphorical), as a wide variety of discourse topics

are featured. This means that a word or conceptual domain may be used literally in some texts, and metaphorically in others. It is unlikely that such polysemy would occur within a single text, however, unless special effects such as humour, irony, or cliché were deliberately being sought (Hoey 2005: 82). In a genre-specific corpus, the heterogeneity of discourse topics makes the automatic identification of metaphor extremely problematic. In contrast, the broadly monothematic nature of a specialized corpus makes identifying its core subject matter quite a simple procedure. In this case, it is possible to extend Hoey's (2005: 82) claim that senses of polysemous words tend to avoid each other's textual environments to a discourse setting: it is extremely unlikely that words belonging to the core subject matter of a specialized discourse should be used both literally and metaphorically within that same discourse.[4]

Starting from this premise, then, the topical content of the specialized corpus is treated as a generic *potential* metaphorical topic (for linguistic metaphors) or target domain (for conceptual metaphors found in the corpus), and those words that are unrelated to the discourse topic can be treated as *potentially* metaphorical. Single, "one-shot" occurrences (Lakoff 1987) are *potential* metaphor vehicles, while if semantic or lexical sets can be identified from among the incongruous words, the resulting sets can be said to be *potential* metaphorical source domains. The shift from being *potentially* metaphorical to being confirmed as metaphorical occurs as a result of further investigation of the individual instance in context, which is done by calling up concordances of the relevant word form or lemma (see Section 4.4).

4.3   Establishing the thematic content of the specialized corpus

The data used in this study was downloaded from the Italian government homepage (www.governo.it) over a twelve-month period (June 2006–May 2007), and was to be used for a study of Italian women politicians' metaphorical language (Philip 2009a). The data was stored as five separate corpora (corresponding to the Ministries of Family Policy, Equal Opportunities, Finance, Regional Policy, and Youth Policy and Sport), and within each corpus the different text types – transcribed speeches, press releases and communiqués, and published interviews – were separated into distinct subcorpora. Over a year, some Ministries produce more written output than others, reflecting their relative prominence, with the result that the sizes of the corpora, and the text types included in them, differ considerably. Details of the composition of the subcorpora can be seen in Table 1.

In a specialized corpus, one would expect the thematic content to be fairly evident. However, in the case of the corpora discussed here, more than one specialized area may be present, both as a result of the Ministerial remit, and due to the political and

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4.   There are always exceptions to rules: when teaching a metaphor module in an academic writing in English class, I made use of a text dealing with software design for an architecture application, where the same architecture terms were used (conventionally) to describe how the software was *constructed*, as well as for actual architectural features.

Table 1. Corpus size (running words) and composition

Corpus	Subcorpora			Total
	Speeches	Communiqués	Interviews	
Family Policy	32,067	13,658	73,360	119,085
Equal Opportunities	3,107	42,157	–	45,264
Finance	78,926	31,132	–	110,058
Regional Policy	5,172	9,101	–	14,273
Youth Policy and Sport	4,664	30,543	63,121	98,328
	123,936	126,591	136,481	387,008

social climate of the period when the data was collected. When the Ministerial remit is varied, the topics it covers may be quite closely related (as is the case for the Ministry of Finance, which covers trade and commerce, economics, and financial policy), but equally the topics may be quite distinct (there may be some overlaps between the domains of sport and young people's interests, but they are essentially separate). As far as transient socio-political issues are concerned, the Church and religious faith feature prominently in the data for Family Policy, reflecting the conflict between Church and State caused by the civil partnership legislation being discussed when the data was collected (see Table 2). Given this state of affairs, the researcher cannot presume to know *a priori* what lexis and subject matter feature most prominently in the data. It is therefore necessary to find out what words are used, which can be done computationally. In the present study WordSmith Tools version 4 (Scott 2004) was used, although most PC concordance packages on the market provide comparable functionalities.

Content is determined by frequency: the higher the frequency of a word (or lemma), the more central it is to the content of the corpus. Frequency can be calculated as a raw figure (the actual number of occurrences), or as a statistically relevant figure, calculated with reference to a baseline measure. The first stage for either measure is to generate a word-frequency list. This is a very simple procedure and can be done with or without concordance software.[5] Once the list has been generated and displayed by frequency, a cut-off point can be decided and any words occurring below that threshold discarded. The remaining list of frequent words can then be sorted alphabetically – for the sake of convenience – and subsequently grouped into semantically-related sets if finer-grained target domains are sought at this stage.[6]

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5.   An Internet search for "word frequency generator" or "word frequency list" should lead the researcher to a range of the many freeware applications which can generate such lists, both alphabetically and by frequency.

6.   Such groupings can be left until later stages of analysis, as it is the combination of target and source domain groupings which will provide evidence of conceptual metaphors.

The most obvious finding of a raw frequency count is that function words (*the*, *a*, *he*, *of*) appear most often, with content words occurring lower down the list. For an analysis of thematic content, the structure words are of limited interest, as metaphors require content. Structure words can be eliminated manually to leave only content words, but mere frequency of occurrence cannot shed light on the relative importance of those content words to the domain under study. For this reason, it is preferable to determine their frequency relative to other domains by applying a statistical measure that compares the content of the specialized data with less specialized data. In WordSmith tools, this is done through the Key Word function.

Keywords are calculated by comparing the word-frequency list of the corpus being examined with the word-frequency list of a reference corpus. The keyword application computes the frequency in the corpus relative to the number of running words in the same data set, and cross-tabulates the score obtained with that of the frequency of the same word in the reference corpus, relative to the number of running words in the reference corpus (Scott 2004). Words are considered *key* if their occurrence in the researcher's corpus is significantly more frequent than their frequency in the reference corpus, significance being identified by a very low p value (Scott 2000). The default *p* value in WordSmith is 0.000001 (one in 1 million), making classification as key maximally selective, as it is preferable to include fewer, not more words in the keyword list. Table 2 shows the top 20 keywords from the Family Policy corpus, together with frequency information and p value. It should be stressed that there is no priority given to frequency within the keyword calculation: a word either is or is not key, and its position on the keyword list is of minimal importance.

Keyword classifications, being calculated by cross-tabulation of two data sets, are not absolute. Depending on the reference corpus used, different results are obtained. For the purposes of this study, the reference corpus used comprised the combined corpora of Italian political language, not a general reference corpus. The reasons for this choice are given in Section 5.2, together with a comprehensive discussion on the choice of the reference corpus for particular research purposes.

Keywords tell us what the data is about, and provide a good indication of the topics and target domain(s) that will feature in the domain's metaphors. Low-frequency content words (LFCWs), by contrast, are where the metaphor vehicles and source domains will be found. Yet while this is a simple observation, the location of metaphor vehicles/sources is neither as straightforward nor as speedy as the identification of the topics/ target domains. In the first instance, in accordance with Zipf's constant (1935),[7] LFCWs account for a larger proportion of the tokens (running words) in a corpus than

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7.   On the basis of Zipf's constant, the rank of any word (1 being the most frequent word, 2 the second-most frequent, and so on), when multiplied with its frequency of occurrence (number of tokens), will provide the same figure (the constant), regardless of the rank of the word. In other words, the frequency of any word is inversely proportional to its rank (all words which have the same frequency share the same rank in the frequency table).

Table 2. Top 20 Keywords in Family Policy corpus

Keyword*	F.P. corpus		Reference corpus			
	Frequency	%	Frequency	%	Keyness	P value
1 *famiglia*	951	0.84	1067	0.27	611.51	0.0000000000
2 *più*	650	0.58	878	0.22	315.1	0.0000000000
3 Bindi	441	0.39	457	0.12	313.52	0.0000000000
4 *È*	5005	4.43	13644	3.44	232.77	0.0000000000
5 *non*	1632	1.45	3624	0.91	223.37	0.0000000000
6 *famiglie*	352	0.31	432	0.11	198.55	0.0000000000
7 *perché*	263	0.23	296	0.07	167.82	0.0000000000
8 Rosy	211	0.19	220	0.06	148.7	0.0000000000
9 *figli*	220	0.19	252	0.06	137	0.0000000000
10 *bambini*	183	0.16	199	0.05	122.2	0.0000000000
11 *può*	187	0.17	221	0.06	111.4	0.0000000000
12 *familiari*	132	0.12	145	0.04	86.96	0.0000000000
13 *cattolici*	120	0.11	124	0.03	85.48	0.0000000000
14 *ma*	706	0.63	1649	0.42	77.54	0.0000000000
15 *sarà*	137	0.12	171	0.04	75.23	0.0000000000
16 *chiesa*	99	0.09	103	0.03	69.92	0.0000000000
17 *adozioni*	93	0.08	95	0.02	67.18	0.0000000000
18 *partito*	182	0.16	285	0.07	66.69	0.0000000000
19 *responsabilità*	98	0.09	105	0.03	66.69	0.0000000000
20 *però*	102	0.09	117	0.03	63.36	0.0000000000

* Translations are as follows: (1) family; (2) more; (3) Bindi [Minister's surname]; (4) is; (5) not; (6) families; (7) because; (8) Rosy [Minister's first name]; (9) children [offspring]; (10) children [infants]; (11) can; (12) family members; (13) Catholics; (14) but; (15) will be; (16) church; (17) adoptions; (18) [political] party; (19) responsibility/-ies; (20) though.

do high-frequency words, even though they constitute a small proportion of the word forms (types) present. The dramatic fall-away is illustrated in Figure 1, which shows the distribution of tokens for the top 100 types in the five corpora combined (the most frequent occurs 14,655 times, the hundredth-most frequent, only 393 times). Over ten thousand hapax legomena (i.e. words occurring only once) occur, accounting for 43.27% of the types (10,027 out of a total number of 23,164 types), although they amount to only 2.57% of the total number of tokens in the combined corpora.

Compounding the seemingly interminable number of low-frequency types is the problem that not all low-frequency words are content words, so structure words have to be filtered out. This has to be done manually, unless the researcher is fortunate enough to have access to tools that do the task automatically. Finally, a LFCW is not necessarily metaphorical, meaning that a considerable amount of manual processing has to be done
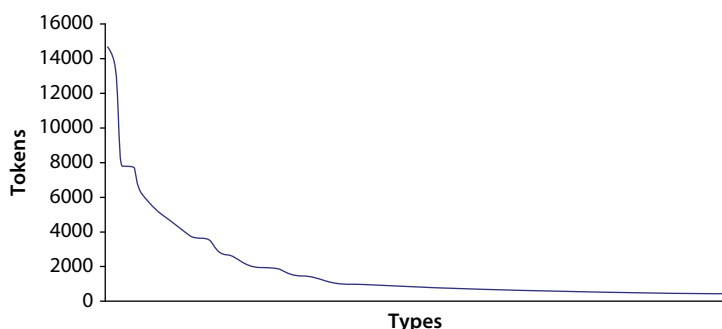
Figure 1. Distribution of tokens in top 100 types (combined corpora)

to find the metaphors. In spite of these problems, though, applying a statistical measure to separate out metaphorical topics/target domains from vehicles/ source domains guarantees the discovery of metaphors that are missed when carrying out partial analysis, ensuring that the analysis covers all metaphors, not just the most prominent ones.

4.4   Grouping and classifying low frequency content words

Once the keywords have been identified (and grouped together, if appropriate), the attention shifts to the LFCWs. Within the LFCWs there will be lexis that is congruous with the keywords, and other lexis that is incongruous. The congruous lexis should be grouped together with the keywords, as it represents alternative wordings referring to the same domain. The incongruous lexis then has to be sorted and grouped by lemma, then by semantic or lexical set (or both). This takes less time if the researcher has access to a lemmatizer to pull together inflected forms, and less still if some form of semantic tagger or classifier can be used; but these are not necessarily available, and were not used in this study.

The most straightforward way to approach the grouping task is to sort the word list alphabetically, which brings related forms together. For minimally inflecting languages such as English, pulling inflected forms together under their respective lemmas is a fairly quick and painless procedure, even without the aid of a lemmatizer. The situation is not quite so straightforward for other languages, however. Italian, while not the most complicated of inflecting languages, presents several complications: nouns, adjectives, participles, and most deictics inflect for gender (m./f.) and number (sing./pl.); verbs inflect for six persons in seven tenses, and prepositions merge with the definite article to form *preposizioni articolate* (so *di + il* becomes *del*; *in + la* becomes *nella*, and so on). These complications make manual lemmatising time-consuming, and it can be tempting to lump all the inflected forms together and work at the more abstract level of the lemma. Should the researcher decide to lemmatize and thus facilitate the arrangement of LFCWs

into semantically related groups, this should be done in such a way that the word forms and their frequencies can still be accessed. As each distinct form collocates differently, the actual forms found in the data should be stored in a spreadsheet or similar database, so that they can be called up in the concordancing software at later stages of analysis.

Once forms have been lemmatized – or even during the procedure – semantic groups will start to coalesce. The more broadly-defined these are the better, as a word that may appear to belong to one semantic class may in fact belong to another, or be potentially a member of both. A selection of the groupings found for the Finance corpus is presented in Table 3. The war grouping – by far the most dominant – was further subdivided into battle, defence and invasion, and victory (see Philip 2010).

Of course, alongside the semantic groups identified, there will be terms that do not seem to fit anywhere in particular. While these are still potentially metaphorical (metaphor vehicle terms), they are unlikely to belong to a conceptual metaphor or metaphor theme. By concordancing these terms, it can be verified whether or not they are in fact metaphors, and if so, whether to consider them conventional or innovative, and to comment on them on the basis of this assessment. The identification of groupings, on the other hand, is potentially indicative of conceptual metaphor at work.[8] The potential metaphors must then be concordanced and are confirmed as metaphorical on the basis of their use. In the data studied, it was found that the same word form or lemma can appear literally in some contexts, and metaphorically in others, so care must be taken in an analysis of metaphors to ensure that any literal uses are kept separate from the non-literal ones.

Having identified the metaphor vehicles (i.e. the words used) and source domains (i.e. the semantic fields the words belong to) in the corpus, their function can then be investigated using the corpus to call up concordances or extended context if required.

Table 3. Low frequency content word groupings in Finance

Semantic field	Examples
Birth	*embrionale* ('embryonic'), *gestazione* ('gestation'), *nascita* ('birth')
Body parts	*cervelli* ('brains'), *ombelico* ('belly button'), *labbra* ('lips')
Death	*soffocamento* ('suffocation'), *strozzature* ('strangulation'), *sterminio* ('extermination')
Emotions	*emotivo* ('emotional'), *sentimenti* ('feelings'), *sensibilizzato* ('sensitized')
Health	*sano* ('healthy') *ferito* ('injured'), *convalescente* ('convalescent')
Hunting	*preda* ('prey'), *caccia* ('hunt')
Risk	*rischio* ('risk'), *sfida* ('challenge'), *salvaguardare* ('to safeguard')
Servitude	*sfruttato* ('exploited'), *servitù* ('servitude'), *sacrificio* ('sacrifice')
War	*battaglia* ('battle'), *conquista* ('conquest'), *sconfiggere* ('to defeat')

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8.   Editors' note: The procedure described is similar to the "vehicle grouping" described by Cameron et al. (2010: 118–126), which aims to uncover systematicity in metaphor use.

Several lines of investigation open up at this stage, and it is up to the researcher to decide if the corpus-based activity has ceased (except perhaps as a conventional means of locating the examples in the large data set), or if instead the automatic tools can be put to further use. The collocational features of metaphor vehicles can be analysed, for example, as can the co-occurrence of metaphors with keywords (see Philip 2010).

5. Further technicalities

5.1   A note on high and low frequencies

While they are convenient as generic terms, high and low frequency have to be defined clearly in this kind of procedure: a cut-off point must be determined. During the initial, experimental stages of this procedure, raw numerical frequency was used (any term occurring less than five times was deemed "low frequency"), but raw frequency-counts cannot be generalized, and different measures would apply to data sets of different sizes. In refining the procedure, a more robust criterion was established, namely that the cut-off point might correspond to the frequency below which no keywords were extracted. Thus, if the least frequent of the keywords occurs 12 times (as is the case for the European Policy component of the Finance corpus that was used as data for a pilot study), then words occurring 11 times or less are "low frequency" (see Philip 2010). However, this criterion was less successful in the corpora whose content was more diversified, such as Family Policy, whose lowest-frequency keyword occurred 35 times: it is not reasonable to treat any word occurring 34 times or less in a corpus totalling just under 120 thousand words, as "low frequency". There is therefore a middle-cut to consider.

Corpus studies generally look for the presence of collocational patternings forming around a given node, as repetition of patterns is a good indication that the meaning being expressed has become, or is becoming, conventionalized. Having excluded metaphorically motivated terminology from this study, the search for metaphors proper essentially involves searching for the opposite phenomenon, namely *absence* of collocational patternings. An absence of patternings suggests that the node in question has not (yet) gained currency in the discourse with one particular meaning. Strong collocational and phraseological preferences affect the polysemous potential of a word, limiting the likelihood that it will be used both literally and figuratively in the same discourse (see Hoey 2005: 85). As different meanings imply different patterns, the emergence of dominant patternings in a text or discourse makes it less likely that other patterns – and hence, other senses – will occur. When no such dominant patternings can be identified, any of the node's meanings can potentially occur, because the discourse has not expressed a preference for one meaning in particular, and therefore does not block the realization of its other meanings (ibid.). These are favourable circumstances for the realization of metaphorical meanings.

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un piano strategico di penetrazione commerciale dal 2008 al 2010 ,
azioni di sostegno alla penetrazione commerciale del sistema Italia.
tà di esportazione e di penetrazione commerciale dei nostri imprendi
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anica strumentale , una penetrazione nel settore dei servizi e in qu
li , di accompagnare la penetrazione sui mercati internazionali con
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Figure 2. The patterning of 'penetrazione' in the Finance corpus (all occurrences)

In the Italian data studied here, crystallization of collocational patternings was identified in as few as ten concordance lines for the same word form, and occasionally with even fewer. An example is provided in Figure 2, which shows the concordance lines for *penetrazione* (penetration). Here it can be seen that there is a preferred collocate *commerciale* (commercial), as well as an identifiable co-occurrence preference for *penetrazione* with markets and sectors (*mercati*, *settori*); and that these tend to be foreign rather than domestic (*esteri*, *internazionali*).

Those metaphor candidates that occurred in the middle-frequency bands (below the keyword threshold, and above ten occurrences) can be seen to demonstrate stronger co-textual patternings than their lower-frequency counterparts, and as a result begin to consolidate themselves as domain-specific vocabulary or indeed terminology (Philip 2010). Although a more detailed examination of the middle band is beyond the scope of this study, the tendencies observed suggest that further investigation into the crystallization of collocational patternings in specialized discourse may be an interesting and fruitful area for future study.

It must be stressed that the LFCW identification criteria adopted here apply to Italian in particular. The working definition of "low frequency" as corresponding to <10 tokens per type may well vary from language to language, discourse to discourse, and the overall size of the corpora being studied. Languages that are morphologically less complex than Italian, and therefore have few inflected forms, will require the presence of a higher number of tokens per type before patterns begin to crystallize. Every inflected form is delimited by its collocates, but if there are only a handful of inflected forms available – as in English – the number of meanings potentially associated with each is far greater than with a meaning that has scores of inflected forms. This is the main reason why lemmatization is not always advisable: it is known that word forms attract patternings that cannot be generalized to the lemma from which they derive (Sinclair 1996, 1998). The more inflected forms there are of a lemma, the more localized these patterns become, meaning that it is easier to detect them – and the particular meanings they express – when unlemmatized. In order to determine the LFCWs

cut-off point for other languages, therefore, some analysis of middle-frequency terms has to be carried out to verify where crystallization seems to be taking place: the author suggests concordancing one or two of the content words occurring 10, 15, 20, 25 times, as a means of determining that threshold.

5.2 Comparing corpora

Using keywords to identify the subject matter of a corpus is quick and reliable, but only if the two data sets being used (the corpus, and the reference word list) are comparable. In this study, it was decided to use a word-list from the combined political corpora as the reference word-list, necessary for the calculation of keywords in the subcorpora. Some scholars might disagree with this choice, claiming that a word list derived from a large, general reference corpus should have been used instead. This subsection illustrates the different results obtained when the reference data differs.

The prime motivating factor behind using the combined political corpus data, and not a general reference corpus, was to compare like with like. As the *WordSmith Tools* (Scott 2004) help file suggests, "compare apples with pears, or, better still, Coxes with Granny Smiths... and avoid comparing apples with phone boxes!" If detailed and reliable results are to be obtained, it is important to filter out those words that would be key to politics in general, but not key to each ministry's sphere of activity. Different keywords emerge when different reference word lists are used, and the discussion to follow shows precisely why a general reference corpus would not have been suitable for the task in hand.

Although a general reference corpus might seem to be the best choice for a word list for calculating keywords in a smaller corpus, it is its very generality that makes it unsuitable: the general language is simply too unlike a specialized language. Keyness is not just related to subject matter; in fact many stylistic features that might otherwise pass unnoticed can be identified because their statistical significance is revealed in a keyword computation. Of course, comparing the specialized data to a general corpus reveals much about the content of the data, but these differences are not as easily identifiable, nor as relevant, as those that appear in a comparison of two more similar data sets. Comparing specialized with general data not only highlights words that are central to the subject matter of the data set, but also those that are more strictly indicative of style, register, and genre. Table 4 shows the top 50 keywords generated by comparing the Family Policy corpus (see Table 2) with the CoLFIS wordlist (Laudanna et al. 1995), which is derived from a corpus of contemporary written Italian (newspapers, magazines and books). As mentioned in Section 3.3, "top 50" does not mean the 50 most significant keywords, but rather should be interpreted as 10% of the total keywords identified, no keyword being inherently "more key" than another. The words are arranged alphabetically to facilitate reading.

It should be immediately obvious just how few content words appear on this list. There are 500 keywords to trawl through, and the vast majority of them are structural.

Table 4. Top 50 keywords in Family Policy corpus, calculated with reference to CoLFIS

a	to	*il*	the (m. s.)
al	to the	*in*	in
alla	to the	*l*	the
alle	at the	*la*	the (f. s.)
anche	also	*lavoro*	work
Bindi	Bindi	*le*	the (f. pl.)
che	that	*legge*	law
ci	[clitic]	*ma*	but
come	like/such as	*ministro*	Minister
con	with	*nel*	in the
da	from	*nella*	in the
dei	of the	*non*	not
del	of the	*o*	or
dell	of the	*per*	for
della	of the	*perché*	because
delle	of the	*più*	more
di	of	*politica*	political (f. pl.); policy; politics
e	and	*politiche*	political (f. pl.); policies; politics
essere	to be	*questo*	This
famiglia	family	*Se*	if
famiglie	families	*Si*	one [reflexive pronoun]
gli	[the m. pl.]	*sono*	am/[they] are
governo	government	*Tra*	between
ha	has	*Un*	a (m.)
i	the (m. pl.)	*Una*	a (f.)

Much of the information provided here is of interest to stylistics scholars, but if the intention is to establish the subject matter of the data, content words are required. These are somewhat thin on the ground, and still too dispersive for the purpose at hand. Compare the 20 most frequent content words in the two keyword calculations (using the combined political corpora, and using CoLFIS), shown in Table 5.

Using the combined political corpora as the general reference, 60 keywords are obtained, 50 of which (83%) are content words. Words related to the world of politics in general, such as *paese* (nation /country), *politica* (politics), and *Italia* (Italy) are largely filtered out as they are common to the specialized corpus and to the combined corpora. Only when these words are used disproportionately more frequently than normal do they register as key: for instance, *Italia* is key in the Economics corpus, because it features in talk on trade, import, export, branding, and so on, in addition to being used to designate the country itself – which is the use that is common to all five corpora.

Table 5. 20 most frequent content words in the combined political corpora and CoLFIS

Combined political corpora		CoLFIS	
famiglia	family	*famiglia*	family
Bindi	Bindi	*servizi*	services
famiglie	families	*ministro*	minister
Rosy	Rosy	*Bindi*	Bindi
figli	children	*famiglie*	families
bambini	infants	*governo*	government
familiari	family members	*politica*	politics
cattolici	Catholics	*politiche*	political
chiesa	church	*lavoro*	work
adozioni	adoption	*legge*	law
responsabilita	responsibility	*paese*	country
partito	party	*figli*	children
vita	life	Rosy	Rosy
anziani	elderly	*diritti*	rights
DICO	DICO*	*vita*	life
coppie	couples	*parte*	part
persone	people	*bambini*	infants
familiare	family (attrib.)	*partito*	party
assegni	[welfare] cheques	*finanziaria*	financial
matrimonio	marriage	*donne*	women

*DIchiarazione COngiunta: the name given to the Italian civil partnership legislation

The CoLFIS word list, being far more comprehensive (more general in nature, and far larger in size), makes it possible to identify 500 keywords (the default maximum number in WordSmith; this figure can be changed if so desired). Of these, 303 (60%) are content words. This greater number of keywords does give a more detailed insight into the content of the corpus, but much of what is considered key here is in fact key to political discourse as a genre. We can find words used to talk about politics and politicians, including *costituzione* (constitution), *presidente* (president), *Prodi* (the then Prime Minister), *Margherita* (the then centre-left coalition party). The keywords also reveal the constant presence of persuasive language: there is a plethora of modal and quasi-modal expressions, as well as conditional and future tense inflections. Discourse markers and rhetorical devices also feature strongly. Additionally, there is a noticeable presence of lexis belonging to the sphere of problems, struggles, and difficulty. All these features are common to all of the political data analysed here, but particularly to the Ministries that deal with social issues.[9]

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9. The financial data is qualitatively different from the other four corpora, for a number of reasons. See Philip (2009a) for a comparative study of the five data sets.

This comparison of keyness serves to illustrate the degree to which the reference corpus influences the identification of keywords. For the purposes of this study, political language in general was of limited interest; rather, the aim was to identify which metaphors were used in one government during a fixed period of time, by different Ministers with different Ministerial remits. Had the intention been to identify political metaphors that were not domain-specific, then each subcorpus should have been compared to a larger data set dealing with the same topic from a range of sources (business and other professional practice, academia, journalism, etc.), thus allowing subject-specific keywords to be filtered out and political and persuasive language to be highlighted. The more similar the data sets are, the easier it is to pinpoint the differences in the keywords that are generated, because there will be fewer keywords (Scott 1997 suggests 40 as a manageable number) and they will be more focused. As a final comment on the matter, there is no reason why only one keyword list should be created for any given study: several keyword lists, each based on comparison with a different reference corpus, will certainly be more revealing than one long, undifferentiated keyword list generated from a general reference corpus.

6.   Conclusions

The present chapter has outlined a technique for retrieving metaphor candidates from specialized corpora using computational tools that are cheap, user-friendly, and easily available. Building a corpus from electronic texts is a simple procedure (see Sinclair 2005), and being able to partially automate the location of metaphors in a corpus allows the researcher to concentrate more energy and attention on the analysis of the metaphors once found, rather than on trawling the data manually in search of them.

Concordancing metaphors makes it possible to identify regularities in the phraseological patternings that crystallize around the node. It is argued here that regularity of patterning is a sign of conventionality and that – in specialized corpora at least – it may be advisable to make a distinction between metaphors that are truly figurative and those that are terminological or otherwise domain-specific. Keyword extraction makes it possible to identify metaphorically motivated terms, and separate them from other kinds of metaphor. This makes it possible for a researcher who is unfamiliar with the specialized language in question to assess the force of the metaphorical terms encountered *as they would be assessed by users of that specialized discourse*, which reduces the danger of over-interpreting metaphoricity as a result of unfamiliarity.

Some issues have been left unresolved. A precise cut-off point, below which content words can be defined as "low frequency", has not been established, as it is expected to vary from language to language, and possibly also from domain to domain. Additionally, it is difficult to ascertain the status of low frequency words as metaphorical or simply formulaic when they occur in small corpora, because regularity of patterning can only be identified when forms are repeated a minimum number of

times. Yet the method outlined here opens up the automation of data retrieval to researchers who for whatever reason do not have access to more sophisticated data annotation tools. It is one of several possible approaches to locating metaphors in text corpora (see Berber Sardinha, this volume), and the difficulties encountered, rather than being seen as flaws in the method, should be seen as further opportunities for research into metaphor typologies and the phraseological realization of metaphorical meaning in text.

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Contexts of production

Metaphor variation across L1 and L2 speakers of English

Do differences at the level of linguistic metaphor matter?*

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English and Swedish, which are both Germanic languages spoken in similar cultures in the Western World, display many similarities with regard to the conceptual metaphors reflected in them. However, the way that the same conceptual metaphor is linguistically instantiated in both languages may be somewhat different. This chapter is a corpus-based analysis of metaphorical 'path', 'road', and 'way' sentences in English produced by speakers with British English as their first language (L1) and Swedish university students with English as their second language (L2). The aim is to see how these L2 speakers of English deal with differences at the level of linguistic metaphor in the two languages, and find out how important this level of organization really is.

Keywords: corpus, foreign language learning, linguistic metaphors, Swedish

1. Introduction

This chapter is a corpus-based analysis of metaphorical 'path', 'road', and 'way' sentences in English produced by speakers with British English as their first language (L1) and Swedish university students with English as their second language (L2). The aim is to see how these L2 speakers of English deal with differences at the level of linguistic metaphor, and find out how important this level of organization really is.

In recent years, several important cognitive linguistics studies have shown how variation in more or less universal embodied experiences is provided by our cultural

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experiences (e.g. Kövecses 2005, 2006). Yu (2008: 253), for instance, compares English and Chinese body-part (face) metaphors and demonstrates how culture filters our bodily experiences, and only allows some of these to map onto certain target concepts. As argued by Cameron (2008: 209), however, "claims about conceptual metaphor have abstracted away from the use of linguistic metaphor in the talk of individuals". Accordingly, conceptual metaphor studies have received much criticism related to their top-down approach emphasizing concepts, and not words, superordinate categories instead of basic level categories, and universal, monolithic aspects of embodiment rather than non-monolithic ones (see Kövecses 2008).

In the present chapter, I explore the thesis that language, which is intimately connected with culture, also functions as a filter. I argue that the "choice of one from many possible options in the large pool of bodily experiences" (Yu 2008: 259) does not only depend on language-external cultural understanding and interpretation; it also depends on what is encoded in language and on how what is encoded in language relates to the world around us. Even though metaphors are grounded in embodied experience, our language still shapes how these experiences are used.

The cultural and linguistic backgrounds of the speakers whose texts are part of this study are very similar (Swedish and British English are both Germanic languages spoken in similar cultures in the Western World), and so are the 'path', 'road', and 'way' sentences studied here at the levels of primary and complex metaphor.[1],[2] But at the level of linguistic metaphor, there are many differences both between English 'path', 'road', and 'way' sentences, and between these and their Swedish equivalents.[3] The differences at the level of linguistic metaphor, and the similarities at other levels, make a comparison between metaphorical 'path', 'road', and 'way' sentences in English produced by these two groups of speakers very useful. Other things being equal, a study of the linguistic differences allows us to learn more about the role played by language in metaphor production.

The idea that conceptual metaphors may be described at various levels of semantic schematicity has been raised previously. Clausner and Croft (1997), for example, investigate properties of conceptual domain mappings by comparing them to morphological derivational relations. Their study suggests that metaphors can be "grouped together and organized in a taxonomic hierarchy" (Clausner and Croft 1997: 273). They identify "a particular level of schematicity – the maximally productive level – as entrenched in the minds of speakers [but do] not exclude the possibility that more schematic representations of the metaphor are entrenched as well" (273). On the one

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1.   *Primary metaphors* are here defined as basic metaphors "motivated by tight correlations in experience" (Grady 2005: 1600).

2.   *Complex metaphors* are defined as systematic cross-domain mappings "motivated by shared features between source and target domains" (Grady 2005: 1600).

3.   *Linguistic metaphor* is used in the sense of linguistic realizations of complex and/or primary metaphors (see e.g. Svanlund 2007, who uses the phrase "lexical metaphor").

hand, metaphorical domains are considered to function as "generalizations over specific metaphorical expressions" (247), and on the other, linguistic expressions are considered to be conceptual structures that influence metaphor use (248).

2. Linguistic metaphor and embodied experience

In a traditional cognitive linguistics analysis, the 'path', 'road', and 'way' instances discussed here would be analysed as linguistic reflections of motion metaphors such as ACTIONS ARE SELF-PROPELLED MOVEMENTS, PURPOSES ARE DESTINATIONS and DIFFICULTIES ARE IMPEDIMENTS TO MOVEMENT etc. (see e.g. Lakoff and Johnson 1999: 190–192). For instance, sentences (1)–(3) (taken from the British National Corpus [BNC]) are structured in line with the primary metaphors ACTION IS MOTION and PURPOSES ARE DESTINATIONS, and the complex metaphor AN ACTIVITY IS A JOURNEY.

(1)   Power sharing was not an easy path to tread.
(2)   [T]hey will be well on the road to enjoying reading.
(3)   We've come a long way since the U.2 fiasco.

Whatever the similarities that exist between metaphorical 'path', 'road', and 'way' sentences at the levels of primary and complex metaphor, the terms do not seem to be interchangeable (cf. Johansson Falck 2010, 2012, in press, Johansson Falck and Gibbs 2012). Sentence (1), is about a metaphorical 'path' that is 'not [...] easy to tread', but can metaphorical 'roads' and 'ways' be described in this way? Can we say 'not an easy path/ road to tread'? Studies of 'path', 'road', and 'way' sentences show that metaphorical 'roads' are typically efficient means of transportation and easy, not hard, to move along (see Johansson Falck, in press). When we move along these fast and efficient routes, we typically do not move the way we do when there is reason to be cautious. This means that a manner-of-motion verb like 'tread' does not refer to prototypical motion along a metaphorical road (see Johansson Falck 2010).

Metaphorical 'ways', on the other hand, are not likely to be 'trodden' because these are typically connected with someone's or something's motion through space and not an extended locative artefact separate from the moving figure (i.e. that person or thing that is moving along the path, see Johansson Falck, in press). The connection between metaphorical 'road' and fast motion is also evident from the phrase 'will be well on the road to' in sentence (2), which discusses the future success of people learning to read. The phrase 'will be well on the way to' also seems to work, but how about the phrase 'will be well on the path to'? Unlike metaphorical roads, metaphorical paths tend to be 'narrow', 'steep', and 'winding' (see Johansson Falck, in press) and not suitable for smooth successful rides like these. Finally, Google searches on the Internet show that the phrase 'come a long way' in sentence (3), is considerably more common than 'come a long path/road'. 'Way', which is closely connected with someone's motion though space is likely to be more apt than 'path' or 'road' in talk about the distance covered by

someone. Unlike the other two terms, 'way' rarely focuses on an artefact ahead of a moving figure, but rather on the distance he or she travels. Moreover, motion verbs in 'way' sentences suggest that the direction of motion along the metaphorical 'way' is less restricted than motion along the metaphorical 'path' or 'road'. It can go in any direction we like and is not primarily connected with motion away from a figure on the given artefact/route (see Johansson Falck 2010). Consequently, we are more likely to 'come a long way' than to 'come a long path/road'.

While acknowledging that each individual word "names a somewhat different concept [that] has its own logic, somewhat different from the others" (Lakoff and Johnson 1999: 186), traditional cognitive linguistics analyses do not account for differences such as those above, nor do they focus on how these relate to the theory of conceptual metaphor. The cognitive linguistic view, that conceptual metaphors are experientially based and intimately connected with our bodily experiences, is not typically accompanied by analyses that provide detailed explanation of this relationship. Even though the "language and logic of moving toward, reaching, or not reaching a destination are [indeed considered to be] recruited from the source domain of movement through space" (Lakoff and Johnson 1999: 190), analyses within this framework do not reveal how, and in what different ways, artefacts and actions connected with different kinds of movement through space help us to structure the language and logic of that motion.

Differences between metaphorically used terms similar to those above have also been discussed by Zinken (2007). His comparison between the German vehicle pairs *Weg* ('path') and *Bahn* ('course'), *Kessel* ('kettle') and *Topf* ('pot'), and Boot ('boat') and Schiff ('ship') shows that these are *form-specific* (systematically associated with different figurative meanings) even though they belong to the same superordinate category. On his view, the differences suggest that "form-specific lexical concepts are a factor in the development of habitual analogies" (Zinken 2007: 459). Correspondences at more abstract levels of organization may not be "a psychologically real additional layer of analogical schemas" (Zinken 2007: 461), and might as well be a "post-hoc artefact[s] of sorting utterances on the part of researcher[s]" (Zinken 2007: 461).

Zinken's theory, however, does not explain why metaphorical 'path', 'road', and 'way' sentences such as (1)–(3) are all coherent with the ideas that travel through space is progress, and that the distance covered in both sentence (2) and (3) indicates how much progress has been made. Even though conversational interactions may indeed be a factor in the formation of analogical schemas, they do not explain why terms that belong to the same superordinate category tend to be structured in a coherent way at the levels of primary and complex metaphor (cf. Johansson Falck, in press, Johansson Falck and Gibbs 2012).

Kövecses (2008) responds to criticisms of cognitive metaphor theory such as Zinken's and maintains that metaphorical mappings are found at the superordinate level. He agrees with Zinken that words with similar meanings cannot be used metaphorically in the same way, but argues that the differences are "due to the meaning foci associated with particular source domains as well as to the fact that the words are based on different

mappings" (Kövecses 2008: 176). For instance, 'kettle' and 'pot' differ because the concept of 'kettle' better expresses one of the meaning foci of the source domain CONTAINER, that is, the concept of 'pressure', than does the concept of 'pot', and metaphorical uses of 'way' and 'course' differ because they are related to different mappings (i.e., the concept of way' is related to the metaphor MEANS OF ACTIONS ARE PATHS, and the concept of 'path' to the metaphor SCHEDULING HOW TO ACHIEVE ONE'S PURPOSE IS SCHEDULING HOW TO REACH ONE'S DESTINATION). Kövecses provides one explanation for interactions between patterns at various levels of organization but does not fully explore the role played by basic level experiences. Moreover, he does not consider the possibility that "the linguistic expressions themselves are also conceptual structures" (Clausner and Croft 1997: 273) and that patterns at the level of linguistic metaphor may be important too.

Interestingly, Zinken's and Kövecses' explanations are not necessarily mutually exclusive. The view that one level of organization plays a role in the processes behind metaphorical language formation of analogical schemas is not necessary in conflict with the view that other levels of organizations may play a role too (see Clausner and Croft 1997). To give an analogous literal example, people who are finding their way through a city might use both their sense of direction and street names to navigate.

My previous study of metaphorical 'path', 'road', and 'way' instances (Johansson Falck, in press) show that these are all structured in line with the function of routes of taking us from one place to another, from A to B. The close connection between the function of paths, roads, and ways and the structure of the clauses indicates that human conceptualization processes operate on a much more specific level of abstraction than that of complex conventional cross-domain mappings, and that metaphorical expressions including 'path', 'road', or 'way' are shaped by people's embodied experiences of these objects in non-metaphorical ways. Since paths, roads, and ways all take us from A to B, they are apt scaffoldings both for the primary metaphor ACTION IS MOTION and the SOURCE-PATH-GOAL schema. At the same time, differences between our experiences of these routes result in differences between the usage patterns of metaphorical 'path', 'road', and 'way' expressions. Both the similarities and the differences indicate that our embodied experiences with paths, roads, and ways, and particularly their function, enable us to reason and talk about our lives, actions and relationships in the specific metaphorical ways that we do.

A comparison between English metaphorical 'path', 'road', and 'way' instances and their Swedish equivalents, however, shows that even though speakers of two different languages may have very similar experiences of paths, roads, and ways, they do not necessarily use these experiences in identical ways. Just like the English sentences, metaphorical utterances including the Swedish terms *stig* ('path') and *väg* ('road' or 'way'), (e.g. *Syftet var att hitta nya vägar att rekrytera män* 'The aim was to find new ways to recruit men') are indeed structured in a coherent way at the level of conventional conceptual metaphor in line with motion metaphors like those above. These too go back to people's embodied experiences with paths, roads, or ways. Nevertheless, there are several important differences between English and Swedish at the level of

language. Swedish realizes the meanings of 'path', 'road', and 'way' in just two different terms (*stig* and *väg*), and does not lexicalize the difference between 'road' and 'way', which both correspond to *väg*. Metaphorical 'path' instances in English are almost as frequent as their non-metaphorical equivalents (see Johansson Falck, in press), but metaphorical uses of Swedish *stig* are rare, and almost always part of a compound noun (e.g. *utvecklingsstig* = 'development path'). Moreover, English 'way' in the sense of "[a] method for doing something" (Rundell and Fox 2007 [henceforth MEDAL]) or "[m]eans, manner" (Brown 1993 [henceforth SOEDHP]) is not at all related to the Swedish term *väg*, but lexicalized as the term *sätt*. As a result, almost all metaphorical 'path', 'road', and 'way' expressions in English correspond to Swedish *väg* sentences, or some other expression. Very many of these other expressions include the term *sätt*. It seems that even if our uses of a given term go back to embodied experiences, and even if many of these are universal, speakers of different languages do not use exactly the same experiences to structure a given concept, but may rely on related, but still slightly different, experiences to do so (cf. Hickmann and Hendriks 2010).

In this chapter, the differences between 'path', 'road', and 'way' sentences and their Swedish equivalents at the level of lexical metaphor and the similarities at the levels of primary and complex conceptual metaphor are used to contribute to our understanding of how important the level of linguistic metaphor really is.

3.   Cross-linguistic influence and transfer

Ever since the beginnings of the study of linguistic relativity and the work of theorists such as Wilhelm von Humboldt (1767–1835) and Benjamin Lee Whorf (1897–1941), a huge body of research has demonstrated the influence of language on thought in the fields of second language acquisition (SLA) and linguistic relativity (see Odlin 2005). Accordingly, SLA studies have shown that when speaking an L2 we are far from free from the "binding power" (Whorf 1956) of our L1. For speakers of an L2, influence from an L1 may result in *meaning transfer* (i.e. "any type of semantic or pragmatic influence from the first language, or from a second language in L3 acquisition [Odlin 2008: 310]), and *conceptual transfer* (i.e. "cross-linguistic influence involving relativistic effects" [Odlin 2008: 306]). The *transfer* may be either *positive* and help a speaker of an L2 to use the correct form, or *negative* and result in mistakes (see Odlin 1989: 26). Cross-linguistic influence from an L1 that does not involve grammatical or semantic errors in an L2 may still result in differences in cognizing (see e.g. Stutterheim 2003). This chapter, which analyses how the "thought world" (Whorf 1956: 147) of one language is carried over to that of another, deals with conceptual transfer.

My hypothesis is that when producing English metaphorical 'path', 'road', and 'way' sentences, the Swedish L2 speakers of English that are part of this chapter will be influenced by what goes on at the level of linguistic metaphor in their L1, and hence by how their L1 encodes people's experiences with the man-made or natural routes that

allow them to move from one place to another. This will be reflected both in the frequency of the expressions and how they are used. These differences between the L1 and L2 speakers of English speakers are expected, despite the highly advanced level[4] of the L2 Swedish speakers, the many similarities between the two languages at the level of conceptual and primary metaphor when it comes to these expressions, and the fact that 'path', 'road', and 'way' are "among the most basic words in English" (Rundell and Fox 2007 [MEDAL]) and should thus be more than familiar to the students of English that are part of this study.

Very similar usage patterns between the English L1 speakers and the Swedish L2 speakers of English, and similar frequencies of the expressions, would contradict this hypothesis.

4.   General method and material

The study is primarily based on dictionary and corpus data. Data about the English terms 'path', 'road', and 'way' was retrieved from MEDAL and SOEDHP, and data about the Swedish terms *stig* ('path' or 'track'), *väg* ('road' or 'way'), and *sätt* ('means, manner, method') from the Swedish dictionary *Norstedts svenska ordbok*, ([NSO] Allén 1999: 3)*,* and the Swedish online dictionary *Svenska Akademiens ordbok* ([SAOB] Eaker and Eriksson http://g3.spraakdata.gu.se/saob/). Translations of phrases including these terms were compared by means of *Norstedts stora engelska ordbok* ([NSEO] Petti 1999).

Sentences including either one of the terms 'path', 'road', or 'way' were extracted from the BNC and the Uppsala Student English Corpus (USE), available at http://nora. hd.uib.no/icame/ij24/. The BNC is a 100 million word corpus of late twentieth-century British English containing about 4,000 samples from a wide range of texts (90% of these texts are written, and 10% orthographically transcribed spoken texts). USE is a 1,221,265-word corpus consisting of 1,489 essays written by 440 Swedish first-, second-, and third-term university students of English. However, the number of essays written by third-term students is small, and only essays written by first- and second-term students were included in this study.

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4.   Before their university studies, Swedish students have studied English for about 6–9 years at *Grundskolan*, the 9-year compulsory school, and 3 years at *Gymnasieskolan*, the comprehensive upper secondary school. A passing grade on the standard course at *Gymnasiet* is required for university studies, but many students have better grades. Younger Swedes today come into contact with a lot of English in their daily lives (e.g. through films, TV programmes, music, the internet, and travel to foreign countries). When taking up their university studies, some of the students have native competence, or close to native competence. First-term English, however, generally attracts more heterogeneous groups of students with respect to their previous knowledge of English. In second-term classes of English, there is usually a larger proportion of students who are specifically interested in languages and/or are extra talented.

The BNC data was used to study the usage patterns of metaphorical 'path', 'road', and 'way' expressions produced by native speakers of British English (for a more detailed discussion of these uses, see Johansson Falck 2010, in press; for a discussion of 'path' and 'road' see Johansson Falck 2012, Johansson Falck and Gibbs 2012). 1,000 random instances of each term were extracted.

Data from USE provided information about 'path', 'road', and 'way' expressions produced by Swedish university students. All instances from this much smaller corpus were extracted.

The corpus material was then divided into metaphorical and non-metaphorical instances (including both literal and metonymic instances) by means of a modified version of the method for identifying metaphorically used words in discourse (MIP) (Pragglejaz Group 2007). Because of the size of this material (5,557 instances), the entire text-discourse of a given instance was here only consulted when a context consisting of two to five lines was not enough to establish whether the instance is metaphorical or not.

Next, frequencies and uses of metaphorical 'path', 'road', and 'way' instances were analysed as well as the prepositions, verbs (see Johansson Falck 2010), and phrases that modify the head nouns 'path', 'road', or 'way' (modifying phrases include both pre-modifiers (e.g. attributive adjectives like 'long [path]') and postmodifiers (e.g. prepositional phrases like '[path] of the jeep') (see Johansson Falck, in press). From prepositions and verbs we learn a lot about motion along the path, road, or way. The modifying phrases further define the paths, roads, or ways.

Finally, comparisons between the usage patterns of 'path', 'road', and 'way' instances from the BNC and USE were made, as well as occasional comparisons with non-metaphorical instances. Dictionary data and searches of the online concordance of *Svenska Akademiens ordbok* (http://g3.spraakdata.gu.se/saob/konk_main.phtml), and the Swedish pages on Google, were used to check the frequencies of Swedish metaphorical *stig*, *väg*, and *sätt* expressions.

Given the differences between the BNC and USE (e.g. the difference in size, and in the distribution of spoken versus written material) the two corpora are unlikely to be highly comparable. However, the random instances extracted from the BNC are expected to provide information on the usage patterns of 'path', 'road', and 'way' in British English, and these can then be contrasted with the usage patterns of these terms in the material written by Swedish L2 speakers of English.

5.   How often are the terms 'path', 'road', and 'way' used in metaphorical ways?

As a first step, the frequencies of metaphorical 'path', 'road', and 'way' instances in the BNC and USE were compared. The aim was to find out which one of the terms 'path', 'road', and 'way' the L1 speakers of British English and the Swedish L2 speakers of English use the most with metaphorical senses.

The dictionary material and searches of the concordance of SAOB suggested that *stig* ('path') is seldom used in metaphorical ways. No metaphorical senses of this term were found in the Swedish dictionaries, and in the bilingual NSEO dictionary, metaphorical

'path' instances (e.g. 'he's always crossing my path') are either translated with Swedish *väg* instances (e.g. *han korsar ständigt min väg* 'he keeps crossing my way'), and not *stig* instances, or they are translated with some other expressions (e.g. *jag stöter ständigt på honom* 'I keep running/bumping into him'). As a consequence, the proportion of metaphorical 'path' instances in USE was expected to be smaller than in the BNC material.

At the same time, the NSEO dictionary entries imply that metaphorical 'way' expressions are the most common translations of metaphorical *väg* expressions, and that of the two English terms for *väg*, 'way' and 'road'. 'Way', which primarily refers to "the direction in which something or someone travels", is more general and less restricted in its uses. The other term, 'road', is typically "a way that leads from one place to another, especially one with a hard surface that cars and other vehicles can use" (MEDAL; see also Johansson Falck, in press). For these reasons, the proportion of metaphorical 'way' instances, but not necessarily that of metaphorical 'road' instances, was expected to be higher in the USE material than in the BNC material.

Table 1 shows the frequencies of the metaphorical 'path', 'road', and 'way' instances in the two corpora. The USE material was divided into two groups, material from essays written by first-term students, and essays written by second-term students, to make any differences between these two groups evident.

The distribution of 'path', 'road', and 'way' instances in the two USE groups was very similar; both groups used 'path' much less often than native speakers of British English. First-term students did so in less than 1% of the cases, second-term students in 1% of the cases, and native speakers of English in 26% of the cases. This tendency is even more evident considering that 11 'path' instances in the first-term essays were produced by only 7 students.[5]

The Swedish students also used 'road' expressions in metaphorical ways slightly less often than the native speakers of British English in my material. Less than 1% of the 'road' instances in the first-term student essays were used in metaphorical ways, and 1% of those in the second-term essays, as opposed to 4% of the 'road' instances from the BNC. This difference was not expected.

Both groups of Swedish students had a greater tendency than the British speakers to prefer 'way' in metaphorical language to 'path' or 'road'. 99% of the first-term students' metaphorical uses of 'path', 'road', or 'way' consist of 'way' instances, and 97% of those of the second-term students, while only 70% of all the metaphorical uses of 'path', 'road', or 'way' in the BNC material are 'way' instances. The difference between Swedish first-term and second-term students is small but may possibly reflect a tendency for second-term students to become more similar to native speakers of English than first-term students.

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5.   The number of 'road' instances in the second-term essays, and the number of 'way' instances in the USE corpus were also larger than the number of texts in which they were found, and the same may be true of 'path', 'road', and 'way' instances in the BNC material. The smaller the number of instances, however, the more important this tendency is. Thus, it is also relevant that the 7 instances of 'road' in the USE Corpus originate from 6 texts, but not as significant that the number of 'way' instances in this corpus is larger than the number of texts that they come from.

Table 1. Frequencies of metaphorical 'path', 'road', and 'way' instances in USE and BNC

	USE		BNC
	1st-term students	2nd-term students	
path	11* (<1%)	6 (1%)	285 (26%)
road	7 (<1%)	7* 1%	49 (4%)
way	1995* (99%)	449* (97%)	778 (70%)
Total number of metaphorical 'path', 'road', and 'way' instances	2013	462	1112

* Some of these instances are from the same text.

Taken together, the frequency of 'path', 'road', and 'way' instances in my material indicate that even if 'path', 'road', and 'way' are basic English terms, and the Swedish students are proficient speakers of English, they are still affected by the linguistic metaphors in their L1 in their uses of metaphorical expressions in their L2.

6.   How are metaphorical 'paths', 'roads', and 'ways' described?

Phrases that are used to describe the 'paths', 'roads', and 'ways' are shown in Tables 2, 3, and 4 (for a more detailed discussion of these, see Johansson Falck, in press). Phrases related to the source domains are shown in the left-hand columns, and phrases related to the target domains in the right-hand columns. The distinction between source and target domain modifiers is based on an analysis of their contextual use. Phrases that may be used to describe the real-world 'paths', 'roads', and 'ways' are analysed as source domain modifiers, and phrases that necessarily modify target concepts as target domain modifiers.

As is evident from Tables 2, 3, and 4, the modifiers of 'path', 'road', and 'way' are not evenly distributed. There is a tendency in the BNC to describe 'paths' and 'ways' more carefully than 'roads' (64% of 'path' instances are modified, 58% of 'way' instances, and 29% of 'road' instances). The fairly large number of phrases that provide information about 'way' (Table 4) may be due to a need to specify 'way', which, in tending to be connected with 'direction of motion' seems to be least physically grounded. The more detailed descriptions of 'path' (Table 2) as opposed to those of 'road' (Table 3) may be related to the fact that motion on real-world 'paths' is typically slower, trickier, and more varied than on real-world 'roads'. The slower speed makes attention to details along the path possible, and the variation with which people or things move along the path may require more descriptions than motion along the smooth 'road'.

The distribution of the modifiers of 'path', 'road', and 'way' in USE is similar to that in the BNC material (47% of 'path' instances are modified, 46% of 'way' instances, 29% of 'road' instances). The number of 'path' and 'road' instances, however, is too low for this to be a reliable tendency.

The biggest qualitative differences between the modifiers of 'path', 'road', and 'way' from the BNC and USE are found in the 'path' and 'road' texts.

The modifiers of 'path' differ with respect to their origin, and to the richness of the information they provide. The modifiers of 'path' in the USE material (Table 2) tend to come from the target domain. The 'path' is referred to as 'the path of growth', 'the path of learning', or 'the golden path'. The only terms that may come from the source domain are 'straight' and 'right'. The BNC material, by contrast, includes both target domain terms such as 'critical', 'growth', and 'career path' and phrases such as 'not easy', 'not clear', 'not straight', 'narrow', 'crooked', 'well-trodden', and 'clear', which may all be connected with the source domain of real-world paths. From the majority of these, we may infer that motion on or along the metaphorical 'path' is difficult.

The modifiers of 'path' in the USE material (see Table 2) provide much less information about the paths than those in the BNC. The Swedish L2 speakers of English,

Table 2. Typical modifiers of metaphorical 'path' in the BNC, and all the phrases that modify 'path' in USE. Taken together, 64% (or 182 out of 285) metaphorical 'paths' in the BNC were modified and 47% (8 out of 17) 'paths' in USE. (Frequencies of more than one instance are within brackets.)

	Source domain				Target domain			
	HARD to move along	EASY or pleasant to move along	Vertical movement	Other	HARD to move along	EASY or pleasant to move along	Vertical movement	Other
USE 1st-term students		straight						of growth, of a union with common human rights value, of working together, of cooperation
USE 2nd-term students			right			golden		path of learning
BNC	no(t) easy (2), not clear (2), not straight, narrow, risky, dangerous, crooked, rather tricky, longer than any other, unlikely to be smooth	welltrodden, easy, clear, straight, fast, best	upward (2), downward, down, higher, lower	another (4), other (3), same (3)	critical (5), punishment (2), more cautious, delicate, dead	growth (7), upgrade (2)	career (4), downsizing	of full cultural control, 'of mind control, meditation, prayer, yoga or whatever'

who are not used to using the equivalent term metaphorically in their native language, do not describe paths in detail. Both the L1 and L2 speakers of English structure their uses in line with the ACTION IS MOTION metaphor. But unlike the L1 speakers of English, the Swedish L2 speakers refrain from using the differences between paths, roads, and ways to express more subtle shades of meaning. As in the BNC texts, metaphorical 'paths', 'roads', and 'ways' in the USE texts all take us from A to B, but there is no qualitative difference between them.

Table 3 shows that in the BNC material, metaphorical roads can be 'long', 'dangerous', 'straight', or 'rough' like real roads. As in real life, there are various kinds of roads (e.g. 'lonely', 'high', or 'different') roads, but roads may also be described by words from the target domains (e.g. 'electoral road' or 'road of different regional governments having different tax rates'). Unlike some of the phrases that modify metaphorical 'path' in the BNC, these phrases are not about width, but length. There are 50 instances of the collocation 'wide' + 'road' in the BNC, and 150 instances of 'narrow' + 'road'. However, none of these 'road' instances are metaphorical. In the corpus there are also 185 instances of the collocation 'long' + 'road', and 42 of these are metaphorical. Considering the focus on length, rather than width in the metaphorical BNC instances, the uses of 'narrow' and 'wide' to describe 'road' in the second-term USE texts seem odd. When an L1 speaker of British English says something about motion from A to B that takes place on or along something that is narrow, or wide, that something is more likely to be a path than a road. That is, although roads may indeed be both narrow and wide in the real world, metaphorical 'roads' are typically fast, and easy to move along and their width less relevant (see Johansson Falck, in press). Metaphorical 'paths', on the other hand, which may be anything from hard to easy to move along, and described in a number of different ways, are sometimes specified as either narrow or wide. In Swedish, where *stig* ('path') is not often used in metaphorical ways, metaphorical roads can be both narrow and wide. This is reflected by expressions such as *den smala vägen* ('the straight and narrow' (NSEO), or lit. 'the narrow road/way')), and *den breda vägen* ('the primrose path', or lit. 'the wide road/way'). The uses of 'narrow' and 'wide' in the USE texts to describe the metaphorical 'road' are likely to be due to transfer from Swedish.

There are very many similarities between the descriptions of metaphorical 'way' in the USE and BNC texts (see Table 4). Not only were terms both from the source and target domains used in all text-groups, but the modifiers also fell into the same groups, and quite a few of the terms were identical. In both the USE and the BNC texts, 'long' is the most frequent source domain term connected with problematic motion, 'best' is the most frequent term from which we can infer that the way is easy or pleasant to move along, and 'same' is the most frequent term that links one specific way with another.

The only important difference between USE and the BNC texts seems to be that, in the USE texts, expressions connected with 'manner' are not usually found in contexts including other terms related to motion.

Table 3. Typical modifiers of metaphorical 'road' in the BNC and all the modifiers of 'road' in USE. 29% of (14 out of 49) metaphorical 'road' instances in the BNC were accompanied by a modifying phrase, and 29% (4 out of 14) metaphorical 'road' instances in USE. (Frequencies of more than one instance are within brackets.)

	Source domain			Target domain		
	HARD to move along	**EASY or pleasant to move along**	**other**	**HARD to move along**	**EASY or pleasant to move along**	**other**
USE 1st-term students			same			
USE 2nd-term students	narrow	wide	right			
BNC	long (2), dangerous (2), rough	straight	lonely, high, different			alternative, electoral, '…of different regional governments having different tax rates'

The differences between the BNC and the USE texts were greatest among the target domain modifiers, and may be related to the topics discussed (see Golden, this volume) and/or cultural differences. A very large number of the modifiers in the texts written by first-term students describe 'way' as 'negative' (18 instances) or 'positive' (11 instances). Quite a few of these 'way' instances are 'effective' (10 instances) or 'efficient' (7 instances), 'natural' (14), 'proper' (10), 'normal' (8), or the opposite, 'strange' (5). They are also 'possible' (10), 'democratic' (9), 'Swedish' (9), or 'American' (7). The most frequent terms in the texts written by second-term students are 'certain' (5), 'effective' (4), and 'friendly' (4). Something may be described as done in 'a strange sort of way' or 'odd' in the BNC texts too, and the 'way' may be 'possible', but there is no equivalent focus on either 'negative' or 'possible ways', 'efficiency', or what is 'proper', 'normal', and 'natural' as opposed to 'strange'. The large number of words belonging to the last of these groups of modifiers is interesting given certain aspects of Swedish culture communicated by the Swedish adjective *lagom*. The English translations of *lagom*, which is an old Swedish ideal, and, to my knowledge, is not used in any other language, are 'just right', 'just enough', 'sufficiently', 'in moderation', and 'moderately' (NSEO). According to the *lagom* norm, things are not supposed be too much, or too little, but just right in between these two endpoints, although less of something is usually considered slightly better than more of something (i.e., the focus on 'proper', 'normal' 'natural' as opposed to 'strange' seems to be related to the *lagom* norm).

The terms used to describe 'path' and 'road' indicate then that Swedish students differ more from native speakers of British in their descriptions of what the 'path' or 'road' is like than in their description of the 'way'. Moreover, the terms imply that, unlike

Table 4. Typical modifiers of metaphorical 'way' in the BNC and all the modifiers of 'way' in USE. 58% (451 out of 778) of metaphorical 'way' instances in the BNC were modified, and 46% (759 out of 1644) metaphorical 'way' instances in USE. (Frequencies of more than one instance are within brackets.)

	Source domain				Target domain			
	HARD to move along	EASY or pleasant to move along	other	Manner	HARD to move along	EASY or pleasant to move along		Manner
USE 1st-term students	long (13), rough	best (72), good (57), easy (57), better (24), easiest (19), new (9), fast (3), great (2)	same (66), only, (57), another, (57) other (43), different (19), wrong (11), right, correct (10), direct (3), some (4)	one way of getting around the problem	negative (18), brutal (4), aggressive (4), hard (3), tricky	positive (11), effective (10), efficient (7), comfortable (4), friendly (4), saf(est) (3), smooth(est) (2)	natural (14), proper (10), possible (10), democratic (9), Swedish (9), normal (8), certain (8), American (7), strange (5), old-fashioned (4)	the best way of solving the problem, the way in which it was carried out, the way in which they are performed, the best way of solving the problem
USE 2nd-term students	long, (15), difficult	best (5), good (4), new (3), better, fast, quickest, easy, direct	same (23), only (23), other (18), some (8), another (5), different (2), right (2), wrong(ful) (2), correct	If Haider can make it all the way to the top and stay there	negative (2), bad (2), aggressive	effective (4), friendly (4)	certain (5), common (3), possible (3)	Brutus's way of rejecting the oath, the harsh and cruel way in which they murdered him
BNC	long (9), hard (3), rough kind of, terrible, no easy,	best (12), easy (4), better (4), great, quick, lovely, safe, secure	same (29), only (13), different (8), every	the way you walk, things were going, the way he seemed to think out / what he wanted to say as he went along	a grave, withdrawn, a strange sort of way, odd way.	sly, a typically sensible, attractive, an intriguing way, very obvious way, the politest way possible	extended, a cheap, unique uncertain	the way in which many keg beers are brewed and the ingredients used

L1 speakers of British English, these Swedish L2 speakers of English do not make a difference between the terms related to what they know about real-world 'paths', 'roads', and 'ways'. L1 speakers of Swedish, who tend not to use the term *stig* metaphorically, but use *väg* expressions or completely different expressions instead, are not used to making this distinction when using these terms in metaphorical ways in their L1, and do not do so when speaking English either. Language seems to be more than just language; the semantic distinctions lexicalized in words such as 'path', 'road', 'way', *stig* and *väg* influence in what ways our embodied experiences are used to understand one kind of thing by means of another.

7.   How are spatial relationships including 'paths', 'roads', or 'ways' described?

Since the number of 'path' and 'road' instances in the USE material is very small, and not all these instances include prepositions, the use of prepositions in metaphorical 'path' and 'road' will not be discussed in detail here. Despite the many differences between Swedish and British English with regard to how prepositions are used, the prepositions in the specific clauses discussed here are very similar in the two languages. Accordingly, no major differences were found between the English produced by Swedish L2 speakers and British L1 speakers in my material. Google searches of Swedish pages on the Internet showed that '*på*' ('on') is quite the most preferred preposition in both *stig* and *väg* expressions, and *till* ('to') the second.[6] Both these prepositions were found in the 'path' and 'road' instances in the USE Corpus too, and they are frequent in the BNC texts.

The prepositions included in the 'way' instances fall into two main groups: those used together with 'way' in the sense of 'manner' or 'manner of motion' (see Table 5, group A), and those used with 'way' in the sense of 'direction' or 'motion from one place to another' (Table 5, group B). Both 'of' and 'in' are typically used with 'way' in the sense of 'manner' (e.g. 'a way *of* affirming belief', '*in* the way they think', 'the way *in* which we can choose', etc.), and the rest of the prepositions in the direction/motion sense (e.g. 'there are bound to be plenty of bumps *along* the way' and 'you were well *on* the way *to* the top of the money league').

Swedish translations of phrases including 'way' in the sense of 'manner' do not include the term *väg* ('way, road'), but the completely unrelated term *sätt*, which can also be used in the senses of 'method' and 'means'. This term is very common in Swedish. A Google search returns 22,100,000 Swedish hits for *sätt*, which can be compared with 13,500,000 hits for *väg*, and 3,150,000 Swedish hits for *stig*. Similarly, 11,951

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6.   Searches of the phrase '*på väg*' returned 8,150,000 hits ('*på vägen*' 2,440,000 hits), '*väg till*' ('to') 2,600,000 hits ('*vägen till*' 2,520,000), and the rest of the more frequent prepositions (*i. längs*, *mot*, *genom*, *ur*, *ut*, *vid*) between 68,100 and 1,650,000 hits. Searches of the phrase *på stigen* returned 29,300 hits (*på stig* 11,200) and other prepositions between 5 and 16,000 hits.

instances of *sätt* were found in SAOB, 5,005 instances of *väg*, and 607 instances of *stig*. Swedes learn to translate phrases including the term *sätt* with phrases including 'way' (e.g. '*på annat sätt*', "in another (in a different) way" [NSEO]) quite early on. Unlike 'way', however, *sätt* is not connected with motion from one place to another.

Since phrases including *sätt* are this frequent in Swedish, transfer resulting in more 'way' instances in the sense of 'manner' in the Swedish texts than in the British were expected in the USE material. This was seen in texts written by both first- and second-term students. As many as 84% of the texts written by first-term students, and 86% of the texts by second-term students (see Table 4) included the combinations 'way of' (e.g. doing something), 'in the way [that]' or 'way in [which]'. This can be compared with 70% of the most frequent prepositional phrases in the BNC texts.

Given that the English term 'way', but not Swedish *sätt* is related to motion, the manner-oriented 'way' instances in the USE material were expected to include fewer other terms about motion from one place to another (e.g. motion verbs, certain prepositions, certain verbal nouns etc.) than the BNC material. This was indeed the case. 21 out of 229 (9%) BNC instances of 'the way' were followed by a phrase referring to motion (e.g. 'the way you *walk*', 'the way he seemed to think out what he wanted to say as he *went along*' etc.). 15 out of 407 (4%) 'the way' instances in the USE texts written by first-term students did so, and 3 out of 88 'the way' instances (3%) in the texts written by second-term students. Similarly, 5 out of 100 'way of' instances in the BNC material (5%) implied motion from one place to another (e.g. 'Another way of making your money *go further*'), but only 3 out of 398 (<1%) of 'way of' instances in texts written by first-term students, and none of the 96 'way of' instances written by second-term students. 2 out of 43 'the way in which' instances in the BNC material, implied motion (e.g. 'the way in which Mr Morrison *bounced back*'), but none of the 6 instances in each USE group.

The low frequencies of motion words in the Swedish material indicate that Swedes, who are not used to thinking of manner as motion, tend not think of motion when using English way instances either. One possible explanation for this is that they downplay 'motion' when highlighting 'manner'. Another is that in the 'way'-as-manner cases, they have simply learnt to use 'way' as a manner adverbial marker and that this overrides the perceived metaphoricity of these expressions.

No matter which explanation is correct, the difference between Swedish speakers and British speakers of English observed here implies that the use of 'way' in sentences such as 'the way in which Mr Morrison *bounced back*' in the BNC material is not simply the result of learning to associate the term 'way' with 'manner', but also connected with what we know about 'way' (i.e., that a 'way' takes us from one place to another) and with thinking about manner as motion through space in line with the ACTION IS MOTION metaphor. The difference between the Swedish material and the British imply that the terms that are actually used in metaphorical language are important, and that uses of specific words are not simply linguistic behaviour, but connected with certain ways of thinking related to our knowledge of the world through bodily experiences and conceptual structures at a more general level of organization.

Of the prepositions used with 'way' in the sense of 'direction' or 'motion' (group B), 'to' was the most frequent in the BNC material (B, Table 5). 12% of the prepositions in this material were 'to' instances, 4% were 'out' instances and 3% 'on' instances. The most frequent preposition in the USE texts written by first-term students was 'on' (5%) followed by 'out' (3%) and 'to' (2%). The most common prepositions in the texts written by second-term students were 'out' (4%), 'along' (2%) and 'to', 'on' and 'by' (all 2%). The tendency for native speakers of British English to prefer the preposition 'to' in talk about somebody's or something's motion along the way is thus not reflected by a similar tendency in the Swedish material. Instead of using 'to' in talk about this type of motion, Swedish first-term students seem to prefer 'on'. This tendency is similar both to the non-metaphorical 'way' instances in the BNC, and to Swedes' uses of the Swedish equivalent '*på*', the most frequent preposition in Swedish *väg* expressions overall on the Swedish pages on the Internet.

Both Swedes and native speakers of British English often use the expression 'way out'. The preposition 'out' is the 2nd most frequent in both the BNC material, and the texts written by 1st term-students, and the most frequent in the texts written by second-term students. Almost all the instances in the texts written by first-term students were 'way out' instances, and so were most of the BNC instances, and about half of the instances in the texts written by second-term students. The Swedish expression *väg ut* ('way out') is fairly frequent too. A Google search of the Swedish pages returns 2.5 million hits for the phrase.

In sum, both similarities and differences between the prepositions used in combination with metaphorical 'path', 'road', and 'way' instances in the BNC and the USE material were found. Some of the similarities may be related to similarities between Swedish and English (i.e., the English prepositions 'on' and 'to' and their Swedish equivalents *på* and *till* are all frequently used together with these terms), and some with the fact that these Swedish L2 speakers of English know English quite well. The differences, however, imply that what goes on at the level of language is also important. Although the Swedish students in my material are proficient and the expressions common, they are still affected by thought patterns connected with their L1. They tend not to associate 'way' in the sense of manner with motion as often as the L1 speakers of British English in my material do, and the more frequent Swedish focus on motion 'on' the path and way rather than motion 'to' something is reflected by more 'on' instances in these groups and fewer 'to' instances than in that of British speakers of English. The uses of 'to' and 'on' in the Swedish and English 'road' instances are very similar. The Swedish term *väg* may refer to precisely the same kind of artefact as 'road', which may, at least in part, explain the similarities. This means that the specific artefact (source domain) that motivates the metaphorical expressions is the same.

Table 5. Prepositions used together with non-metaphorical 'way' instances in the BNC, and with metaphorical 'way' instances in the BNC and in USE. The columns include both the number of instances and the percentage of each preposition in a given group (shaded). The most frequent prepositions in each corpus are in bold

Preposition	BNC				Metaphorical *way*			
	Non-metaphorical *way* (149 instances include prepositions)		Metaphorical *way* (603 instances include prepositions)		*USE* 1st-term students (632 instances include prepositions)		*USE* 2nd-term students (308 instances include prepositions)	
A (way) of	*3*	2%	**100**	**17%**	**398**	**63%**	**96**	**31%**
in the way	*5*	3%	**279**	**46%**	**120**	**19%**	**156**	**51%**
way in	*2*	1%	43	7%	15	2%	13	4%
				70%		84%		86%
B into	*7*	5%	7	1%	8	1%	1	>1%
along	*7*	5%	7	1%	7	1%	7	2%
to	*35*	**24%**	70	**12%**	14	2%	5	2%
toward(s)	*2*		5		4	>1%	2	>1%
through	*11*	7%	7	1%	4	>1%	1	>1%
from	*7*	5%	7	1%	6	>1%	2	>1%
on	*49*	33%	17	3%	33	5%	5	2%
under	–		14	2%	0		0	
out	*9*	6%	22	4%	20	3%	11	4%
at	–		6	1%	1		1	>1%
by	*12*	8%	13	1%	–		5	2%
off			1	>1%	–		0	0%
up			1	>1%	1		2	>1%
between			4	>1%	1		1	>1%

8.   What do we do 'on', 'along', or 'near' the metaphorical 'path', 'road', and 'way'?

The Swedish tendency to focus on motion 'on' the *stig* ('path') (i.e. on contact with the path from above), and the English tendency to focus on motion along the path is also suggested by a comparison between the verbs used together with 'path' in the BNC material (Johansson Falck 2010) and in the USE texts written by first-term students. All the most frequent motion verbs in the BNC material (e.g. 'follow/ing/ed' (16/3/7 instances), 'pursue/d' (3/3), 'continue/s/d' (3/2/1), and 'lead/led' (4/1)) except 'tread/ing/trodden' (2/1/3) have this focus, but none of the USE instances do. Other frequent verbs in this material are 'take/ing' (4/5) and 'choose/chosen' (3/3), which focus on decisions about courses of actions, 'provide/s/ing' (1/3/1), which emphasize

preparations before action can be taken, and 'find/found' (2/3) that are about finding a given course of action. The USE material written by first-term students is similar to the BNC material in being about decisions about action. Here the most frequent verbs are 'choose' (3 instances), 'decide to/what path to walk' (2 instances), and 'cross'. The occurrence of 2 'walk' instances in this fairly restricted material, however, suggests a different tendency in the Swedish data than in the British English. As a possible result of transfer from Swedish or from patterns including non-metaphorical 'path', Swedish first-term students seem more likely to use 'walk' in metaphorical 'path' contexts than native speakers of British English. Although the BNC material is much larger than the USE material it only includes 1 metaphorical instance of 'walk'. Accordingly, an analysis of the collocation 'walk' + 'path' in the rest of the BNC suggests that native speakers of British English seldom use the term 'walk' in metaphorical 'path'-contexts. Only 3 of 58 'walk' + 'path' collocations are metaphorical (see Johansson Falck 2010). In contrast, Google searches of the collocations of the Swedish term *stig* ('path') show that the collocation *stig-gå* ('walk/go') is very common in Swedish (see Table 6).

Unlike the verbs used together with 'path' in the USE material written by first-term students, those in texts written by second-term students (i.e. 'follow', 'lead', and 'take') do not stand out as different from those in the BNC material. There are more than two instances of all these verbs in the BNC material and 'follow' is the most frequent.

If we consider the verbs included in metaphorical 'road' instances (Johansson Falck 2010), the first-term students are slightly closer to the British L1 speakers of English than the second-term students. They use the verbs 'be', 'lead', and 'go', and second-term students the verbs 'follow' (2 instances), 'choose', 'pursue', and 'lead' (same text). 'Be', 'go', and 'follow', but not 'choose', 'pursue', and 'lead' are found in the BNC material. The difference between the two Swedish groups, however, is small and transfer from Swedish would not have interfered with the Swedish first-term students' uses of 'be' and 'go'. In fact, given how frequent both *vara* ('be') and *gå* ('go, walk') are in combination with *väg* ('way') in Swedish sentences, these uses may even be the result of positive transfer.[7] Almost all the verbs in the Swedish texts are frequent in combination with *väg* ('road/way'),

Table 6. Frequencies of the English verbs 'choose', 'follow', or 'walk' in combination with 'path', and of the Swedish verbs '*gå*' ('walk'), '*välja*' ('choose') or '*följa*' ('follow') in combination with *stig*. The English frequencies are based on the collocations of 'path' in the BNC. The Swedish frequencies are based on Google searches of Swedish Internet pages

path	stig
...and *follow* 169 (81.0)	...and *gå (walk,go)* 1,230,000 hits
...and *choose* 28 (14.0)	...and *välja (choose)* 584,000 hits
...and *walk* 58 (26.0)	...and *följa (follow)* 241,000 hits

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7.   Google searches (Nov 3, 2008) return 6,880,000 Swedish hits for '*väg*' and '*gå*', and 3,630,000 hits for '*är på väg*' ('is on the road to').

and Swedish transfer may explain why the second-terms students, unlike the British speakers, use the verbs 'choose', 'pursue', and 'follow'.[8] The Swedish equivalent of 'lead', however, is fairly infrequent in Swedish *väg* sentences too, and transfer does not seem to explain why both Swedish groups use this verb.[9] Possibly it is related to the relatively high frequency of *följa* ('follow'), which is what the figure does when the road *leder/bär* ('leads').

In both the British (Johansson Falck 2010) and the Swedish corpora, 'be' is the most frequent verb in the metaphorical 'way' sentences (see Table 7). The texts are also similar in including several instances of the motion verbs 'go' and 'get', and quite a few target domain verbs. The large number of target domain verbs means that some of the differences between the corpora are likely to be due to the topic of the texts. Interestingly enough, the Swedish focus on 'negative' or 'possible ways', 'efficiency' or what is 'proper', 'normal', and 'natural' as opposed to 'strange' (discussed earlier), is reflected by a large number of verbs in the Swedish material written by first-term students discussing how people 'think', 'see', 'behave' or 'act', or how they 'find', 'feel', 'express', or 'treat' something. The verbs 'think', 'see', and 'find' are common in the BNC material too, but, taken together, there is a stronger tendency for verbs in the USE texts written by first-term students to be about behaviour. Three related verbs were found in the USE texts written by second-term students; 'behave', 'think', and 'find'.

Even though Swedish does not distinguish between 'road' and 'way' and the Swedish term *väg* ('way') typically refers to an artefact on which we can walk, the Swedish students do not seem to connect metaphorical 'way' with a physical artefact. None of the motion verbs used together with 'way' (i.e. 'come', 'get', and 'take') in the Swedish material indicate that the motion takes place on an artefact that is separate from those who are travelling on or along it. Just like the L1 speakers of English, the metaphorical 'way' instances in the L2 material are based on the sense of the 'direction of someone's or something's motion'.

In addition to the motion verbs and target domain verbs, quite a few verbs in the BNC material are about making one's way in one way or the other (e.g. 'prepare', 'pave', and 'fight'), or connected with finding a way (e.g. 'find', 'point', 'show') (see. e.g. Jackendoff 1990, Goldberg 1995). None of these verbs are very frequent in the USE material.

We may conclude that the biggest differences between the British and Swedish material were found in the metaphorical 'path' instances. The verbs used in combination with 'path' in the USE texts focus on motion 'on' the path to something, and not motion 'along' the path. In that sense, they are different from those in the BNC texts, but similar to conceptualizations involving the Swedish term *stig*. No major differences were found with respect to the verbs used together with metaphorical 'road' and

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8.   Google searches (Nov 3, 2008) return 3,050,000 Swedish hits for *väg* and *välja* ('choose'), 2,130,000 for *väg* and *följa* ('follow', 'pursue').

9.   Google searches (Nov 3, 2008) return 8,570 Swedish hits for '*vägen leder*' ('the way/road leads').

Table 7. Verbs used together with metaphorical 'way' instances. Frequencies of the verb forms are within brackets

Corpus	Motion verbs (and verbal motion nouns)	Other verbs
BNC (778 metaphorical 'way' instances)	come/ing (13/3), go/went/ going (10/4/3), take/s/taken (2/3/2), get/got (2/5), heading (2), continue lead/led (3/2), follows/ing (1/1), walk, rambles, arcing, catapulted	be/is/was/been (6/55/43/5), (2), stand [in sb's way] (5)
		work/s/ed (5/12), give/s/ing/gave/given (7/1/4/2/4), make (3), prepare/d (1/2), pave/paved (1/2), pushed, forced, fight, barged, shoved, elbowing, ploughing, negotiate,
		find/ing/found (16/1/2), see /saw/seen (5/1/2), know/ing/knew (5/1/1), point/ed (4/2), viewing/ed (3/1), look/ing/ed (1/1/1), show/ed (1/1), lost
		use/s/ed (5/3/8), think/thought (7/3), speak/ing (5/1), act/ed/ing (3/2/1), treat/s/ ed/ing (4/1/3), express (3), talk/ed (1/1), affect/s/ed (1/1/1), do/done (6/1), had (3)
USE 1 (1995 metaphorical 'way' instances)	go/es/ ing (6/10/1 = 17), get/s/ting/got (4/1/12/4), take/ing/took (6/5/2)	be/ing/is/was (36/21/55/25 = 137), use/s/ ed/ing (something in/as) a way (24/1/23/15), think/s/thought/thinking (18/1/4/21), see/s/ing/saw/seen (27/6/7/3/5), find/s/ing/found (21/0/2/5), feel/s/ing/t (18/3/2/7), act/s/acted/acting (14/12/4/4), express/ing/ed (14/10/3), treat/s/ed/ing (10/2/10/4), turn/ed (out) (13/3), affect/s/ing/ed (13/11/1/4) behave/s/ing/d (10/3/3/1), change/s/ing/d (10/3/4/4),
USE 2 (449 metaphorical 'way' instances)	getting (6), go/ing/gone (3/1/1 = 5)	be/is/was (14/44/1= 59), change/d (10/2), behave/s/behaving (7/2/1), think/ thinking (7/3), speak/s/ing (5/4/3), find/s/ ing/found (6/1/1), know/s/ing (5/1/2),

'way' instances. The similarities between the 'road' instances in the two corpora may be due to similarities between English and Swedish. Again, Swedish students seem to be more similar to L1 speakers of British English in their metaphorical 'way' instances than in their 'path' instances. The reasons for this are not clear from the study. A

tentative suggestion is that when learning an L2 we pay more attention to, or find it easier/more important to remember, expressions that are closer to those in our L1 than those connected with a different "thought world" (Whorf 1956: 147).

9.   Conclusion

My analysis of the USE and BNC texts showed that there are many similarities between metaphorical 'path', 'road', and 'way' instances produced by Swedish university students of English, and L1 speakers of British English. The 'path', 'road', and 'way' instances written by the Swedish L2 speakers of English are all grammatical with no obvious errors. These uses were probably facilitated by the fact that the terms are so common, and by the many similarities between Swedish and English at the levels of primary and complex metaphor.

More detailed analyses, however, show that there are several important differences between the two corpora. Swedish students use English 'way' expressions more often than British speakers, and 'path' and 'road' expressions less often than them. This tendency mirrors the pattern that Swedes tend to use *väg* ('way/road'), but not *stig* ('path') in metaphorical ways. Unlike British English speakers, Swedish students do not use the differences between real-world 'paths', 'roads', and 'ways' to express finer shades of meaning. Thus, Swedish students, who are not used to thinking of *stigar* ('paths') in metaphorical ways, do not focus on the details of what is prototypical of real-world *stigar* ('paths'), that is, details that distinguish *stigar* ('paths') from *vägar* ('roads/ways'). Instead, the Swedish students stick to the most relevant features of the mapping, (i.e., that paths are meant for motion from one place to another), and in that sense must be similar to their metaphorical uses of *väg* ('road/way') in their L1.

Another important difference between the corpora is that Swedish students seem to be influenced by the fact that the English term 'way' also corresponds to the Swedish term *sätt*, which, unlike *väg*, focuses entirely on manner and not motion. Metaphorical 'way' instances used in the sense of 'manner' in the texts written by Swedish students include fewer terms related to motion than those from the BNC material; sentences such as "[*T*]*he way* he seemed to think out what he wanted to say *as he went along*" are thus less usual in the Swedish material (my emphasis).

These findings, most generally, suggest that differences between languages at the level of lexical metaphor are important for understanding cross-cultural metaphor use. Typological analyses (Talmy 2000) of literal (Özçalişkan and Slobin 2003) and metaphorical motion (Özçalişkan 2005) suggest that language-specific factors have conceptual salience for the speakers of a language. Accordingly, Hickmann and Hendriks' (2010) analysis of children's acquisition of spatial language in French and English, and Ochsenbauer and Hickmanns' (2010) analysis of children's verbalizations of motion events in German show that children construct spatial relationships in accordance with their mother tongue from an early age. As observed in

cross-linguistic transfer research (Slobin 1993, Pavlenko 1999, see also Brown and Gullberg 2010), language specific patterns in one language influence the language patterns in another. The present study suggests that one's native language, and the very particular ways it talks about different experiences, shapes the specific metaphors that are learned in a second language. Even if two languages, because of commonalities in embodied experience, share many primary and complex metaphors, one's native language, and the specific lexical metaphors it includes, provide a lens that directly influences how a speaker of an L2 conceives of, and talks about, ideas and events in this language. Even if grammatical and semantic errors had been overcome by the highly advanced learners of English whose texts were studied here, differences in cognizing 'path', 'road', and 'way' events still persist between them and L1 speakers of British English. One obvious implication of this work for language learning and teaching is that the use of conceptual metaphor theories for pedagogical purposes (see e.g. Boers 2000, Csábi 2004, Littlemore and Low 2006) needs to be complemented by a focus on the level of lexical metaphor and how conceptualizations at this more specific level of organization relate to primary and complex metaphor.

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Metaphorical expressions in L2 production

The importance of the text topic in corpus research

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To what extent do learners of Norwegian use metaphorical expressions in Norwegian? What types of expression are used, in which context, and by whom? What are the learners' characteristics? Does their mother tongue influence their use of certain expressions? Using data from the ASK corpus at the University of Bergen, this chapter examines metaphorical expressions involving the high frequency nuclear verb *ta* (English: 'take') in the writing of learners with German, Spanish and Russian as their first language. All the expressions are compared with frequencies of these expressions in written Norwegian used by native speakers. The findings of this study reveal the importance of the topic in comparative studies of this kind.

Keywords: ASK corpus, different first languages, foreign language learning, Norwegian as a second language

1. Introduction

This chapter has two different aims. First, it reports on on-going research that studies the extent to which foreign learners of Norwegian use metaphorical expressions when they write in their second language (L2) and the degree to which any differences are related to their mother tongue (L1) and to their proficiency level in Norwegian. Second, it aims to show the importance of the topic of the texts that constitute the corpus in use when studying the meanings of words.

2. Background

It is commonly said that metaphors, or more precisely metaphorical expressions, are among the last vocabulary items to be learnt when studying a new language. However, this is far too simple a statement. Metaphorical expressions, like all words in a language,

are not all of the same kind. They have very different meanings and forms, occur in all sorts of contexts, and constitute a heterogeneous area of the lexicon of any language. Some have a high general frequency of use whereas others are more common in particular genres or in relationship to certain topics. Some metaphorical expressions have just one word that constitutes the metaphorical core; others have a phrase (Golden 2005, 2010). Some have a complex syntax; others a canonical one. Some are transparent; others opaque. Thus, not all metaphorical expressions involve the same degree of difficulty in L2 learning, although, as an overall tendency, L2 students seem to lag behind their L1 peers in using some metaphorical types. In addition, L2 students believe that metaphorical expressions are difficult both to use appropriately and to understand. Research on metaphorical comprehension indicates that, in general, L2 students have difficulties in comprehending certain types of metaphorical expressions and that some types are more difficult to comprehend than others (Cameron 1999, Littlemore 2003, Golden 2005, 2010).

The possibility of using corpora in language studies has greatly improved the reliability of research and has also allowed researchers to study much larger amounts of data. In Norway the recently compiled Norwegian L2 learner corpus (the ASK-corpus or *AndreSpråksKorpus*) has opened promising avenues of research on learner language.[1] But corpus data also present possible pitfalls for the researcher. One of these is when study of the lexicon is undertaken without due regard for the way the corpus is constructed, that is, when it is studied in an unreflective way. The texts that constitute the data usually deal with different topics, creating potentially unreliable results because words and word usage are often topic specific. I will demonstrate this by presenting the use of the Norwegian verb *ta* (more or less equivalent to 'take' in English) in the Norwegian learner corpus ASK and in its affiliated control corpus, where Norwegian students have written in their L1.

3.   Research questions

This study is part of a larger research project, ASKeladden, which uses a learner corpus to investigate mother tongue transfer in second language acquisition. My overall research question concerns the degree to which the learners' use of figurative language is influenced by their L1. This is a field of research that has produced some interesting results (see Deignan et al. 1997, Boers and Demecheleer 1997, Boers 2000, Littlemore and Low 2006). In one sense metaphors – at least primary metaphors – are universal, reflecting our experience with the world, particularly our bodily experience (Lakoff 1987, Lakoff and Johnson 1980, 1999, Grady 1997, Lakoff and Turner 1989), but they are also culturally filtered (Gibbs 1999, Kövecses 2000, 2006). As is well known, in the field of cognitive linguistics the term 'metaphor' is used for the

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1.   The ASK-corpus is available at: http://gandalf.uib.no/ask/ask.

cross-domain mapping between two concepts, and 'metaphorical expressions' is used for the realization of the metaphors in a particular language. In the study reported here, I investigate the metaphorical expressions used by a group of students writing in their L2, which is Norwegian. The research is limited to the use of expressions containing the Norwegian core verb *ta* (usually roughly equivalent to English 'take'). I study whether groups of students with a particular L1 use metaphorical expressions with *ta* in their written Norwegian production with a higher frequency than other groups, and whether there is an increase in the frequency of these expressions as the students become more proficient in Norwegian. My rationale for focusing on the verb *ta* is the diversity of topics in the essays that constitute the data, and verbs are considered less context dependent than nouns (Viberg 1998), something that is especially true of the nuclear verbs. The term 'nuclear verbs' originates with Viberg, who has investigated the 20 most frequent verbs in Swedish (Viberg 1993). These verbs belong to a limited set of semantic fields in which they denote a semantic core meaning, hence the motivation for the terms 'nuclear verbs' or 'core verbs'. Viberg has then compared the 20 most frequent verbs in 11 languages, finding that several of these verbs exist or have an equivalent in all of the 11 languages. Among these is the verb *ta*. Other researchers (Cameron 1999, 2003, Deignan 2005) have demonstrated the difference between the metaphorical expressions including verbs and nouns, so verbs seem to offer an appropriate starting point for this research.

4.   Data

The data is taken from the ASK corpus, the Norwegian Learner Corpus at the University of Bergen. This is an electronic corpus consisting of essays written by adult immigrants with one of ten different mother tongues. The essays are collected from two official tests that give candidates certification of competence in Norwegian. The levels are somewhere near B1 (threshold level) and B2 (vantage level) according to the Common European Framework of References for Languages (CEFR). This means that the data are all produced under more or less the same conditions, in a test-like situation. For each level, there are about 100 essays from each L1. In addition, there is a control corpus of 200 essays written by adults with Norwegian as their L1, produced under approximately the same conditions. The corpus not only provides a database of the essays themselves, but also contains annotations of various kinds, such as parts of speech, morphological categories and other grammatical information, as well as error tags. Since it is a learner corpus, it contains learners' way of saying things, including expressions that do not follow Norwegian norms. Such deviations have been interpreted and corrected by research assistants, following certain criteria (see Tenfjord et al. 2006). This affords the opportunity to study errors and other deviations, as well as to search for words and expressions when words are misspelled or even omitted. The ASK corpus could thus be categorized as a parallel corpus consisting of an interlanguage corpus

and a corrected version of the same text. This contributes to higher precision as well as higher recall, variables much welcomed in corpus research.

Personal data are linked to the essays and are equally searchable. These variables include mother tongue, country of origin (important in different varieties of the same language), age, gender, education, type of Norwegian courses attended, amount of contact with Norwegians, length of stay in Norway, and English language proficiency. When combined with an efficient interface system, this information makes it possible to test hypotheses generated by previous studies in Norwegian as a second language. It also provides a rich source for exploratory studies to generate new hypotheses about lexical, grammatical and textual features of written SLA, as well as hypotheses on individual and external factors influencing the language acquisition process.

In the study reported here, I restrict the data to L2 learners of Norwegian who are native speakers of German, Spanish, or Russian. I use data from both the previously mentioned levels (approximately B1 and B2) and I also include Norwegian students writing in their L1.

5.   Metaphorical sense

According to cognitive linguistics there is a prototypical or basic sense of words (Lakoff 1987: xiv–xv): those often used to refer to concrete or physical actions, relations, or entities. In Conceptual Metaphor Theory a metaphor is the mapping between a source domain and a target domain (Lakoff and Johnson 1980, 1999), and a distinction is made between the (conceptual) metaphors that are part of our thought and the words and expressions that realize the mapping: metaphorical expressions or linguistic metaphors. Different procedures may be employed to decide whether to count an instance of a word's use as a metaphorical expression, such as the Pragglejaz procedure (Pragglejaz Group 2007, Steen 2007), where certain steps have to be followed. My categorization is not as extensive. It is based on a judgement of the involvement of the body, since conceptual structure is considered embodied in the cognitive linguistic framework. The actual use of the body (or not) seems to be an appropriate way to separate a basic sense from metaphorical ones. In the case of categorization of the action verb *ta,* the reasoning is that, in the basic sense, the use of hands is central. In the basic sense, an entity of some kind is moved from a location to a person (or other animate being), resulting in the latter holding or 'possessing' the entity moved. The use of hands often offers the most likely option in effecting this transfer. This is similar to what Norvig and Lakoff (1987) call the "central", or the "most basic", sense of the verb 'take' in English. In the typical case "the agent uses his hand as an instrument of movement by extending his arm, and the patient is a relatively small, light-weight physical object within grasping distance of the agent (Norvig and Lakoff 1987: 199). Examples from the data and their more or less literal translations into English are:

(1) *... neste dag **tok** Jean Valjean alle tingene og løp av gårde* (sp–0697)
'... next day Jean Valjean took all the things and ran away.'

(2) *... idet han **tok** ut brusen fra kjøleskapet* (no-s0029)
'... the moment he took out the soft drink from the refrigerator.'

(3) *Det er sikkert mye lurere å **ta** med et eple og dra på tur* (sp-h0528)
'It is probably much smarter to take with an apple and go on a walk.'

Likewise, the expressions are considered metaphorical when it is not possible to grasp the items in questions with the hands (or other body parts). Examples from the data are:

(4) *Alle lærerne på skolen **tar** dette alvorlig* (ru-h0422)
'All the teachers at school take this seriously.'

(5) *Sterke sponsorer og bakmenn må **ta** sin del av skylden* (no-h0054)
'Powerful sponsors and the people behind the scenes must accept (take) their share of the blame.'

(6) *Det **tok** tid for meg å lære å gå på ski* (sp–0690)
'It took time for me to learn how to ski.'

In this kind of categorization there is, however, a group of items that is difficult to categorize because it is not obvious if the hands (or other body parts) are used. They are somewhat similar to a category that Kittay (1987) calls "bridge terms". An illustration is *ta telefonen* (lit. 'take the telephone', i.e. 'answer/pick up the telephone'). It is possible to categorize this as a non-metaphorical expression if the phone is a classic one where the handset is grasped in order to answer. But it is also possible to argue that *ta telefonen* only means to answer, since the classic handset is no longer obligatory and it is often sufficient to merely press a button. The context does not tell us whether the hand is actually grasping something or not. I have grouped these items into a separate category, named bridges. In addition, there is one example of a special Norwegian construction *ta og* + verb 'take and' + verb, such as 'take and wash') where *ta* has an aspectual function of some sort. This construction is frequent, particularly in spoken Norwegian. Vannebo (2003) calls this a pseudo-coordination with *ta*. I consider this use grammatical and as such it is categorized separately from the other instances.

6. The base line: The use of *ta* in L1 = Norwegian

The Norwegian control corpus consists of 200 texts with a total of 72234 words. *Ta* is the eighth most frequent verb, with 261 occurrences in these texts – an average of 1.3 per text. For specific details of the use of *ta* by L1 groups writing Norwegian, see Table 1.

Table 1. Texts, words, and number of tokens of the verb *ta* in the data used by groups of German, Russian, and Spanish language learners of Norwegian at two different tests levels as well as by the L1 = Norwegian group

Level	L1	Texts	Words	Number of *ta*	Average *ta* per text
Native	Norwegian	200	72234	261	1,3
B1	German	85	25566	76	0,9
B2	German	96	49715	142	1,5
B1	Russian	101	27439	31	0,3
B2	Russian	102	47182	106	1,0
B1	Spanish	100	25636	67	0,7
B2	Spanish	100	45557	131	1,3

The texts written by Norwegians using their L1 contain more expressions with *ta* used metaphorically (Met-*ta*) than with *ta* used in its basic sense (Bas-*ta*). Met-*ta* is used more than four times as often as Bas-*ta*. A further categorization of the instances of Bas-*ta* is created with respect to variables such as direction, type of entity, and intent; these are categories that are salient according to cognitive linguistics theory. According to my subcategorization the most frequent use of the Bas-*ta* by far in these L1 texts is in expressions where objects or liquids are *taken away* (21 out of 47). Other uses of *ta* are in the sense of 'receiving something', of 'putting something in your mouth' (like drink, food, or medicine) and of 'bringing a person along', each employed in 6 out of 47 instances.

The use of *ta* in the metaphorical expressions includes some expressions that could be considered examples of fixed collocation (also called formulaic sequences, multi-word units, lexical phrases, routines, holophrases, etc.). These include some with no

Table 2. The different types of *ta* its basic senses used by L1= Norwegian group

Different categories	Translations (Eng or lit)	Amount
ta [obj, *væske*] (*ting, sekk, mobil, skrivemaskin, organ, blodprøve, inkl* fra/*vekk*)	Take [an object] included take from/away	21
ta [*munn*] (*drikk, mat, medisin osv inkl* refl)	Take [to the mouth] (included reflexives)	6
ta med/opp [pers]	Take [person] with/up	6
ta imot [obj]= *få* (*organ, bil*)	Lit: Take towards = receive	6
ta ut/fram [obj] (*søppel, brus, mobil, organer*)	Take out/ahead [objects]	4
ta med [obj] (*penger, mobil, matpakke, telt, mat* etc)	Take with [object]	2
ta på (=*klepå*)	Take on = dress	1
ta [*konkr*] (=*stjele*)	Take [concrete] = steal	1

Table 3. The use of the Norwegian verb *ta* in its basic sense (Bas-*ta*) and in its metaphorical sense (Met-*ta*) in the written production of Norwegian by groups of German, Russian, and Spanish language learners of Norwegian at two different tests levels as well as by the L1 = Norwegian group

Level	L1	Number of *ta* (total)	Basic sense (Bas – *ta*)	Bridges	Grammatical Use	Collocations (Coll-*ta*)	Metaphorical sense rest (MetR – *ta*)
Native	Norwegian	261	47 (18%)	11 (4%)		60 (23%)	143 (55%)
B1	German	76	8 (11%)	3 (4%)		17 (22%)	48 (63%)
B2	German	142	8 (6%)	11 (8%)		30 (21%)	93 (65%)
B1+B2	German	218	16 (7%)	14 (12%)		47 (22%)	131 (65%)
B1	Russian	31	10 (24%)	4 (10%)		12 (29%)	15 (37%)
B2	Russian	106	7 (6%)	5 (4%)	1 (1%)	35 (31%)	65 (58%)
B1+B2	Russian	137	17 (11%)	9 (14%)	1 (1%)	47 (31%)	80 (52%)
B1	Spanish	67	8 (12%)	4 (6%)		28 (42%)	27 (40%)
B2	Spanish	131	9 (7%)	7 (5%)		33 (25%)	82 (63%)
B1+B2	Spanish	198	17 (9%)	11 (6%)		61 (31%)	109 (55%)

room for variation within the expression, like *i det hele tatt* (lit. 'in the whole taken', i.e. 'on the whole') and some with a change of the verb tense and insertion of a negator and/or an intensifier as the only variations possible, like *ta for gitt* (lit. 'take for given', i.e. 'take for granted'), *ta hensyn til* (lit. 'take consideration to', i.e. 'take into consideration'), *ta stilling til* (lit. 'take position to', i.e. 'take a stand on') and *ta vare på* (lit. 'take care on', i.e. 'take care of'). Following Moon (1997), expressions with wider room for variation could also be considered as instances of collocation. A collocation can thus be viewed as a radial category (Lakoff 1987) with a prototypical central element of fixedness. Corpus studies have revealed the importance of these expressions in the L1 as well as in the L2. Sinclair, for example, claims that language as a whole is structured according to two principles, the open choice principle and the idiom principle (Sinclair 1991). The open choice principle is in line with the traditional view of language, that any word might be followed by any of a great number of words. The language user has almost a free choice, the only constraints being syntactic. The other principle takes into account the fact that words do not co-occur at random:

> To some extent, the nature of the world around us is reflected in the organization of language and contributes to the unrandomness. Things which occur physically together have a stronger chance of being mentioned together; also concepts in the same philosophical area, and the result of exercising a number of organizing features such as contrast or series. (Sinclair 1991: 110)

Hence, the conclusion that there is a vast number of prefabricated sequences in a language seems justified. This gives the user "a large number of semi-preconstructed

phrases that constitute single choices, even though they might appear to be analysable into segments" (Sinclair 1991: 110). These words have been acquired together and are associated with each other. Language users' choices are thus constrained as a result of the strong collocational tendencies between words.

For quite some time, researchers of language acquisition in the L1 as well as the L2 have been aware of how important such collocations are in the acquisition process. For instance, the reliance on formulas in the development of interrogative structures has been demonstrated in L1 studies (Johnson 1983, reported in Clark 2003). As regards L2 studies, in her seminal report on Nora's development in English, Wong Fillmore (1979) demonstrates how Nora starts using longer units (formulae) that she has heard without being aware of their parts. Nora then slowly starts to break the formulae down into smaller units and uses them in new constructions. Similar development is attested in several other classic studies (Hakuta 1974, Huebner 1983, Schmidt 1983). This phenomenon has also been referred to as U-shaped or U-curved behaviour (Krashen and Scarcella 1978, Kellerman 1983) and has been explained in various ways, depending on the theoretical framework of the researcher.

A separation of the collocations from the remaining metaphorical constructions is therefore strongly motivated by L1 acquisition theory, as collocations have a special status in the acquisition process. The delimitation of these constructions from other metaphorical expressions is, however, not straightforward. Moon (1997) uses the criteria of *institutionalization*, *fixedness*, and *non-compositionality* in combination with a phonological criterion that the words have to be pronounced in one intonation unit, while Schmitt and Carter (2004) discuss several other criteria. In my case, the fixedness of form and the phonological criterion are considered foremost. Moreover, I require three or more words in the expressions.

The 203 occurrences with *ta* in the metaphorical sense are thus separated into 60 collocations (Coll-*ta*) with a remainder of 143 metaphorical expressions (MetR-*ta*), giving percentages of 23% and 55% respectively (see Table 3 where the frequency of the metaphorical and the basic use of *ta* by different groups of speakers is presented after these analyses have been conducted). The most frequent collocations in the data written by the 200 Norwegians students are *ta stilling til* 27 (lit. 'take position to', i.e. 'take a stand on') and *i det hele tatt* 7 (lit. 'in the whole taken', i.e. 'on the whole') and the most frequent of the rest are *ta ansvar for* 25 ('take responsibility for'), *ta en avgjørelse* 13 (lit. 'take a decision', i.e. 'make a decision'), *ta et valg* 10 (lit. 'take a choice', i.e. 'make a choice'), *ta for seg* 9 (lit. 'take for oneself', i.e. 'deal with'), *ta i bruk* 8 (lit. 'take in use', i.e. 'start using').

7.   The use of *ta* in L2 = Norwegian

As has been said, the texts from the three learner groups are collected from two different test levels, roughly corresponding to the B1 and B2 levels. *Ta* is the eleventh most frequent verb in the texts written by students with L1 German, the thirteenth most

frequent in the texts written by students with L1 Spanish, and the sixteenth most frequent in the texts written by students with L1 Russian, hence it is a frequently used verb in these groups too. There is a difference in the use of *ta* at the two test levels though – the verb is less often employed by all the L2 groups at the B1 level overall, largely due to the difference in the average text length, which is 288 words at the B1 level and 530 words at the B2 level. The Russian groups use this verb less often than the other groups at both levels. The use of *ta* in the texts written by the Russian group at B1 level is particularly infrequent. A categorization of the *ta* uses into the categories Bas-*ta*, Bridges, Grammatical-*ta* and Met-*ta*, in this case divided into *ta* used in Collocation (Coll-*ta*) and the rest of the metaphorical *ta* (MetR-ta), is presented in Table 3. A comparison between these different categories reveals that all the Norwegian-as-L2 groups employ *ta* in its basic sense the least and the metaphorical sense (even when the collocations are excluded) by far the most. In the texts written by the German group, there are eight times as many MetR-*ta* as Bas-*ta*.

An intergroup comparison shows that the Russian group has the highest proportion of the use of *ta* in its basic sense and the German group the smallest. The German group has the highest use of *ta* in its metaphorical sense (excluding the collocations), and the lowest use of *ta* in collocations. Broken down by proficiency level, the percentages reveal that it is primarily the Russian B1-level group that differs most. The two other groups use *ta* in its basic sense twice as often in the B1-level as in the B2-level.

Table 4. The different types of *ta* in its basic senses used by the three learner groups

	Rus B1	Rus B2	Rus	Spa B1	Spa B2	Spa	Ger B1	Ger B2	Ger
ta med [obj] (*penger, mobil, matpakke, telt, mat* etc)	3	2	5	3	4	7	3	3	6
ta med/opp [pers]	2	2	4		1	1			0
ta [obj, *væske*] (*ting, sekk, mobil, skrivemaskin, organ, blodprøve* inkl *fra/vekk*)	2		2		3	3	2		2
ta ut/fram [obj] (*søppel, brus, mobil, organer*)	1	1	2			0	1		1
ta [*munn*] (*drikk, mat, medisin* osv inkl refl)	0	1	1	3	1	4	2	4	6
ta imot [obj]= *få* (*organ, bil*)	1		1			0			0
ta på (=*klepå*)	1		1	1		1			0
ta opp (=*absorbere*)		1	1			0			0
ta [*konkr*] (=*stjele*)			0	1		1			0
ta på (=*berøre*)			0			0		1	1
Total	10	7	17	8	9	17	8	8	16

In the Russian case, the B1-level group uses *ta* in its basic sense four times as often as the B2-level group. As regards the use of *ta* in its metaphorical sense (excluding the collocations), there is hardly any difference in proficiency levels in the German group, whereas both the two other groups demonstrate a greater use at the B2-level. As regards the use of collocations with *ta*, the Spanish B1-level group differs the most from the others with a higher percentage. The results from the intragroup comparison remain the same even when bridges and the instances characterized as grammatical usage are discarded.

When the basic uses of *ta* is subcategorized, it is revealed that all groups use *ta* most often in the 'bring-along-an-object' sense, in Norwegian *ta med* [+object] ('take with' [+object]). It should be noted that the German group has many instances of the 'take to the mouth' sense, in Norwegian *ta mat* (lit. 'take food')*, ta drikke* (lit. 'take drink')*, ta medisiner* ('take medicine'). There are not enough instances to further subcategorize them by proficiency levels.

8. Comparison between the Norwegian-as-L1 group and the Norwegian-as-L2 groups

All the groups produce *ta* in the metaphorical sense more often than in the basic sense (see Table 3). Even if this seems counterintuitive, it is in line with other corpus results. Deignan (1999) found this in her research on the use of *shreds* in English and claims that:

> While non-metaphorical senses may be psychologically primary and historically prior, contemporary corpus data shows that metaphorical senses of some words are used as frequently as, or even more frequently than, non-metaphorical senses. (Deignan 2005: 94)

The Norwegians writing in their native language use *ta* in its basic sense more often (18%) than the groups writing in their L2 (the German group 7%, the Russian group 11%, the Spanish group 9%). The Russian and the Spanish groups use *ta* in a collocation the most (both 31%) and the German the least (22%). The German group uses *ta* in the metaphorical sense (where the collocations are excluded) the most often (65%), the Russian group the least (52%). The proportions are about the same when the bridges and the instances of grammatical use are discarded from the figures.

When proficiency level is taken into consideration, however, the picture changes slightly. The basic sense of *ta* is used the most in the texts by the Russians at the B1-level (24%) and the least at the B2-level of all the L2 groups (6% by the German and the Russian groups and 7% by the Spanish group). As for the collocations, the Spanish B1-group has the highest frequency of use, 42%. Both the German group and the Norwegian group have a frequency of use between 21% and 23%, and the Spanish B2-level group 25%. The rest of the metaphorical expressions are used most often by the two German groups (63% and 65%) and by the Spanish B2-group (63%). The

Russian B1-group and the Spanish B1-group are both on the lower side, *ta* being employed in its metaphorical sense 37% and 40% of instances, respectively. The corresponding number for the Norwegian group is 55%.

These results for the comparison of the L2 and the L1 users of Norwegian are somewhat counterintuitive. My hypothesis was that the Norwegians, who write in their L1, would use *ta* in its metaphorical sense more often than the other groups writing in an L2. This hypothesis was not confirmed by the data. Moreover, I expected the Germans to be the group most similar to the Norwegian group. Their mother tongue is a Germanic language, as is Norwegian, and German has the greatest overlap in vocabulary with the Norwegian language, something that most likely facilitates the use of metaphorical expressions. Thus, it seems unsurprising that it is the German group that produces the most metaphorical expressions with *ta*. But since my primary hypothesis was not confirmed, the explanation concerning the German use of metaphorical expressions in Norwegian seems invalid. It is not surprising, however, that there is a difference between the proficiency level in all the groups, with an increase in the metaphorical senses and a corresponding decrease in the basic sense from level B1 to level B2.

These results prompt a closer comparison of the actual uses of *ta*. The Norwegian group has the highest use in the basic sense – and a comparison of the sub-types reveals a particularly high frequency of *ta* in the 'remove-from-something' sense. This construction is used to a much lesser extent by the Norwegian-as-L2 users. According to Talmy (1985), Norwegian is an S-framed language, where the direction of the movement is expressed in a satellite (a particle) in contrast to V-framed languages where the direction of the movement is incorporated in the verb itself. This means that Norwegian may use the nuclear verb *ta* and just change the particle when changing the direction of movement. V-framed languages often have separate verbs to denote different direction of the movement. But German and Russian are, however, S-framed languages as well (Slobin 1996), so this cannot be the only explanation.

A closer examination at the instances of the 'remove-from-something' sense in the texts written by the Norwegians reveals what kind of objects are taken or removed, namely the inner organs of the human body. The explanation lies in the topic choice of many of the Norwegian writers: organ donation. More than half of the Norwegian students (total 200) chose this essay topic, as did 14 of the Spanish B2-level students (total 100), but none of either the German or the Russian group. There were of course other topics where 'take out' was an appropriate expression to use, but in the 'organ donation' topic, it is almost an obligatory construction. In essays with the topic 'traffic' the verb *ta* will probably be frequently used as well, but then in the sense 'take the car', 'take the bus' – instances that would be categorized as metaphorical since no hands are involved. And in other topics like 'friendship' the use of *ta* will probably not be as frequent.

As Viberg (1998) has pointed out, the verb *ta* in Swedish and its equivalents in other languages are common, and language learners also frequently use this verb when writing in Norwegian. It is between the eleventh and sixteenth most frequently chosen verb in the three language groups studied. But when broken down according to the

different senses of this verb, even this highly frequent nuclear verb is topic specific. This agrees with Golden's finding when studying the vocabulary in Norwegian school-books (Golden 1984). These textbooks were chosen from six different levels in three different school subjects. In each class level, from 4th to 9th grade, 2–3 schoolbooks in Physics, Geography and History were analysed, comprising a total of 850,000 words. The vocabulary was classified as "highly common school vocabulary" by the research-ers and the rest as either "subject-specific vocabulary" or "non-subject-specific vo-cabulary" by the two or three teachers responsible for each subject in the 4th to 6th grades and the 7th to 9th grades. Their instructions were to mark the words that they, as teachers, would explain in class. The "highly common school vocabulary" consisted of a limited set of everyday concrete nouns and activity verbs used in school, frequent adjectives and regular function words – a total of around 165 lemmas. When compar-ing the category "non-subject-specific vocabulary" across the three school subjects, less than half occurred in more than one subject. This meant that a little over half of the lemmas categorized as "non-subject-specific" were in fact subject-specific.

9.   Conclusion

The recently initiated research of different aspects of learners' written production of Norwegian using an intermediate-advanced learner corpus raises high expectations for the study of L1 influence on the learners' Norwegian. Plans have been made for research on vocabulary, particularly on formulaic utterances, where several might be considered metaphorical depending on the framework of the researchers (see Spöttl and McCarthy 2004, DeCarrico1998). Cross-cultural comparison, highlighting the ty-pology of the languages involved, should be included in such studies.

The results of this pilot study on figurative language, starting with expressions containing the Norwegian verb *ta* in the production of learners with German, Russian, or Spanish as their mother tongue, reveals one area of caution; words and expressions in a language are to a large extent topic-dependent (see Philip, this volume). When comparing the production of lexical units between groups, the topic of the raw data is highly relevant and has to be considered even when highly frequent lemmas are stud-ied. This does not mean that corpus research should be avoided in this regard. On the contrary, the use of corpora allows one to easily understand the contexts and gives researchers the chance to critically interpret the results. What is necessary is explicit consciousness of the potential pitfalls as well as later expansions of these studies on more detailed levels that may better explain the results – a claim that is obviously not exclusively relevant to corpus research, but to research of all kinds.

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Researching linguistic metaphor in native, non-native, and expert writing*

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In order to discover where pedagogical efforts need to be made in helping students to develop metaphorical competence in their writing, it is necessary to be able to show what distinguishes the kind of metaphorical language used by native and non-native speakers of the language, and if there are any differences between the kind of metaphors used in writing by native and non-native speakers of English of the same age and educational background and those used by older, more expert writers. The aim of this chapter is to illustrate how we may arrive at a detailed description of the similarities and differences between metaphor use by different groups of writers through the application of a combined procedure of metaphor identification.

Keywords: combined procedure, corpora, metaphor identification procedure, metaphor identification through vehicle terms

1. Introduction

Studies from cognitive linguistics suggest that metaphor is a specific mental mapping that greatly influences the way people think, reason, and imagine in everyday life. One of the claims of this work is that many concepts, especially abstract ones, are structured and mentally represented in terms of metaphor (Lakoff and Johnson 1980). Research following this cognitive approach has shown that metaphorical language is pervasive in different registers and that it is highly systematic. Most of the studies have been concerned with characterizing and explaining how metaphorical expressions can systematically be related to very general mappings of concrete source domains to abstract target domains (e.g. Lakoff 1987, 1993, 1996, Kövecses 1986, Winter 1989). As

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Stefanowitsch (2005) points out, this pervasiveness and systematicity of metaphor could not be accounted for if metaphor were simply a stylistic phenomenon.

However, Lakoff's approach to metaphor research has been recently criticized for three main reasons. First, Lakoffian arguments stating that "the locus of metaphor is not in language at all, but in the way we conceptualize one mental domain in terms of another" (1993: 203) while still relying on linguistic examples to support the theory seem contradictory. The importance of linguistic expressions is limited to simple evidence for cognitive links and, as the focus is on shared conceptual systems, "a cognitive explanation of metaphor use inevitably ignores the possible explanatory power of an individual's previous experience with language" (Cameron and Deignan 2006: 672). Second, Conceptual Metaphor Theory (CMT) has focused on the many conventionalized metaphors that realize the conceptual mappings that we use to make sense of our everyday experience. However, those metaphors are "idealized cases, disconnected from the context of actual use in natural discourse" (Quinn 1991: 91 as quoted by Koller 2006: 237), they are "constructed examples, often restricted in length to sentence level or below" (Cameron 1999: 106). The third criticism is related to the view of novel metaphors. CMT claims that most novel metaphors are creative extensions of existing conceptual mappings and explores them mainly in literary and poetic works (e.g. Lakoff 1993, Lakoff and Turner 1989). Thus, research within this trend rarely seeks to describe and investigate novel metaphor use in non-literary discourse data. All in all, as Steen (1999: 81) asserts, "metaphor research is in need of a comprehensive approach to the language of metaphor in order to give full credit to its linguistic variability, if only so that we can get away from the stale format of A is B".

The call for a change from the cognitive to the more linguistic focus has been relatively recent (Cameron and Low 1999). Within this trend, language and thought are not considered as separate, individual, and abstracted; instead, they are seen as online, situated, and often jointly constructed (Cameron 2003). Furthermore, through the development of corpus and discourse approaches, an applied strand of metaphor research places a renewed focus on the language of metaphors. The applied linguistic approach to metaphor research takes ideas from cognitive theory as regards the widespread and conventionalized nature of much metaphor, but it also connects the conceptual with the linguistic, in theory and in empirical work (Cameron and Deignan 2006). In sum, the use of representative, naturally occurring empirical corpus data from different types of oral and written discourse, as well as the methodological concerns of this type of research are doubtless the most significant features of these applied linguistic approaches to metaphor analysis.

This renewed applied focus on metaphor research has raised questions about the methodological procedures for metaphor identification in empirical data. It has been generally acknowledged that identifying linguistic metaphor in representative, naturally occurring empirical corpus data is far from simple as it cannot be retrieved directly. It is notoriously subjective and the analyst has to rely largely on intuitions. As Cruse (2004: 195) argues, the contrast between literal and figurative uses of the

language may be problematic when pinning down the essence of literalness and trying to determine, with certainty, what figurative meaning really is.

The present exploratory research takes an applied linguistic approach to the study of metaphor in which language and thought are not considered as separate. It does so by connecting the conceptual with the linguistic, in theory and in empirical work. Drawing on representative, naturally occurring empirical corpus data from written discourse, this investigation aims at identifying, describing, and comparing non-native and native students' use of metaphorical language in their argumentative written production, more specifically, their use of linguistic metaphors, with reference to a corpus of expert writing. It also aims to select and pilot an appropriate, reliable, and applicable procedure for metaphor identification. The research questions that motivated this exploratory study are:

–   To what extent are linguistic metaphors used by native and non-native students as compared with native expert writers?
–   What is the nature of the linguistic metaphors in the three corpora under analysis? What are their lexico-grammatical features?
–   What are the differences and similarities in the use of linguistic metaphor across the three corpora?

Three corpora were used to carry out this comparative exploratory study. As shown in Table 1, the first consists of 11 argumentative texts extracted from the International Corpus of Learner English (ICLE), written by non-native students of English as a foreign language whose L1 is Spanish (henceforth referred to as the non-native student corpus). The sample contains 5,601 words. To compare uses of linguistic metaphor by learners of English as a foreign language (EFL) with native English uses, a second corpus extracted from the Louvain Corpus of Native English Essays (LOCNESS) was necessary. This second sample is made up of 10 argumentative texts written by American English native-speaking students and contains 5,657 words (henceforth referred to as the native student corpus). These two corpora are fully comparable: the non-native student essays were written by university students with upper-intermediate to advanced proficiency levels and the native student essays were written by second- or third-year university students. They are also comparable in terms of size, text type, and topic.

The third sub-corpus is a reference corpus of expert writing, compiled especially for this exploratory study. It consists of 15 editorials written by expert writers and taken from the online edition of the American newspaper *The New York Times* (henceforth referred to as the Expert corpus).[1] The editorials were carefully selected so that the topics matched with those of the non-native student (NNS) and the native student (NS) essays. This comparable corpus contains texts published between October 2007 and May 2008. As the editorials are typically much shorter than the argumentative essays, the Expert corpus sample is made up of 15 texts with a total number of 5,598 words and an average text length of 373 words.

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1.   http://www.nytimes.com.

Table 1. The corpora used in this exploratory study

	Text type	Topic	Number of texts	Number of words
ICLE (NNS)	argumentative	crime/prison	11	5,601
LOCNESS (NS)	argumentative	crime	10	5,657
Editorials	argumentative	crime/prison	15	5,598
Total			36	16,856

2.   Procedures for linguistic metaphor identification

Several procedures for linguistic metaphor identification have been proposed by metaphor researchers in response to the type of corpus they are examining, their research questions and objectives. The strategy used for metaphor identification in this exploratory study was manual searching. There are two main problems when using this method: it drastically limits the potential size of the corpus, as the researcher has to carefully read through the corpus extracting all metaphors she or he comes across. Also, and as a consequence, this method requires manual annotation, which is very demanding and takes much longer than automatic annotation (Stefanowitsch 2006, Berber Sardinha, this volume). These reasons may explain the fact that very few researchers have used this strategy in empirical studies (e.g. Jäkel 1995, Semino and Masci 1996, Cameron 2003). However, manual identification allows for an exhaustive, in-depth search and certainly reduces the potential risk of missing significant instances of metaphorical language used in the corpus.

In order to gain understanding of the nature and patterns of linguistic metaphor in argumentative student and expert writing, the first task was to set clear criteria as to what could be (or could not be) counted as metaphorically used language. This was not a straightforward task and some problems emerged during the process of metaphor identification. This issue was somehow expected. While evidence from theoretical approaches to metaphor has been taken from decontextualized, elicited, and created examples that are certainly figurative, researching metaphor in naturally occurring *contextualized* discourse has been found to be problematic by several researchers (Steen 1999, Heywood et al. 2002, Cameron 2003, Semino et al. 2004). In addition, as previously mentioned, few studies embark on the task of identifying all instances of metaphor through manual searching. In what follows, the linguistic metaphor identification procedure applied in this exploratory study and the ways problematic issues were dealt with will be discussed.

2.1   Key starting points

It was important to define, as a starting point, what was going to be considered as an instance of linguistic metaphor in this study. In a prosaic view, linguistic metaphor in this study goes far beyond the ornamental or the decorative; instead, it is concerned

both with the conventional and the creative metaphorical language used in argumentative writing by ordinary people (students/editors) for everyday purposes (writing an argumentative essay/editorial).

For the purposes of this research it was important to distinguish *process metaphor* as opposed to *linguistic metaphor*. According to Cameron (2003: 12) metaphor as an uncountable noun refers to "a process of mapping across domains" while the countable noun "a metaphor" refers to "a linguistic expression consisting of the focus placed within its immediate frame". The focus of this study is on instances of linguistic metaphor that may be counted.

Linguistic metaphor in this study is understood as a stretch of language that has the potential to be interpreted metaphorically (Cameron 2003, 2006). It includes conventionalized metaphorical language. A conventional linguistic metaphor is "a metaphor that is frequently used and is taken up in a language community, thereby reducing our awareness of its presence" (Charteris-Black 2004: 21).

2.2 The MIV procedure

Within the applied linguistics trend, Cameron (1999, 2003, 2006) has developed the Metaphor Identification through Vehicle terms (MIV) procedure for metaphor identification in contextualized data. The MIV sets out how to distinguish (linguistic) metaphors from non-metaphors in real contexts of use. It requires manual searching and manual annotation in order that the researcher may extract all the instances of linguistic metaphor present in a text. It consists of identifying the presence of a focus term, i.e. the *Vehicle term*, a word or phrase that somehow contrasts with (is incongruous or anomalous with) the topic of the on-going text. The first step in metaphor identification is then to identify possible Vehicle terms that have the potential for incongruity. The incongruity can be resolved by some "transfer of meaning" from the Vehicle (the metaphorical focus) to the Topic (the content of the on-going discourse) where 'transfer' is used in a loose sense that may be described theoretically as comparison, interaction, or conceptual mapping. The second step then is to see whether connections can be made between the meaning of the Vehicle and the Topic domain. The following examples illustrate how the MIV procedure works:

(1) "I've been an *active* republican": *active* is identified as the Vehicle term. It has a meaning of "physically active" that is metaphorical when used to mean politically engaged (Cameron 2006).

(2) "It is a very *widespread* opinion": *widespread* is identified as the Vehicle term. It has a meaning of 'being physically occupying a wide space' that is metaphorical when used to mean generalized (NNS Corpus).

(3) "Many youths are well aware of the fact that crime *pays*": *pays* is identified as the Vehicle term. It has a meaning of 'physically transfer money or goods' that is metaphorical when used to mean to yield some recompense or reward (NS Corpus).

The MIV procedure was used in this study to identify instances of linguistic metaphor in NNS, NS, and Expert writing. It required several readings of the data and reliance on the researcher's knowledge of the language and the contexts of use. It has been widely acknowledged that metaphor identification may depend on the researcher's intuitions at least to some extent. This fact makes the reliable identification of linguistic metaphor a problematic issue. Accuracy in identification was strengthened in this exploratory study by the participation of four raters. Its usefulness went beyond a simply cross-checking of the data as it was also of significant value in the construction of a final set of linguistic metaphors for each sub-corpus.

2.3   Inter-rater reliability

Identifying metaphor in context is problematic as the researcher may either overlook instances of linguistic metaphor or look at the data over-optimistically and inaccurately mark language as metaphorical. Inter-rater reliability basically requires another researcher (or researchers) to go through the same procedures with a sample of the data. Their independence from the research project helps to avoid bias and manipulation.

In this study, four raters checked the same sample text from each one of the three corpora. The sample was randomly taken from the dataset and consisted of a total of 1,682 words: a 638-word text from the NNS corpus, a 517-word text from the NS corpus and a 527-word text from the Expert corpus. Since the dataset for this exploratory study consists of non-native and native argumentative writing, it was considered appropriate that two of the raters should be non-native speakers of English whose L1 is Spanish, and the other two were native speakers of English. All the raters were experienced metaphor researchers and they received the same samples and the same guidelines for metaphor identification through Vehicle terms. The identification outcomes across metaphor researchers for the three samples were compared and analysed. Table 2 shows the marking of words as literally (0) or metaphorically used in the texts by the raters.

Table 2. Frequencies and percentages of total number of words marked as metaphorically used by four raters in the three texts

No. of times marked	NNS		NS		Expert	
	Frequency (No. of words)	Percentage (%)	Frequency (No. of words)	Percentage (%)	Frequency (No. of words)	Percentage (%)
0	557	87.3	413	79.9	401	76.1
1	39	6.1	23	4.4	48	9.1
2	9	1.4	21	4.1	15	2.8
3	15	2.4	31	6.0	26	4.9
4	18	2.8	29	5.6	37	7.0
Total	638	100%	517	100%	527	100%

It is worth mentioning here that each Vehicle term may consist of one or more words. The frequencies were calculated on word basis. The Pearson test was used to calculate reliability among raters. The result was 0.868. This value indicates high reliability and suggests that the rating was not due to chance alone.[2]

In general, two groups of scores for full agreement stand out: First, there is a large group of words that are unanimously marked as not metaphorically used in each one of the texts, on average accounting for 81.1% or four-fifths of the data. And second, there is a small group of cases that are marked by all the four raters as being metaphorically used. It is noticeable, though, that perfect agreement as regards metaphorically used language is lower in the NNS text and higher in the Expert text, which corresponds to 2.8% and 7.0%, respectively. On average, the words marked by all four raters in the three texts account for about 5.1% of the data. In all, before further analysis and discussion, there is full agreement between the four metaphor researchers about 86.2% of the data. These may constitute perfectly clear cases of both literal language and strong metaphors. An example is the following sentence taken from the NNS text, where no Vehicle terms were marked as metaphorically used by any of the four raters (for readability reasons the zero (0) scores are not attached to any of the words):

(4)   There are several types of crime: There is a kind of criminals who attack against the persons and others who attack against the properties or institutions. (NNS text)[3]

There are only two sentences from the NS text where no Vehicle terms were marked as metaphorically used by any of the four raters (again the zero (0) scores are not attached to any of the words):

(5)   They dress in Karl Kani, Pele Pele, and Guess clothing. They wear Cartier wristwatches and expensive Nike footwear. (NS text)

In contrast, all sentences in the Expert text contain at least one word that was identified as a Vehicle term by at least one rater. An example of perfect agreement about both metaphorical and non-metaphorical usage in the text is the following:

(6)   After three decades of explosive (4) growth (4), the nation's prison population has reached (4) some grim (4) milestones (4). (Expert text)

The words 'explosive', 'growth', 'reached', 'grim', and 'milestones' were marked as metaphorically used by all four raters, and none of the other words were marked as

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2.   See Berber Sardinha (this volume) and Dorst and Kaal (this volume) for more on interrater reliability.

3.   Examples are shown here as they were actually written by the NNS, NS, and the Experts. The texts were only checked and corrected for spelling mistakes (typos).

metaphorical by any of the analysts. There are no comparable sentences in the NNS or in the NS texts.

Also, as Table 2 shows, there are several instances in which words were marked as metaphorical by only one of the four raters. They account for 6.1% in the NNS text, 4.4% in the NS text and 9.1% in the Expert text. Again, the Expert text constitutes the highest percentage. The other group of cases is that in which three raters agree on the metaphorical use of a word. On average, they account for about 4.4% with the NS having the highest percentage (6.0%) and the NNS the lowest (2.4%). An example of these groups of cases is given as follows; again, the words that have no scores should have a zero attached to them displaying full agreement that they were non-metaphorically used:

(7)   *Where* (1) do the funds *come* (3) *from* (3) to purchase these fashions? In (1) many cases the answer is simple: crime. As unfortunate as it may *sound* (2), many youths are well aware of the fact that crime *pays* (4); and it *pays* (4) well. (NS text)

There are two cases here of perfect agreement about the metaphorical use of a word ('pays'). The other cases show disagreement since one, two, or even three of the raters (not necessarily the same one(s)) did not identify these words as metaphorical Vehicle terms. One of the cases concerns the phrasal verb 'come from', where only one rater disagreed about its metaphoricity. The other concerns the adverb 'where' and the preposition 'in', which were judged as metaphorical by only one rater and finally, the verb 'sound', which was marked as metaphorical by two of the analysts.

These examples of disagreement may be explained by the fact that metaphor identification in contextualized data requires the analyst to rely on both his/her knowledge of the language and his/her knowledge of the context created by the text. Metaphor identification may be highly intuitive and variability in intuitions remains a complicated issue that needs close attention. Thus, two of the raters analysed the data several times and by having a closer look at the context, several cases were discussed and resolved. However, there were still unresolved cases that needed further investigation. In order to check out intuitions and resolve the instances of disagreement, the MIP procedure for metaphor identification was applied to all the Vehicle terms that had been previously identified by the raters. Thus, each Vehicle term was analysed in its context of use.

2.4   A combination of procedures

Applying the MIV procedure for metaphor identification and the inter-rater checks were very important to improve reliability in this study. However, having several raters going through the same sample of data revealed the need to have a closer look at each Vehicle term marked by at least one rater as a potential linguistic metaphor. In order to disambiguate unresolved cases (i.e. cases of disagreement) the decision was made to adapt the MIP (Metaphor Identification Procedure) proposed by the Pragglejaz Group (2007).

The MIP is a flexible and reliable procedure that consists of four steps for metaphor identification in context. It is flexible because metaphor researchers from different fields may adapt the procedure according to their research questions and goals. It is reliable because it goes beyond intuitive judgements from the part of the metaphor analyst. It proposes the use of external resources, such as dictionaries, "as a frame of reference to check individual intuitions" (Pragglejaz 2007: 25). Pragglejaz recommends the use of the *Macmillan English Dictionary for Advanced Learners* since it is a corpus dictionary based on a large and recent corpus of contemporary English.

In this study, the three parts of step 3 and step 4 of the MIP procedure, which are especially valuable for their systematic and intuition sharpener qualities, were used in combination with the MIV procedure for metaphor identification purposes. Thus, for each Vehicle term (VT) previously identified, and employing the New Edition of the *Macmillan English Dictionary for Advanced Learners* (Rundell and Fox 2007), the following steps adapted from Pragglejaz (2007: 3) were applied in order to determine whether each VT was used metaphorically in the context of each text:

Step 3

–   *Establishing the contextual meaning*: For each VT in the text, establish its meaning in context. That is, how it applies to an entity, relation, or attribute in the situation evoked by the text, taking into account what comes before and after the lexical unit.
–   *Establishing the basic meaning*: For each VT in the text, determine if it has a more basic, contemporary meaning in other contexts than the one in the given context. 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.
–   *Contextual meaning vs. Basic meaning*: If the VT 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.

Step 4
–   If *yes*, mark the VT as metaphorical.

By applying the procedure to the first sentence of the NS sample text, taken from the corpus, the following three examples illustrate how the adapted steps from the MIP procedure work in combination with the MIV procedure:

(8)   *Drive down* any street in *urban* America and you will see young males and females, both black and white, driving Pathfinders, BMWs, Mercedes, and other *luxury* automobiles.

'Drive down', 'urban', and 'luxury' were identified, by at least one rater, as Vehicle terms. Each VT is considered in turn and the decisions for each part of step 3 and step 4 from the MIP procedure are reported:

Drive down
 – *Contextual meaning*: In this context, 'drive down' indicates the action of imaginatively or virtually going along (up, down, through, across etc.) the way (and seeing or noticing).
 – *Basic meaning*: The basic meaning of the phrasal verb is to control a vehicle so that it moves down the road (when the road does slope). 'Down' has a more basic meaning of 'being or going physically lower'.
 – *Contextual meaning vs. Basic meaning*: The contextual meaning contrasts with the basic meaning and can be understood by comparison with it: we can understand the imagined or virtual going along the way by the physical control of an automobile going down a prototypical vertical path.
 – *Metaphorically used*? Yes

Urban America
 _ *Contextual meaning*: In this context, 'urban' refers to the towns and cities in the United States of America.
 _ *Basic meaning*: The basic meaning of urban relates to towns and cities, or happening there, as in the following example from the Macmillan Dictionary: "People moved to the urban areas for jobs".
 _ *Contextual meaning vs. Basic meaning:* The contextual meaning is the same as the basic meaning.
 _ *Metaphorically used*? No

Luxury automobiles
 _ *Contextual meaning*: In this context, 'luxury' refers to the very expensive and of the highest quality automobiles.
 _ *Basic meaning*: 'luxury' does not have a different, more basic meaning.
 _ *Contextual meaning vs. Basic meaning:* The contextual meaning is the same as the basic meaning.
 _ *Metaphorically used*? No

As a result, one out of the three Vehicle terms identified as instances of linguistic metaphor was judged as being used metaphorically. The previous examples illustrate how the combination of procedures work and some of the decisions made when judging whether a word conveys metaphorical meaning in context.

   Also, while applying the combined identification procedure, it was realized that establishing the basic meaning of some words, and more particularly of prepositions, was sometimes complicated. In addition to using the Macmillan Dictionary and, in order to strengthen the accuracy of the decisions as regards prepositions, Lindstromberg (1998) was used as a resource. His book *English Prepositions Explained* proved to be

essential as it discusses both the central and most basic meanings of each preposition and the cases in which they have metaphorical extensions of meaning.

In summary, the process of metaphor identification in naturally occurring *contextualized* argumentative writing required the consideration of several complex issues that somehow emerged from actually working with the data. First, the unit of analysis was defined as the countable linguistic metaphor that has the potential to be interpreted metaphorically, including conventionalized metaphorical language. Second, the identification through Vehicle terms was set as a fundamental first step to distinguish (linguistic) metaphors from non-metaphors in real contexts of use. Third, for reliability purposes, inter-rater procedures were applied to a sample text from each of the three sub-corpora used in carrying out this exploratory study. Finally, a combination of procedures for metaphor identification (MIV and MIP) was necessary in order to go beyond intuitive judgements by (i) making systematic decisions and (ii) using two key resources as frames of reference.

2.5   The linguistic form of metaphor

In order to further understand and describe the nature of linguistic metaphor in NNS, NS, and Expert argumentative writing, the set of instances identified by the application of the above procedure was analysed for lexico-grammatical form and its distributional patterns across the corpora. According to the way it is used in a sentence, each instance of a linguistic metaphor was categorized as follows: (i) single word instances of linguistic metaphor were classified according to the word class to which the Vehicle term belonged (noun, verb, adjective, preposition, and adverb); and (ii) phrase level and multi-word Vehicle terms were classified by the word class of the head word in the phrase (noun phrase, verb phrase, phrasal and prepositional verbs, and prepositional phrase).

3.   Results and discussion

3.1   The nature of linguistic metaphor in student and expert writing

During the identification process, various decisions needed to be made about what to count as linguistic metaphor as it emerged both from the three sample texts and from the whole dataset. As has been explained, this was done with the systematic application of a combination of the MIV and MIP procedures for metaphor identification.

'Strong' linguistic metaphors, that is, those identified by all the four raters in the three sample texts, were all counted as metaphors since there were no problems when establishing their contextual and basic meanings and the contrast between those meanings was clear. The following example illustrates two of these cases:

(9)   They must *hold an image* (from the NNS)

Both 'hold' and 'an image' were marked by the four raters as Vehicle terms. When establishing the contextual meaning for 'hold', 'to continue to have a particular feeling (such as respect or admiration)', it was noticeable that it contrasted with its basic meaning 'to carry something using your hands or arms', as in the example given by the Macmillan dictionary: "Can you hold my bag for a moment?". Similarly, the contextual meaning for 'image', 'an opinion or feeling that people have about someone' clearly contrasts with its basic meaning 'a picture, photograph, painting or other work of art that represents a person or thing'.

Many of the cases in which instances of linguistic metaphor were identified (even if they were marked by only one, two or three of the raters) were similar to those in which the Vehicle terms are referring to something that is abstract (e.g. feelings/opinions) using a word or words that in other contexts refer to something that is more body-related (e.g. carry in your hands, arms) or more concrete (e.g., a bag, a photograph or a painting). This fact is in line with CMT as it claims that we rely on concrete, physical, or more clearly delineated ideas or concepts in order to talk about and understand fairly abstract ideas or concepts (Kövecses 2002: 15). Some examples from the data that further illustrate this particular characteristic of the abstract/concrete nature of linguistic metaphor (reification) are as follows:

(10)   ... many *great* businessmen have a *big* prestige that they don't deserve. (NNS corpus).

(11)   ... you are forced to work in a hot, cramped *atmosphere* (NS corpus).

(12)   ... men... are *serving* time (Expert corpus).

Other cases of full agreement included examples like this (from the NNS corpus):

(13)   There are lots of cases which never *arrive* to the court.

'Arrive' was unanimously marked by the four raters as a Vehicle term. Here, the Vehicle term is referring to something inanimate: 'cases', 'legal matters that will be decided in a court', as capable of human actions: 'arrive', 'to reach a place, after having been somewhere else' (definitions from Rundell and Fox 2007). In other words, 'cases' refers to a nonhuman entity that is being given a quality or attribute (the ability to 'arrive') proper of human (or animate) beings with the faculty of self-propelled motion and displacement.

Several examples of animation metaphor (personification) from the data used verbs that characterized actions as performed by an inanimate agent. In this type of linguistic metaphor, the basic semantic sense of the verb involves animate collocates, but the Topics they are referring to, in their specific contexts of use, are not animate. The following examples illustrate this point:

(14)   ...crime *has robbed* individuals of possessions, jobs and lives. (NS corpus)

(15)   The only danger that exists for a criminal *comes from* other criminals trying to take what's theirs. (NS corpus)

(16)   Criminal behaviour partly *explains* the size of the prison population (Expert corpus)

Another case of full agreement included the following example (from the NS corpus):

(17)   The few police on the street are thus often left chasing criminals *like a dog chasing its tail*.

The complete phrase 'like a dog chasing its tail' was marked as a Vehicle term by the four raters. This is a very interesting case for two main reasons: First, it provides empirical evidence of the fact that a linguistic metaphor can take the form of a phrase therefore, going far beyond the form of a single word. Second, the particle 'like' is acting as the explicit term that signals the connection between the Topic ('The few police chasing criminals') and Vehicle ('a dog chasing its tail') as a comparison (see Dorst and Kaal, this volume, for further discussion).

The comparison theory view of metaphor as an implicit or reduced simile has been criticized for being too narrow as well as for requiring literal transformations so that metaphor can be treated as ordinary comparison statements. However, this example from the dataset has brought two unlike things or ideas together in a statement of comparison. Similes are comparisons marked by 'like', 'as', 'as if' or 'as though', but they might or might not be metaphorical: in the (constructed) example 'Mary is like her sister', both 'Mary' and 'her sister' belong to the same domain as they are both people. However, in the (constructed) example 'Mary is like a flower' two ideas from two different domains (people/plants) are contrasted and we can understand this contrast by comparison.

Following Ortony (1979), Cameron (2003) and Pragglejaz (2007), and based on the fact that example (17) from the dataset was unanimously marked as metaphorical, explicit comparisons in which two incongruous domains are brought together were counted as instances of linguistic metaphor, more specifically, as metaphorical similes. Consequently, the literal comparison 'a wolf is like a dog' was to be excluded, while the figurative comparison 'a man is like a wolf' was to be included (examples taken from Ortony 1979).

In sum, cases of full agreement were revealing of three important features of the nature of metaphor in these particular contexts of use. As previously discussed, linguistic metaphor might be characterized by the presence of abstract/concrete relations, personification, and comparisons that take the form of metaphorical similes. Moreover, as we will see in examples (18) to (34) that follow, cases of disagreement were also very enriching to further understand the nature of linguistic metaphor in NNS, NS, and Expert argumentative writing.

In the following case, for example, 'government' was identified by two raters as a Vehicle term:

(18)   ... the *government* cannot run counter to public opinion... (NNS corpus)

Is 'government' a case of personification? Are we imputing human qualities to an entity that is not human? Or are we using one entity to refer to another that is related to it? Following Lakoff and Johnson (1980) the above example is not a personification metaphor but a metonymy. 'Government' is being used to refer to the actual people who are part of an institution. While metaphor is principally a way of conceiving one thing in terms of another, metonymy "allows us to use one entity to *stand for* another" (Lakoff and Johnson1980: 36). They argue that metonymic concepts, like metaphors, are systematic. Examples of disagreement taken from our dataset can illustrate the presence of the following metonymies:

INSTITUTION FOR PEOPLE RESPONSIBLE
(19)   Recently, the *Supreme Court and the United States Sentencing Commission* announced sensible changes

THE PLACE FOR THE INSTITUTION
(20)   The 50 *states* last year spent about $44 billion in tax dollars...
(21)   ... some *states* are learning...
(22)   ... *the country* may finally be waking up.

In his discussion on metaphor and metonymy, Steen (2007: 61) points out that, even if they both consist of "relations between conceptual or semantic structures ('mappings' in a general sense), the nature of the correspondences and the relation between the structures is fundamentally different". For metonymy, the conceptual structures and their relations exist in the contiguity or co-occurrence between them, while for metaphor, the conceptual structures and their relations are said to reside in the existence or creation of some form of similarity between the two domains or spaces. That is, metonymic relations take place at an intra-domain level whereas metaphoricity takes place at a cross-domain level.

Thus, metaphor and metonymy are two distinct constructions arising from two distinct cognitive operations (Warren 2003) and certain features may clearly distinguish cases of metonymy from cases of metaphor.[4] However, it has been argued that in corpus studies it is possible to find a "substantial overlapping between the categories of metonymy and metaphor" (Deignan 2005: 69). There might be many borderline cases that, depending on their use in context, may fall within a fuzzy point in a continuum from metonymy to metaphor.[5] As Deignan points out, metonymy and metaphor might be so closely intertwined that it is hard and even unnecessary to try to disentangle the two in any analysis.

In the present study, however, clear cases of metonymy in which intra-domain mappings based on relations of contiguity or co-occurrence were excluded. Thus, the

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4.   See Warren (2003: 116–118) for a detailed list of the most important differences between metaphor and metonymy.

5.   See Deignan (2005: 70) for an intertwined model of the cline from metonymy to metaphor.

aforementioned examples of disagreement (18–22) were not counted as instances of linguistic metaphor.

Cases of disagreement centred also on issues such as conventionalized senses of words such as delexicalized verbs and prepositions. Through the analysis of the data, it was possible to realize that determining metaphoricity might require going beyond the word level and even beyond the Topic-Vehicle contrast level. Especially in the cases of disagreement as regards verbs and prepositions, it was noticeable that the nearby uses of other words related to the Vehicle term were important to decide whether the instance was metaphorically used or not.

Verbs in English are extended metaphorically and non-metaphorically by being used with collocates beyond the most basic and typical, thus, the collocated noun, both in subject or object position, affects the meaning of the verb. Verdaguer-Clavera and Poch (2005), for example, studied the metaphoric mappings and the evolution of the verb 'ponder' whose basic meaning was of physical action and has been extended to mental activity by a process of metaphoric transfer and a shift of the semantic type of its collocates (going from concrete to abstract). Also, in her study of perception verbs such as 'see', 'hear', and 'smell', Ibarretxe-Antuñano (1999) argues for the metaphorically motivated extensions of meaning that occur in those verbs.

In order to decide on the metaphoricity of a verb, it was necessary to observe its collocates when establishing the contextual meanings as well as the contrast with the basic meaning and its primary collocates when applying the MIP procedure. This also applied for the most delexicalized verbs such as 'take', 'make', 'put', and 'get'. For each of these frequently used verbs, one basic, concrete, physically oriented meaning was selected from the Macmillan Dictionary and meanings that contextually invoked different conceptual domains and that contrasted with the basic meaning were counted as metaphorical. Uses of the verbs with abstract collocating nouns rather than concrete ones were also considered as metaphorical. The following examples from the NNS, NS, and Expert texts respectively, illustrate these points:

(23)   ... the government has begun to *take* the subject seriously.
(24)   ... comfortable living *supported* by burglary, mugging, dealing ...
(25)   ... drug treatment programs, *combined* in some cases with shorter sentences.

Prepositions were also identified as metaphorical by the raters and they account for most of the cases of disagreement. According to Lindstromberg (1998: 15), a preposition 'expresses a relationship between a *Subject* and a *Landmark*'. Subject and Landmark may each refer to a physical body, concrete object, or place, but when any of them refer to abstract notions or abstract concepts the preposition is being used metaphorically: 'He's *in* trouble'. Prepositions of path and place can be used with Landmarks of time. In such cases, the preposition is metaphorically used since time is an abstract notion: 'We plan to stay *from* May *to* October'.[6]

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6.   For a discussion on key abstract notions see Lindstromberg (1998: ch. 23).

Since Lindstromberg explains and exemplifies both the literal/prototypical and metaphorical/non-prototypical uses of each preposition, it was possible, first, to resolve all the cases of disagreement among raters as regards prepositions, and also to generate a contrastive list of metaphorical and basic meanings of prepositions that served as an instrument to strengthen the accuracy and consistency of identification. The following are examples of prepositions marked as metaphorically used in the dataset:

(26)   *In* conclusion, the crime does not pay. (NNS corpus)
(27)   The proof exists *on* any street in urban America. (NS corpus)
(28)   ... *up from* nearly $11 billion *in* 1987. (Expert corpus)

All of the above examples were counted as instances of linguistic metaphor. Similarly, Lindstromberg was followed, along with the *Macmillan Dictionary* in order to disambiguate unresolved cases related to phrasal and prepositional verbs. These were counted as metaphorical when any of their particles expressed an abstract conventional metaphor, and also when their meanings were idiomatic as opposed to literal. Examples of metaphorically used phrasal and prepositional verbs taken from the data are as follows:

(29)   ... the trial is only *based on* the testimonies ... (NNS corpus)
(30)   ... statistics, ... *point to* a terrible waste of money (Expert corpus)
(31)   ... a thug *bent on* destroying society (NS corpus)

To sum up, cases of disagreement were revealing of the importance of both distinguishing metaphor from cases of metonymy and observing the nearby use of other words related to the Vehicle term in order to decide whether the instance was metaphorically used or not, especially when it comes to (delexicalized) verbs, prepositions, and prepositional verbs.

Another important feature that emerged from the application of the combined procedure for metaphor identification in the corpora under investigation has to do with idioms. According to Knowles and Moon (2006: 19):

> Idioms are conventionalized phrases such as *spill the beans* or *jump the gun*, where the meaning of the whole phrase is different from the meaning which might be produced by interpreting the individual words in the phrase. These examples are metaphorical.

Several other authors have argued for the metaphoricity of idioms. In his discussion of different kinds of metaphor in language, Gibbs (1994, 1999) argues for the metaphorical roots of many idioms and suggests that they are indeed partly analysable and motivated by enduring conceptual metaphor. Within this same trend, Kövecses (2002: 201) points out the metaphoricity of idioms by stating that their meanings "arise from our more general knowledge of the world embodied in our conceptual system".

Researchers from the applied linguistic trend have also identified metaphorical idioms as "stretches of language that satisfy the necessary conditions for linguistic metaphor" (Cameron 1999: 131) and have suggested that idioms are linguistic manifestations

of metaphor that should be included in the analysis as metaphor (Steen 2002). In contrast, in her study of figurative colour word expressions in English and Italian, Philip (2003) treats metaphors and idioms as two separate categories of non-literal language.

Given that when applying the combined procedure for metaphor identification (MIV and the aforementioned steps of the MIP procedure) to the idiomatic expressions found in the corpora, the contextual meaning contrasted with the basic (literal) meaning (as Knowles and Moon state) and, considering the fact that several researchers have acknowledged the metaphorical roots of idioms, they were included in the analysis. Thus, the following idioms were counted as instances of linguistic metaphor:

(32)   *... an eye for an eye, and a tooth for a tooth.* (NNS corpus)
(33)   I was going to have to live the rest of my life *looking over my shoulder.* (NS corpus)
(34)   Worse still, they *tied the hands of judges.* (Expert corpus)

In short, going through a qualitative analysis of each instance was helpful to understand the complex nature of linguistic metaphor in the writing of NNS, NS, and expert argumentative texts. The data reveal that linguistic metaphor used in naturally-occurring contexts by ordinary people, three groups of writers in this case, can have fuzzy boundaries and that it can be highly conventionalized. These are issues that may make the identification and analysis of linguistic metaphor, in real contexts of use, a complex task.

3.2   Quantifying linguistic metaphors in student and expert writing

A total number of 3,220 metaphorically used words were identified in the whole dataset (consisting of 16,856 words). This gives a figure of 19.1% for the metaphorical density on the whole corpus. The distribution of metaphorically used words across the three sub-corpora indicates that the Expert corpus has the highest metaphorical density with 40.5% while the NS corpus accounts for 31.8%, which is closely followed by the NNS corpus with 27.7%.

As regards the frequencies and percentages of literal and metaphorical language in each one of the three sub-corpora, the results shown in Table 3 illustrate that 23.2% of the language used in the Expert corpus is metaphorical while 76.8% is literal.

Table 3. Metaphor density in the three corpora

	Literal		Metaphorical	
	Freq.	**%**	**Freq.**	**%**
NNS	4709	84.1	892	15.9
NS	4630	81.9	1027	18.1
Exp	4297	76.8	1301	23.2
Total	13636	80.9%	3220	19.1%

It is clear that the Expert writing makes more uses of metaphorical language than the student writing. In each corpus of student writing, the metaphorical language accounts for less than 20 per cent with 18.1% in the NS and 15.9% in the NNS.

Using WordSmith Tools 4.0, Type-Token ratios were also calculated with the purpose of finding out how likely the metaphorically used words were repeated or re-used in each one of the three sub-corpora. By dividing the number of a metaphor's type by that of its tokens, we get to the metaphoric type-token ratio – mTTR – (Koller 2006). Table 4 shows the mTTR results for each sub-corpus.

These results may indicate that the mTTR increases in reciprocal proportion to the number of types. The most re-used or repeated Vehicle term in the three corpora is the preposition *in* with a total of 238 occurrences. This is similar to Cameron (2003), who reported that, in her study of primary school classroom language data, out of the 711 instances of linguistic metaphor, *in* was the most frequent as it occurred 92 times.

Of the 3,220 metaphorically used words, the whole corpus contained a total of 2,477 instances of linguistic metaphor (i.e., stretches of metaphorical language that include both single word and phrase-level metaphors). As Table 5 shows, the instances of linguistic metaphor in each sub-corpus are distributed as follows:

The NNS corpus, with the lowest frequency, contains 686 instances of linguistic metaphor, accounting for 27.7% of the total. The NNS corpus differs from the NS corpus in 37 instances of linguistic metaphor since the NS corpus contains 723 accounting for the 29.2% of the total. Together the NNS and the NS corpora represent 56.9% of the total number of linguistic metaphors identified. In contrast, the Expert corpus, with the highest frequency, contains 1,068 metaphors that account for the 43.1% of the data under analysis. The Expert corpus has 382 and 345 more instances of linguistic metaphor than the NNS and the NS corpora respectively. These results illustrate the fact that the Expert corpus outweighs the number of linguistic metaphors used in the whole dataset employed for the development of this exploratory study.

Table 4. Metaphor type-token ratios

	mTokens	mTypes	mTTR
NNS	892	344	0.38
NS	1027	440	0.42
Experts	1301	621	0.47

Table 5. Distribution of linguistic metaphors

Instances of linguistic metaphor per corpus	Frequency	Percentage
NNS	686	27.7%
NS	723	29.2%
Expert	1068	43.1%
Total	2477	100.0%

3.3   The lexico-grammatical forms of linguistic metaphor

By breaking the quantitative evidence down into word classes, it is possible to explore whether student and expert argumentative writing might be based on a nominal, verbal, prepositional, or adjectival model as far as the linguistic form of metaphor concerns. Table 6 provides a summary of the frequencies and percentages that resulted from quantifying and classifying linguistic metaphors according to their lexico-grammatical form in the three sub-corpora.

The key findings from this classification and frequency counts suggest that, on the one hand, linguistic metaphors with verbs as Vehicle terms are the most common form in the three sub-corpora under investigation. These are followed by prepositions, both in each specific corpus and generally in the whole corpora. The NNS corpus shows a higher number of metaphorically used prepositions and it is closely followed by the Expert corpus.

On the other hand, metaphors with single nouns as Vehicle terms, which are often used to exemplify metaphor theory, rank third and account for less than 20% in the overall corpora (17.4%). The Expert corpus is the one that shows a higher level of single nouns when compared to the student corpora, and it is followed by the NNS corpus. However, it is the NS corpus that makes most use of Vehicle terms in the form of noun phrases.

As regards adjectives as Vehicle terms, while both student corpora show a similar pattern, the Expert corpus displays a much higher use. It can also be observed that the NS corpus uses a lot more phrasal verbs than the Expert and the NNS corpora. In terms of metaphorically used adverbs, the results suggest that the patterns of use are similar in the three sub-corpora and that these are the least frequent in the whole dataset.

Table 6. Lexico-grammatical forms of linguistic metaphor

Word class	NNS		NS		Exp		Whole	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
Noun	125	18.2	96	13.3	209	19.6	430	17.4
Noun phrase	25	3.6	45	6.2	35	3.3	105	4.2
Verb	205	29.9	218	30.2	303	28.4	726	29.3
Phrasal & prep. verb	27	3.9	69	9.5	60	5.6	156	6.3
Verb phrase	18	2.6	38	5.3	34	3.2	90	3.6
Adjective	64	9.3	66	9.1	130	12.2	260	10.5
Preposition	168	24.5	144	19.9	243	22.8	555	22.4
Prepositional phrase	43	6.3	29	4.0	24	2.2	96	3.9
Adverb	11	1.6	18	2.5	30	2.8	59	2.4
Total	686	100.0	723	100.0	1068	100.0	2,477	100.0

The large use of verbs and prepositions as linguistic metaphors is further highlighted when the results are presented in group forms (merging single and phrase-level categories according to the Vehicle terms they centred around). That is, prepositional metaphors, for instance, include single word prepositions and prepositional phrases. These results are given in Table 7 and illustrated in the accompanying Figure 1.

Possible explanations for verbs showing the highest frequencies of metaphorical realization might be related to several issues. First, verbs that refer to physical activity frequently metaphorically extend their meaning to refer to abstract or mental activity (e.g. 'ponder', Verdaguer-Clavera and Poch 2005). The same applies for perception verbs (e.g. 'see' or 'smell', Ibarretxe-Antuñano 1999). As Goatly (1997) argues, metaphorically used verbs evoke imagery when they refer to mental processes. That is, in our attempts to understand and express mental processes such as feelings, perceptions, and cognition, we often use verbs that describe material processes. Second, verbs may realize various personification metaphors when giving animate action to something that in principle is inanimate. Third, verbs may also realize reification metaphors when they have abstract collocates (e.g. '*hold* an image'). This is the case of delexicalized verbs as well; as they have evolved, they have developed several metaphorical extended meanings that differ from their basic meanings.

Table 7. Linguistic metaphors by word class of Vehicle terms

Word class	NNS		NS		Exp		Whole	
	Freq	%	Freq	%	Freq	%	Freq	%
Nominal metaphors	150	21.8	141	19.5	244	22.9	535	21.6
Verbal metaphors	250	36.4	325	45	397	37.2	972	39.2
Prep. metaphors	211	30.8	173	23.9	267	25	651	26.3
Adjective	64	9.3	66	9.1	130	12.2	260	10.5
Adverb	11	1.6	18	2.5	30	2.8	59	2.4
Total	686	100.0	723	100.0	1,068	100.0	2,477	100.0
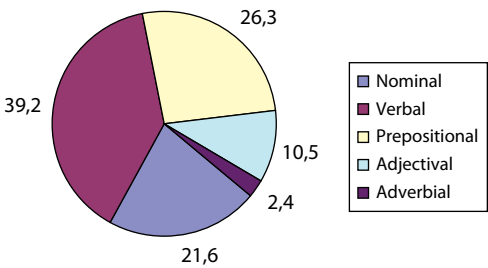
Figure 1. General distribution of lexico-grammatical forms in the whole corpus

The importance of verbal metaphors in our corpus resembles Koller's findings (2006), as she also found verbal metaphors to be more prominent in her business media data. However, these findings run counter to Cameron (2003) who found that metaphors with prepositions were the most common form of linguistic metaphor in her primary school classroom language data.

Yet, as Deignan (2005) argues, the importance of studying the lexico-grammatical patterns of linguistic metaphor in contextualized data remains since they are not predictable from any theoretical model. She has also suggested that analysing metaphors from naturally occurring data may reveal not otherwise noticed patterns of possible theoretical significance (Deignan 1999).

4.   Conclusions

One of the main objectives of this exploratory study was methodological. It was motivated by the well-known concern for reliable, systematic, and valid procedures for metaphor identification in contextualized data, which should provide a clear account of what is and is not considered metaphorical. When we embarked on the task of identifying all instances of linguistic metaphor through manual searching in the whole corpus, a number of problematic issues started to emerge and, gradually, it was realized that a combination of procedures was appropriate to provide systematic solutions to those *emergent problems*. Through this exploratory study, a methodology for metaphor identification that combines the MIV and the MIP procedures has been developed and piloted. Both the search through Vehicle terms and the inter-rater checks combined with the intuition-sharpening steps of the MIP procedure proved to be a reliable and systematic procedure for metaphor identification.

In response to the first research question, "To what extent are linguistic metaphors used by native and non-native students as compared with native expert writers?" results of the metaphor identification procedures applied to the whole corpus show that the Expert use of metaphorical language is higher than that of the students and it accounts for 40.5% of the total number of metaphorically used words in the three corpora. Similar distributional results were obtained when quantifying the instances of linguistic metaphor as stretches of language: The Expert corpus accounted for 43.1% while the student corpora accounted for less than 30% each. These results may indicate the fact that the Expert corpus outweighs the number of linguistic metaphors used in the whole dataset employed in this exploratory study.

As far as metaphorical densities are concerned, it was noticeable that the student corpora showed the lowest percentages: NNS metaphorical language, accounting for 15.9%, was closely followed by NS with 18.1%. In contrast, the results for the Expert corpus showed that 23.2% of the language is metaphorical while 76.8% is literal.

As regards the second research question, "What is the nature of linguistic metaphors in the three corpora under analysis and what are its lexico-grammatical

patterns?", the results suggest that linguistic metaphor in NNS, NS, and Expert argumentative writing is of a complex nature. First of all, strong linguistic metaphor is also conventionalized and might be characterized by the presence of abstract/concrete relations, personification, and comparisons that take the form of metaphorical similes. However, the qualitative analysis of the data revealed, on the one hand, that metaphor is not easily separated from other ways of using language figuratively or idiomatically, and, on the other, that it can have high degrees of conventionality that may prevent us from recognizing it as such.

In the first case, in this study it was important to distinguish between literal and figurative comparison, as well as between metonymy and metaphor. Thus, cases in which inter-domain mapping was not justifiable (as in literal simile and metonymy) were excluded. In contrast, idioms were included as instances of linguistic metaphor because of their acknowledged metaphorical roots and the contrast between their literal, basic meanings and their contextual meanings.

In the second case, highly conventionalized senses of words such as verbs, delexicalized verbs, and prepositions required a close observation of the nearby uses of other words related to the Vehicle term in order to decide whether the instance was metaphorically used or not. As Sinclair (2004: 25) has observed, "words enter into meaningful relations with other words around them" and this seemed to hold true for linguistic metaphor. The qualitative analysis carried out in this exploratory study suggests that the nature of linguistic metaphor in NNS, NS, and Expert argumentative writing is complex, it may display fuzzy boundaries that, in contextualized data, are sometimes difficult to disentangle with sharp precision. It thus may be described as *a multi-faceted phenomenon* in which the following features can be found:

– abstract/concrete relations (reification)
– inanimate/animate relations (personification)
– figurative comparisons (metaphorical simile)
– metaphorically extended meanings of verbs
– delexicalized verbs
– prepositions used with abstract Subjects and/or abstract Landmarks
– phrasal and prepositional verbs with idiomatic as opposed to literal meanings
– idioms (because of their metaphorical roots and non-literal meanings)

As a result of the analyses undertaken to describe the lexico-grammatical form of linguistic metaphor, it can be said that linguistic metaphors with verbs as Vehicle terms are the most common form in the three sub-corpora under investigation. In general, verbal metaphors accounted for 39.2% of the data. These are followed by prepositions, both in each specific corpus and generally in the whole corpora.

The fact that metaphors with single nouns as Vehicle terms ranked third and accounted for less than 20% in the overall corpora, may raise theoretical questions as they are often used to exemplify metaphor theory. As Deignan (2005) points out, the

differences in form are not fully explained by the relatively static view of mapping that is sometimes suggested in discussion of CMT.

The third research question that motivated this study was "What are the differences and similarities in the use of linguistic metaphor across the three corpora?" In terms of frequencies and densities, as previously discussed, the Expert corpus shows the highest use of metaphorical language. The NS corpus ranks second and it is closely followed by the NNS corpus. The fact that NS frequencies of linguistic metaphor are closer to the frequencies of NNS and not to the native expert writers may suggest that being a native speaker of the language is not the reason why writers may use more or less metaphorical language in argumentative writing. This is an interesting finding if we consider applications of findings such as these to EFL contexts and attempts to foster an appropriate use of metaphor among undergraduate students.

In terms of the nature and patterns of lexico-grammatical form of *linguistic metaphor*, results revealed that in the three sub-corpora most of the linguistic metaphors took the verbal form. Also, they are alike in the sense that prepositions ranked second and nouns ranked third in general terms. Metaphorically used adverbs showed the lowest frequencies in the three sub-corpora. Another similarity is that instances that fall under each one of the nine pre-defined categories for word class classification were found in the three sub-corpora. Differences, however, lie at the heart of distributional patterns. In the case of the NNS corpus, a higher frequency of prepositions and prepositional phrases was observed. The NS corpus stands out with the highest frequency and percentages of single word verbs, verb phrases, and phrasal verbs. It also shows a higher frequency of use in terms of noun phrases. As regards the Expert corpus, the frequencies and percentages in the use of single word nouns, adjectives, and adverbs are higher than those of the NNS and the NS corpora. These differences in the frequencies of use among the three groups of writers are interesting findings that may be useful in the EFL context if attempts are made to encourage students to use metaphorical language appropriately in their argumentative writing.

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Contexts of interpretation

Appreciation and interpretation of visual metaphors in advertising across three European countries

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The alternative typologies of visual metaphors proposed by Forceville (1996, 2005) and Phillips and McQuarrie (2004) show some striking similarities with regard to disposition of the visual elements, that is, the source and target domains. The first part of this chapter summarizes the results of two experiments that tested the validity of these classifications with Spanish, French, and Dutch participants and proposes an overall image of the appreciation of the three visual metaphor types. The second part focuses on the interpretations of the metaphors by the Spanish, French, and Dutch participants in the second experiment, to verify whether culture influences the interpretation of the common ground in visual metaphor. We detected subtle cultural differences in focus and interpretive diversity.

Keywords: advertisements, culture, Dutch, French, Spanish, types of visual metaphor

1. Introduction

Studies that adhere to the "copy theory of pictures" (see Scott 1994) claim that visual communication is the answer to global advertising. There is thus no need for translation, since the same message can be used everywhere to convey the same idea: a picture paints a thousand words. However, little is known about the cultural connotations that visual imagery evoke. Especially in the case of visual metaphor, it is very possible that some cultural groups process metaphors differently than others.

In this chapter, we investigate cultural differences between Spanish, French, and Dutch consumers with regard to the appreciation and interpretation of visual metaphors in advertising. Recently, two typologies of visual metaphors have been proposed by Forceville (1996, 2005) and Phillips and McQuarrie (2004), which show some striking similarities with regard to the disposition of the visual elements – that is, the source

and target domains. This chapter sums up the results of two experiments that tested the validity of these classifications with Spanish, French, and Dutch participants. It then focuses on the interpretations of the metaphors by the Spanish, French, and Dutch participants in the second experiment, in order to verify whether culture influences the interpretation of the common ground in visual metaphor.

2.   Visual metaphors

In his call for a rhetoric of the image, Barthes already stressed the fact that the readings of an image may vary across cultures (1964: 48). Albers-Miller and Gelb (1996) studied cultural appeals in advertisements from eleven countries. Their content analysis showed a clear culture-reflecting quality of advertising for at least ten hypothesized correlations between appeals in advertisements and the cultural values that were dominant in particular countries. They concluded that cross-cultural research is needed to investigate cultural differences in interpreting the same advertisement, and to investigate whether these differences relate to different effectiveness of the advertisement (1996: 69). Kövecses (2005) also questioned the universality of metaphors. He noted that the cultural context may override the universal mapping in metaphors. Spanish, French, and Dutch cultures differ with regard to the manner in which information is processed: Spanish and French cultures are known to be high context cultures, where communication relies on the specific situational context to be properly interpreted, whereas Dutch culture can be characterized as a low context culture, in that communication involves intensively elaborate expressions and requires clear, explicit verbal articulation (Hall and Hall 1990). Callow and Schiffman (2002) have shown that consumers from high-context communication systems are more apt than those from low-context communication systems to derive implicit meaning from visual images in print advertisements. Consequently, one might expect to come across similar differences in the preferences for visual metaphors. A culture that is more familiar with relying on the contextual implications and indirect signals in communication, like the French and Spanish, may be more open to and capable of interpreting metaphors than a culture that is more used to direct, straightforward communication.

Scott (1994) has shown convincingly that pictures, like language, can be used persuasively and hence must be processed cognitively rather than absorbed peripherally or automatically (see Scott and Vargas 2007). Pictures can be argumentative, and a pictorial argument can be laid out in recursive emblematic visual templates, not unlike the verbal figures of style. The disposition of the visual elements – in the case of metaphors, the source domain and the target domain – can be considered the "syntax" of the visual, and can be analysed in a way similar to verbal metaphor. Forceville (1996, 2005) has shown that the structure of visual metaphors has similar properties to that of verbal metaphors. A picture in which both the source and target domain are visually presented separately, where one element is juxtaposed to another, can be

considered the equivalent of a simile. Pictures where the target and source domain are combined into a single "gestalt" and the two elements are fused together can be considered visual metaphors ("hybrids" in the terminology of Forceville 2005). One would expect then that the way similes and metaphors differ in the verbal domain – with regard to processing and retention (Bowdle and Gentner 2005, Gentner and Wolff 1997, Gentner et al. 1987) – is similar to the way visual similes and metaphors are treated in the visual domain. It would imply that with very conventional visual metaphors, like the light bulb as a brilliant idea, viewers assess the categorical meaning of 'idea' first, as the most salient interpretation of a bulb, and the meaning of a source of light only after reinterpretation. Forceville isolates yet another structure type in visual metaphors: contextual metaphors. This type of metaphor occurs when there is only one term pictorially represented (either the target or the source) and the other term is visually absent and has to be inferred. The absent domain is evoked by the visual context. This kind of visual metaphor is also described by Groupe Mu (1992), who call this type of metaphor "in absentia disjunct" (see Van Mulken 2003, Maes and Schilperoord 2008). In all, Forceville identifies three different structures of visual metaphors: similes, hybrids, and contextual metaphors. This typology resembles, to a certain extent, the classification proposed by Phillips and McQuarrie (2004), who also identify three different types with regard to the visual structure of the figurative image. Although their taxonomy encompasses nine different metaphor types, the axis that describes the visual structure of these templates shows striking similarities with Forceville's proposal, in spite of a different terminology. On the structure axis that indicates visual complexity, Phillips and McQuarrie distinguish juxtapositions, fusions, and replacements, and the definitions of these three types of visual structure are – as can be inferred from the names – more or less similar to the ones suggested by Forceville (1996).

In our view, the enormous number of possible visualizations of metaphor – even when we only consider the syntax of the visual elements – can hardly be reduced to three. We do not think Forceville or Phillips and McQuarrie claimed that the number of possibilities is restricted to just three types; rather that the three patterns can be considered canonical to represent fundamental characteristics of the disposition of the visual elements that incorporate the target or the source of the metaphor. However, in our opinion, the structural pattern that visualizes the target with regard to the source should be considered a continuum with, at one end, the target and source as two distinctively different visual elements, and, at the other end, one element (either the source or the target), which has been completely absorbed by the other. The descriptions of contextual metaphor or replacement, both in Forceville (2005) and in Phillips and McQuarrie (2004) are not always able to establish clear distinctions between fusions and replacements or between hybrids and contextual metaphors. This again corroborates our stand that it is best to view the visual structure axis as a continuum rather than as a list of discrete categories. In our view, the most complex type of visual structure is the one where either the target or the source completely has been removed from the picture and has to be inferred from context, as is illustrated in the continuum in

Continuum of visual complexity

| Fructis anti-dandruff shampoo | Fructis anti-dandruff shampoo | Fructis anti-dandruff shampoo |

Figure 1. From left to right: simile (juxtaposition), hybrid metaphor (fusion), contextual metaphor (replacement). (We thank Peter Nusselder for allowing us to use his image manipulations)

Figure 1. The first picture on this continuum shows both the target (shampoo) and the source (vacuum cleaner) in juxtaposition (or simile). If we move to the right, we see a hybrid metaphor, where the shampoo has been fused with the vacuum cleaner. In the third picture, we see that the shampoo has disappeared and has been replaced by the vacuum cleaner; the metaphorical relation vacuum cleaner-shampoo can only be inferred from the advertising context (for instance, the slogan or the product brand).

Both Forceville's (1996) and Phillips and McQuarrie's (2004) typologies are inspired by Relevance Theory (Sperber and Wilson 1986), which claims that receivers will always assume that a message provides an optimal balance between cognitive effects and the effort required by the processing. Receivers are inclined to expend as little effort as possible in order to understand the message and at the same time they will try to gain as much effect as possible from the message by processing it. In other words, receivers expect that the more processing costs a message requires, the more effect they will gain. They are presumably willing to expend more cognitive effort, provided that they gain more effect, in the sense of more information, but also in the sense of more pleasure (see Tanaka 1992, Forceville 1996, 2005, Van Mulken, et al. 2005, and Van Mulken et al. 2010). Because contextual metaphors (or replacements) rely more heavily on the context (since an absent element has to be supplied by the consumer him/herself), more cognitive effort has to be expended than with the other two types of metaphor structure. The extra cognitive elaboration that they require will simply be rewarded with the extra relevance, i.e. extra cognitive effects in the form of humour or aesthetic pleasure. Provided that the effort invested is considered worthwhile, that is, provided that the message is understood, contextual metaphors will on average be better liked than hybrids or similes (see Tanaka 1992: 5).

3.   Research questions

Because more cognitive effort has to be expended, the amount of interpretive diversity that contextual metaphors evoke will be greater than with other types of metaphor. Contextual metaphors should therefore evoke more and more diverse interpretations than hybrids or similes. Similarly, hybrids should be richer in interpretations (i.e. evoke more diverse interpretations) than similes (see also Utsumi 2007). Our first research question is therefore: is there a correlation between the complexity of the visual structure and the amount of elaboration a metaphor evokes?

Since research in intercultural communication assumes that in everyday life the French and the Spanish are familiar with indirect and contextualized speech (Hall and Hall 1990, Callow and Schiffman 2002), we also hypothesize that French and Spanish participants have a higher appreciation of more complex metaphors than Dutch participants. In order to investigate this cultural factor, we examined how French, Dutch, and Spanish participants respond to the three types of visual metaphors. Our second research question is therefore: do participants with different cultural backgrounds differ with respect to appreciation and interpretation of visual metaphors? We will first deal with appreciation, and will focus on interpretive diversity in the second part of this study. Our analyses are based on two experiments that investigated the appreciation of the three metaphor types, and on a content analysis of the qualitative data gathered in the second experiment.

4.   Appreciation

4.1   Experiment 1

In our first experiment we tested the structure axis of the Phillips and McQuarrie (2004) typology. We verified whether the most complex metaphorical structure – replacement, comparable to contextual metaphor in the Forceville typology – was liked best in comparison to fusion (cf. hybrid) and juxtaposition (cf. simile). 202 participants from the Netherlands, 83 from France, and 89 from Spain took part in an on-line experiment. All participants in the three countries viewed exactly the same 24 advertisements – six juxtapositions, six fusions, six replacements, and six advertisements that contained no metaphor and served as a base line. Within each category the same product types were represented: cars, food and drinks, and care products. Copy was removed from the original, authentic advertisements, and the brand name was mentioned above each advertisement.

A questionnaire was developed to measure respondents' appreciation of the advertisements. Two bilingual colleagues specializing in cross-cultural research checked and approved the translation of the Dutch questionnaire into French and Spanish. Apart from appreciation, experienced complexity and comprehension were also investigated

(Le Pair and Van Mulken 2008). Appreciation was operationalized as follows: participants were invited to evaluate each advertisement in terms of being "well-chosen", "appealing", and of evoking a "positive judgement", on a 7-point Likert scale. After having verified that Mauchly's test indicated that the assumption of sphericity had been met, we used repeated measures analyses of variance, t-tests and univariate analyses.

The results showed that appreciation varied according to the type of metaphor that was present in the advertisements. "No metaphor" was appreciated least by our respondents (M = 3.52, SD = 0.96) and "fusion" was appreciated most (M = 4.55, SD = 0.92). Juxtaposition and replacement were less appreciated than fusion but better than "no metaphor" (M = 4.23, SD = 0.89 and M = 4.19, SD = 0.94 respectively). Juxtaposition did not differ significantly from replacement.

We found an interaction effect for Nationality and Type of metaphor (F (6,738) = 6.51, p < .001, Wilks' Lambda = .90, η2 = .05). This interaction effect was caused by differences in appreciation between the three nationalities of the four categories of advertisements. T-tests showed that the most substantial differences occurred at the level of No Metaphor, and that only the differences at this level were responsible for the interaction effect: when this category was excluded, the interaction effect disappeared. In other words, the different appreciation of the three types of metaphor followed the same pattern in the three countries.

What remained was a strong main effect of Type of metaphor (F (3,369) = 116.09, p < .001, Wilks' Lambda = .51, η2 = .49). Pairwise comparisons of mean appreciation of the different types of metaphor per nationality showed that the respondents from all three countries appreciated advertisements with visual metaphors more than advertisements without visual metaphors. The findings also show that the respondents from the three countries, contrary to what was predicted by the Phillips and McQuarrie (2004) framework, appreciated replacement (contextual metaphors) significantly less than fusion (hybrid metaphors). The other main effect that we found was of Nationality on appreciation of the three types of metaphors. T-tests showed that the Spanish respondents appreciated juxtaposition and fusion metaphors more than the French respondents, while the Dutch respondents appreciated all three visual metaphors less than both the French and the Spanish respondents.

4.2   Experiment 2

In order to test the Forceville typology, we carried out the second experiment. For this experiment we selected authentic advertisements with metaphors that could indisputably be considered to represent this typology. We decided to keep product category as a constant, and restricted to metaphors in automobile advertisements exclusively.

In our second experiment, in order to try to stabilize the effect of product involvement (Rossiter et al. 1991), we chose to examine only automobile advertisements – a typical high involvement product. Care was taken that in the metaphorical stimuli the comparison pertained to the entire car, and not just to an aspect of the car or to

characteristics of the user. Again, all copy was removed from the original advertisement, and the brand name was mentioned above each advertisement. Each type of metaphor was represented in five automobile advertisements, and five advertisements were used to represent a category with no metaphor.

Again, a questionnaire was developed to measure respondents' appreciation of the advertisements. 68 respondents from France and 69 from Spain took part in the online experiment. Of the 185 respondents from the Netherlands that completed the questionnaire, 75 were arbitrarily selected in order to keep the populations of the participants comparable. All participants in the three countries viewed exactly the same automobile advertisements that were divided into four groups: those that did not contain a metaphor, those that contained a simile, those with a hybrid metaphor, and those with a contextual metaphor. Appreciation was operationalized with the help of three semantic differentials: "original" versus "banal", "boring" versus "novel", and "predictable" versus "authentic" (internal consistency was always superior to .7). Two bilingual colleagues specializing in cross-cultural research checked and approved the translation of the Dutch questionnaire into French and Spanish. The data were analysed using analyses for repeated measures, t-tests, and univariate analyses.

We found a small interaction effect for nationality and type of metaphor (F (6,408) = 4.6, p < .001, Wilks' Lambda = .88, $\eta2$ = .06). This interaction effect was caused by differences in appreciation between the three nationalities of the four categories of advertisements. The French participants disliked "no metaphor" significantly more than the Spanish (but not than the Dutch) participants, and they also preferred hybrid metaphors significantly more than both the Dutch and the Spaniards. We can interpret the interaction effect as follows: with regard to hybrid metaphors, the French were more pronounced in their appreciation, whereas with regard to contextual metaphors, the Spanish were (relatively) more pronounced in their dislike.

Again, there was a strong main effect of type of metaphor (F (3,204) = 553.25, p < .001, $\eta2$ = .89). Pairwise comparisons (LSD) in the participant analysis showed that the different types of metaphor all differed significantly from each other: "no metaphor" was least appreciated (M = 1.88, SD = 0.77), followed by contextual metaphors (M = 4.55, SD = 0.95), closely followed by similes (M = 4.75, SD = 0.96), while hybrid metaphors were appreciated most (M = 5.21, SD = 0.91).

Since both typologies share a common basis in the distinction of the three metaphor types, and since the outcomes of our appreciation studies present a similar pattern, we decided to collapse the two databases, and to compute the appreciation results for both our experiments. This implies that we can now generalize over stimuli: for each metaphor type we have 11 instantiations (5 from experiment 1 and 6 from experiment 2). Table 1 shows the results of this combination of data, and Figure 2 illustrates our findings. We used Forceville's terminology to characterize the types of metaphor.

Table 1. Mean evaluations and standard deviations on appreciation as a function of type of metaphor and nationality

| | Appreciation[a] | | | | | | | |
| | Total ($n = 535$) | | Dutch ($n = 276$) | | French ($n = 126$) | | Spanish ($n = 130$) | |
	M	SD	M	SD	M	SD	M	SD
No Metaphor	2.85[a]	1.14	3.06[a]	1.08	2.35[a]	1.08	2.87[a]	1.18
Simile	4.38[b]	0.93	4.18[b]	0.87	4.59[b]	0.90	4.61[b]	1.00
Hybrid M.	4.78[c]	0.96	4.57[c]	0.90	5.01[c]	0.99	4.98[c]	0.95
Contextual M.	4.31[b]	0.95	4.17[b]	0.90	4.51[b]	0.93	4.40[b]	1.02

[a] 1 = very negative appreciation, 7 = very positive appreciation

Note: A difference in superscript indicates that the difference is significant in subject analysis.
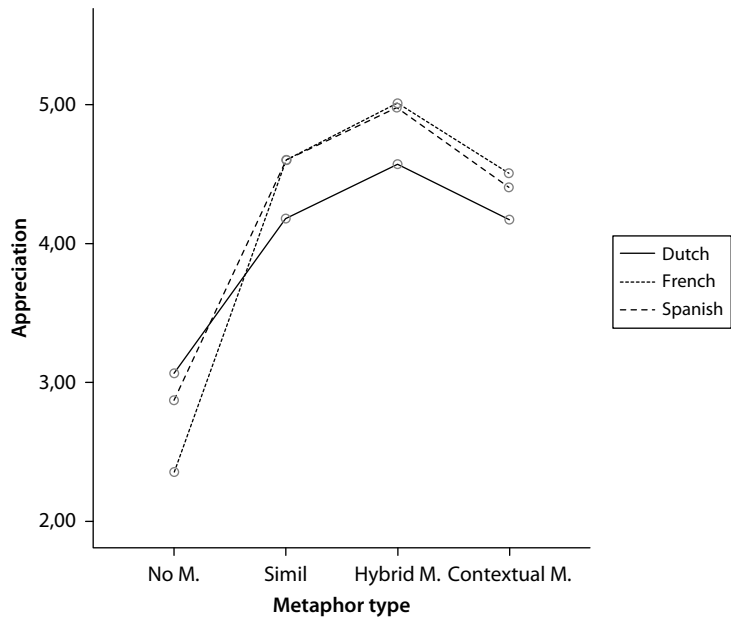
Figure 2. Mean appreciation (1 = very high appreciation, 7 = very low appreciation) * nationality, as a function of metaphor type

Again, we found a small interaction effect of nationality and metaphor type (F (6,1054) = 9.96, p < .001, Wilks' Lambda = .90, η2 = .05) and a strong main effect of metaphor type (F (3,527) = 286.67, p < .001, Wilks' Lambda = .38, η2 = .62). If we remove "no metaphor" from the dataset and focus on the three metaphor types only, the interaction effect disappears. T-tests revealed significant differences between the cultures: the

French and Spanish participants show a general higher preference for all types of metaphor compared to the Dutch participants.

Summarizing the results of Studies 1 and 2, we see that the results of the two experiments that tested competitive typologies of metaphor structure show a similar pattern: it is always the medium complex metaphor type, hybrid or fusion, that is liked best. We conclude that the use of relatively complex visual metaphors is appreciated to a certain extent: if cognitive elaboration requires too much effort (such as in contextual metaphors or replacements), appreciation decreases. Complexity, within limits, is pleasurably arousing, and will also be related to greater advertisement liking. However, too much complexity reduces comprehension of the advertisement, and therefore the outcome of advertisement liking associated with more complex visual figures is likely to be subject to moderating factors.

It appears that in both our experiments, the Spanish, French, and Dutch respondents did not differ with regard to the effect of metaphor type, but the Spanish and the French participants appreciated all three metaphor types significantly more than the Dutch. This is in line with the observations of Hall and Hall (1990), Callow and Schiffman (2002), and De Mooij (2004). It might be the case that for the Dutch consumers, being members of a low context culture, the lack of explicit information causes more difficulties in processing the (lack of) information when interpreting a complex visual message. Spanish and French consumers might be more used to processing implicit complex messages.

5.   Interpretive diversity

Interpretive diversity can be defined as the range of different interpretations a metaphor evokes. For instance, the comparison of the shampoo and the vacuum cleaner, such as the one used in Figure 1, invites the interpreter to map notions like "cleanliness", "ease", "every day job", and "swiftness" to the shampoo (and s/he might also try to map notions like "soft smell", "good for hair", and "liquid" onto the vacuum cleaner). Although these common grounds are linked together, and can be seen as a network of associations that all contribute to the richness of the metaphor, they can also be identified as different aspects of the comparison. In this section, we will look at the quantity and variety of common grounds mentioned by the different groups of participants. Further, we will zoom in on some of the networks of common grounds, in order to pinpoint cultural differences in interpretive diversity.

In the second experiment, the one that tested the Forceville typology, the questionnaire contained the question: "When you first saw the advertisement, did you see a comparison?" If participants answered "yes" to this question, the screen prompted an open question that started with the words: "In this advertisement, the car is compared to ...".

As expected, most participants did not see a comparison in the advertisements that, indeed, did not contain a metaphor. Table 2 shows in percentages the proportion of participants that did see a comparison and verbalized it in the open question. We also see that, *grosso modo*, our participants recognized more often a metaphor in hybrids than in the two other types of metaphor. The Dutch and French participants show a similar pattern; the Spanish, in contrast, seem to make no difference between the three metaphor types. Whereas the Dutch and French seem to find it easier to recognize a metaphor in hybrids than in similes and contextual metaphors, the Spaniards make no difference between the three types of metaphor with regard to the recognition. This difference is however not significant ($p > .05$).

Table 2. Percentages of participants that recognized a comparison in the advertisement (% indicates that the respondents answered to the open question)

		Nationality		
		Dutch	**French**	**Spanish**
Metaphor type	No Metaphor	6	5	6
	Simile	49	42	47
	Hybrid	67	56	49
	Contextual	44	38	40
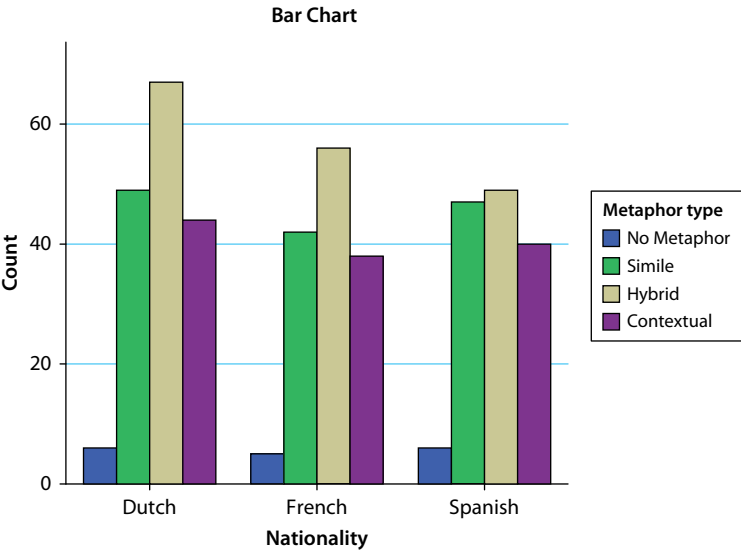
Figure 3. Recognition of the metaphor per nationality

In order to compare the number of different interpretations, two judges scored the individual answers to the open question. This permitted us to analyse the references to the common ground of the metaphors with regard to interpretive diversity. All verbalizations were analysed and qualified with regard to the common ground in the comparison. For instance, in a hybrid metaphor where a car has been fused with a shoe, 13 French participants answered: "*une chaussure*". They chose to mention only the source of the comparison, and this is of course due to the leading format of the open question. However, a large number of participants provided longer responses. Another French participant answered: "*Une belle paire de chaussures confortables*", which permitted us to score "beauty" and "comfort" as two different bases for comparison. In fact, most participants opted for longer answers. Often, a respondent evoked more than one common ground, as in the example of this French participant.

In order to quantify interpretive diversity, we scored each answer with a reference to a common ground by labelling it with the noun that best covered the given qualification. This allowed us to verify whether the three countries differed in interpretive diversity. Interpretive diversity is a rather complex concept. Utsumi (2008) argues that if a metaphor allows for more diverse interpretations, it should be processed more easily. The problem is, however, that it is difficult to define what exactly qualifies as a "different" interpretation. For instance, in the case of the contextual metaphor of a car that is replaced by a star fighter, some French respondents noted "*la vitesse de l'avion*" whereas others wrote "*rapidité*", and some Spanish respondents mentioned "*velocidad*" while others said "*rapidez*". Since "*vitesse*" and "*rapidité*" are quasi-synonyms in French (and so are the Spanish equivalents), these two answers have been scored as one and the same interpretation: "speed". However, one of the French respondents had written "*la vitesse du son*", referring to a specific quality of fighter jets, and apparently he or she thought that it is the speed of sound that should be mapped to the car. Such a modification of the qualifier 'speed' has been coded as a different interpretation, namely "speed of sound". Table 3 and Figure 4 show the totals of all different interpretations per group of respondents and per metaphor type.

Table 3. Total number of different references to common ground per type of metaphor and nationality

		Nationality			Total
		Dutch	French	Spanish	
Type of Metaphor	Simile	52	62	61	175
	Hybrid	89	86	42	217
	Contextual metaphor	66	65	67	198
Total		207	213	170	590
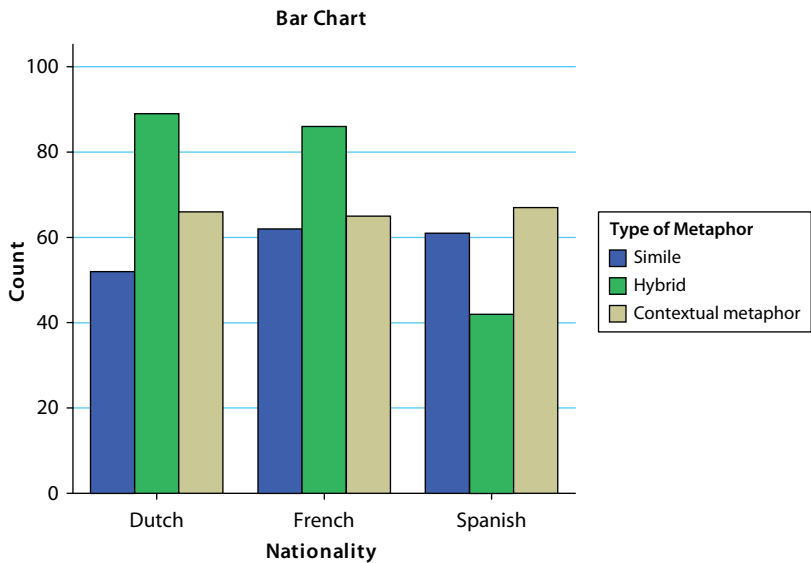
Figure 4. Total number of different references to common ground per type of metaphor and nationality

We see then that contextual metaphors did not evoke more different common grounds than the other two types of metaphor. Although this type of metaphor relies most heavily on context, and thereby presupposes more cognitive elaboration, and therefore may evoke more diverse interpretations, this is not the case if we generalize over all our stimuli with contextual metaphor. However, the advertisement that elicited the largest quantity of different common grounds contained a contextual metaphor. The advertisement that compared the car to a puma (a contextual metaphor, Figure 5A) scored across the three nationalities far more diverse interpretations (on average 19 different common grounds) than other metaphors. On average, a metaphor scored 12.5 different common grounds. The advertisement that compared the car to a tug (a simile) scored the least number of common grounds (on average 4.66 common grounds per nationality).

We see that the Spanish participants differed significantly from the Dutch and the French. They verbalized significantly less different bases of comparison, compared with the Dutch and French (χ^2 (4) = 15.83, p = .003). Whereas the Dutch and French participant groups both mentioned more different common grounds in the case of fusions, the Spaniards mentioned less. It may seem then that our Spanish participants found, in general, less common ground in the case of comparisons to cars. Of course, it is quite possible that the choice of the source domain makes the cultural difference: cultures and subcultures may differ in what source domains are used to characterize single target domains, such as beer, financial services, shampoos, or computers (see Kövecses 2005, Forceville 2000, Trim, this volume). If this is true, then it is also
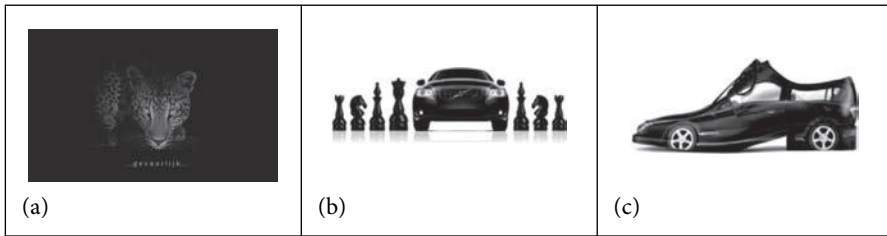
Figure 5. Contextual metaphor (A), Simile (B), and Hybrid (C)

conceivable that source domains differ in the type of associations they evoke. As we have seen above, the different associations that metaphors evoke and that serve as bases for common grounds, are generally linked together, and can be represented in a network. For instance, one of our stimuli compared the car to the king in a chess set (Figure 5).

When interpreting this metaphor, Dutch participants referred mainly to common grounds such as 'importance' (*belangrijkste van het spel*), 'competition' (*competitief*), 'strategy' (*strategie*), 'intelligence' (*intelligentie*), 'power' (*macht*, *de heerser*), and 'cleverness' (*slim*, *slimheid*), qualifiers that could be grouped into one hierarchical node of common grounds "POWER PLAY". The French respondents also acknowledged this POWER PLAY feature of the chess play, by mentioning 'importance' (*importance*), 'intelligence' (*intelligence*), 'dominance' (*maîtrise*), 'power' (*pouvoir*, *puissance*, *plus fort que les autres pièces*), 'performance' (*prestance*), and 'strategy' (*stratégie*), but they also added 'luxury' (*luxe*), 'class' (*classe*), 'grace' (*grâce*), 'grandeur' (*grandeur*), 'prestige' (*prestige*), 'royalty' (*royauté*), and 'supremacy' (*suprématie*), thereby accentuating a different hierarchical node of common grounds, MAJESTY. Apparently, the French common associations with chess give rise to a broader, and perhaps a richer field. The Spanish respondents also referred to the "POWER PLAY" characteristics of the king of chess ('power', 'the best', 'superior'), but like the French, and unlike the Dutch, we recognized in the Spanish reactions several common grounds that are closely linked to MAJESTY, expressed in verbalizations like 'grandeur' (*grandeza*), 'elegance' (*elegancia*), 'distinction' (*distinción*), and 'majesty' (*majestuosidad*).

Something similar happened in the case of the advertisement where the car is compared to a shoe (Figure 5). The French participants find 18 different common grounds that shoes share with cars, whereas the Dutch mention no less than 26 common grounds, and the Spaniards only seven. The common grounds can be grouped into three hierarchical network nodes: UTILITY, CLASS, and COMFORT. It appears that all three nationalities mention common grounds that can be grouped into one of these three hierarchical network nodes, but the French are more specific in their qualifiers than the Spaniards, whereas the Dutch are even more specific than the French. Table 4 shows the various common grounds with shoes. For the Dutch participants, the shoe metaphor is a more diverse and richer comparison than for the French, who, in turn, view this metaphor as more diverse and richer than the Spaniards.

Table 4. Networks of common grounds, grouped per hierarchical node, for CAR = SHOE*

Hierarchical nodes of common grounds	Class	Comfort	Utility
	Allure F	Compact F	Business F N S
	Chic F N	Comfort F N S	Go ahead F N S
	Class F N	Convenience N	Commodity N S
	Beauty F N	Form F N	Usability N S
	Elegance F N S	Protection F	
	Dressed F	Quality F N S	
	Luxurious F N S	Confection N	
	Perfection F	Expensiveness N	
	Distinguished N	High Power N	
	Exclusivity N	*Souplesse*/Flexibility N S	
	Classic N	Sportivity N S	
	Modern N	Power N	
		Adaptable S	
		Velocity S	

* 'F' stands for mentioned by the French-speaking participants, 'N' stands for the Dutch-speaking participants and 'S' stands for the Spanish-speaking participants.

We see then that cultures can differ not only in the type of common ground networks that metaphors evoke, but also in the degree of detail with which a hierarchical node of common grounds is filled in.

6. Conclusion and discussion

With respect to our first research question, whether there is a correlation between the complexity of the metaphor and interpretive diversity, we conclude that the most complex type of metaphor (contextual metaphors) does not evoke more diverse interpretations than hybrids, a less complex metaphor. In contrast, it appears that there is a correlation between appreciation and interpretive diversity. We found that the best-liked metaphor type also evokes the highest interpretive diversity. Apparently, if a reader sees a metaphor s/he likes, s/he is also inclined to elaborate more upon the target and source of this metaphor.

With regard to the role of culture, our hypothesis that Dutch respondents would show less liking of metaphors than French or Spanish participants is confirmed. Indeed, the Dutch groups liked all three types of metaphor less than the French and Spaniards. This might be attributed to the fact that the French and Spanish cultures are known for their high contextualization. They may be more familiar with the use of

indirect, figurative speech than Dutch respondents, and therefore express a higher appreciation.

We also hypothesized that the Dutch would show a preference for less complex, elaboration demanding metaphors, such as similes. This hypothesis has to be refuted. Although Dutch culture is a low context culture, where communication usually relies less on context than in other cultures, this does not automatically mean that the Dutch respondents dislike figurative speech, such as metaphors, in persuasive communication. The preference pattern for all our three nationality groups was similar: they all liked hybrid metaphors, or fusions, best. This is the type of visual metaphor that combines the target and the source domain in one single "gestalt", into a new, unconventional entity, which invites readers to elaborate on the common ground that unites the target and the source. This type of visual metaphor is preferred to the theoretically more complex contextual metaphors or replacements. It is also preferred to the less complex simile or juxtaposition. Apparently, on the continuum of visual structure of the pictorial elements – a dimension that can be considered to make part of visual syntax – consumers, whether Spaniards, French, or Dutch, prefer a type of metaphor that facilitates processing by suggesting that two elements have been physically fused together in one pictorial element, but in such a way that both the original components are still identifiable. Overall, the preferences for the different types of metaphors show a similar pattern regardless of culture.

In our experiments, we used in all 44 authentic advertisements, from which advertisement copy had been removed. Of these advertisements, 36 contained metaphors that could be classified as typical of a metaphor category established by either Forceville (1996, 2005) or Phillips and McQuarrie (2004). Since both frameworks show similarities with regard to the distinction of metaphor structure types, we collapsed our data files, and in this new data file, each metaphor type was represented by 11 instantiations. Although the general preference for hybrids is quite salient, further research into the effect of visual metaphor structure can be improved by creating metaphors that compare the same targets to the same sources for each metaphor type (such as illustrated in Figure 1). We propose, in future research, to keep things as equal as possible, and to investigate the effects of similes, hybrids, and contextual metaphors by making sure that the execution of the structure of the metaphor varies, but that the target and source are alike across all metaphor types. In order to give interpretive diversity the largest chance to occur, pretests should be executed in all participating countries, in order to investigate what possible mappings participants make with ordinary products.

In this study, we have used both a quantitative and qualitative method to investigate interpretive diversity. In future research, data collection could be improved by using thinking-aloud methods or protocols, which might give more insights into the different mappings participants make when processing visual metaphors.

It is often thought that a picture can paint a thousand words. In the discussion on globalization in the field of communication, and certainly in the field of advertising, De Mooij (2004) stresses that it is of the utmost importance to localize campaigns, and

adapt them to the value systems that are typical of a certain culture. In this contribution, we have shown that the use of visual figurative communication in advertising, especially metaphors, is highly appreciated by Spanish, French, and Dutch respondents. We have also seen that the choice of the complexity of the visual structure is not hindered by cultural biases: both high context and low context cultures show the same pattern of preferences. We have also seen that, with regard to interpretive diversity, cultures – although relatively similar – tend to diverge. The same metaphor evokes slightly different networks of associations in each culture. Cultures differ in the richness that certain individual metaphors evoke.

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English native speakers' interpretations of culture-bound Japanese figurative expressions*

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Every language has its unique figurative expressions. This chapter focuses on culture-bound Japanese figurative expressions, how these were interpreted by speakers of English, and the strategies that were used in their interpretations. The Japanese expressions used in the investigation were translated literally into English (called here 'raw' translations). Among the test items, there were included figurative expressions displaying highly culture-bound elements, which made these expressions problematic for non-native speakers of Japanese. The participants in this study used a variety of strategies when interpreting them: for example, resorting to the knowledge of their mother tongue, utilizing schematic knowledge, and/or logical thinking. However, these cognitive processes may have ambivalent effects, especially on the interpretations of highly culture-bound figurative expressions in a foreign language.

Keywords: culture-bound expressions, first language, interpretation strategies, logical thinking, raw translations

1. Introduction

Understanding culture means understanding and appreciating the cultural differences that are expressed in language. One of the areas where "the multiple hidden dimensions of unconscious culture" (Hall 1976: 2) may be detected is in figurative language use,

because metaphors are often closely connected with the culture of their speakers. The growing interest in the relationship between metaphor and culture (e.g. Kövecses 2005) has highlighted the fact that the figurative expressions conventionally used by speakers of one language to express their understanding of situations or events may be very similar to those used by other language-speaking communities or quite different from them (Deignan et al. 1997). For example, in Japanese, a complicated problem-solving process (such as solving a difficult criminal case) is expressed figuratively as something that cannot be solved with 'a piece of rope'. That is, the problem may be hard to solve, but not impossible with the appropriate 'pieces of rope', a metaphor that would be unfamiliar to a native-speaker of English (ENS) from experience with his/her first language. In other cases, a figurative expression may be virtually identical in the two languages (for example, to 'be soft in the head') but mean something quite different in each. In Japanese, this expression has positive connotations, because it attributes a person with 'flexible thinking', unlike a similar expression in English that refers to a person's stupidity. In contrast, other figurative expressions that are used by Japanese speakers, such as 'she *set out on a journey to* her husband', may be more transparent, because speakers of English also express their understanding of life and death in terms of journeys (Gibbs 1994, Lakoff and Johnson 1980, 1999, Lakoff and Turner 1989).

The consequences of cross-linguistic and cross-cultural variation in metaphor use for learners of English as a second or foreign language (ESL/EFL) have received a growing amount of attention (e.g. Azuma 2005, Boers 2000, Boers and Demecheleer 2001, Charteris-Black 2002, Johansson Falck, this volume, and Littlemore and Low 2006). However, less attention has been paid to the challenges posed to learners of other foreign languages (but see Golden this volume). My focus in this study is on the way that speakers of English interpret culture-bound figurative expressions in Japanese when these are presented as 'raw' translations. Earlier research into the metaphorical competence of Japanese EFL students (Azuma 2005) showed that these learners' comprehension and use of figurative/metaphorical expressions in English were affected by their vocabulary level in English and by knowledge generated from their mother tongue (L1). These results led to the present study investigating the positive and/or negative effects of L1 knowledge on the interpretation of figurative expressions that overtly or covertly inherit and conceive traits that originate in another culture. It further aims to explore the influence of non-linguistic background knowledge in the interpretation of familiar and unfamiliar figurative expressions by looking at the way speakers of the same language from different parts of the English-speaking world interpreted conventional figurative expressions used in Japanese when these were translated literally into English.

2.   Conventional metaphors in Japanese and the feasibility of their 'raw' translation

In bilingual dictionaries, conventional metaphors and figurative expressions are usually found translated loosely (either by a literal paraphrase or by an equivalent figurative

expression in English) so that their sense will be clear; however, in such loose translations the delicate nuances of the original expressions disappear. The original expressions have linguistically and culturally unique characteristics that can only be preserved by literal or 'raw' translations. For example, when a newspaper reporter comments that 'the Prime Minister made *iridescent* remarks on the matter' (*Shusho wa sonomondai nituite **tamamushiiro** no hatsugen o shita*), the metaphorically used word could be translated by a more common expression, such as 'multi-layered', but this would imply the loss of the original nuance. Iridescence is caused by multiple reflections from inner multi-layers. ENSs may have their image of the spectrum of colours implied by 'iridescent' as seen on the wings of a jewel beetle (a slightly different insect), while native speakers of Japanese (JNS), who know the colour originated in an insect (chrysochroa, *tamamushi*), can easily imagine what the colours represent. Furthermore, the wings of the colours of chrysochroa were used to decorate precious vessels in Japan in the Nara period. Nowadays the word is used metaphorically to refer to how politicians talk, and how their means of expression conveniently camouflage their real meaning. However, whether such raw translations would be feasible, in the sense that they could be understood by non-native speakers (NNSs) of a language when consulting a bilingual dictionary, is not clear.

Various options are available to the maker of a bilingual dictionary when translating figurative languages uses. A figurative expressions such as *hyotan kara koma* may be translated into English by a literal formulation of the idea ('an unexpected surprise'), by a figurative expression that means something similar (such as 'out of the blue'), or by a raw translation that renders the original wording: 'a horse out of a bottle gourd'. A raw translation such as this preserves the original nuances of the Japanese expression; however, if metaphors such as these are read in raw translation, their understanding depends on an appropriate interpretation. That is, they cannot be taken literally nor interpreted in ways that rely completely on knowledge of the L1, although on occasion this may be helpful. For example, appropriate understanding of the Japanese *ashi o hipparu* ('to pull someone's leg(s)') would require blocking the sense of the similar expression of 'to tease or play a joke on someone' in English, in order to arrive at its meaning for Japanese speakers: 'an obstruction'. In contrast, knowledge of metaphorical language use in the L1 would probably facilitate understanding of the raw translation of *mi o musubu* as 'to bear fruit', because the expressions have identical figurative meanings in the two languages.

In order to decide whether the raw translation of Japanese figurative expressions as described here would be an appropriate way of translating them in bilingual dictionaries, it would first be necessary to ascertain how such raw translations are interpreted by non-native speakers of Japanese. It would also be necessary to confirm or refute the hypothesis that the raw translation of certain types of figurative expressions might be more difficult to interpret than others when presented as stand-alone items or in the context of a short sentence (as they would be in a bilingual dictionary). In turn, findings on how native speakers of English interpret culture-bound figurative

expressions from another language may contribute to furthering our knowledge about the strategies foreign language learners bring to bear when they interpret a range of figurative expressions in the target language, and how successful their interpretations are. It is expected, for the benefit of an EFL situation, that the results from English native speakers' interpretations of culture-bound Japanese figurative expressions would act as counter measurements to the Japanese native speakers' (JNSs) interpretations of the same expressions; therefore, they may contribute to the teaching of figurative expressions in an FL situation. The research reported in this chapter aims to shed some light on these issues.

3. The study

The research reported here is part of a larger study funded by JSPS in 2006–2007[1] that comprised a Metaphor Cognition Test consisting of 40 items and involved native speakers of Japanese (JNS) and native speakers of English (ENS). The research questions that motivate the part of the study reported in this chapter are:

RQ 1: What phenomena did English native speakers (ENSs) show in their interpretations of culture-bound 'raw' Japanese figurative expressions (i.e. the expressions literally translated from the original Japanese into English)? Were there any interpretative differences among ENSs from different parts of the English-speaking world?

RQ 2: What strategies did these ENSs use in their interpretations and what were the causes and effects?

3.1 Methodology

A test was designed to collect quantitative data (see Appendix C for the actual test). The target test items comprised a total of the following 20 figurative expressions: (1) *Time is money*, (2) to *bear fruit*, (3) We're *at the crossroads*, (4) *a bolt from the blue*, (5) to *slip through one's fingers*, (6) *a body blow*, (7) to *come to a head*, (8) to *pull someone's leg(s),* (9) Tim must be *soft in the head* to do such a thing, (10) At the age of 96, she *set out on a journey* to her husband, (11) *I cannot sleep with my feet turning toward him*, (12) Prime Minister made *iridescent* remarks on the matter, (13) You and I *are united with a red thread*, (14) *a frog in the well*, (15) to *cast a shrimp to catch a bream*, (16) *a horse out of a bottle gourd*, (17) to *wet eyebrows with saliva*, (18) He is *a weak worm*, (19) *a cry of a crane*, and (20) *a carp on the cutting board.*

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1. This particular study is derived from part of the author's overall study, "Benefits and risks of the effects of mother tongue knowledge on understanding figurative expressions", funded by JSPS Grant-in-Aid for Scientific Research in 2006–2007.

Participants in the study were asked to write figurative meanings of the test items provided, but were not told specifically which of these were translations of Japanese expressions. The aims of the test were described on the cover page of the Metaphor Cognition Test in the following way: 'This questionnaire (Metaphor Cognition Test) aims to investigate how we understand (or interpret) figurative expressions (including the translations from Japanese)'. The 20 figurative expressions served as a measurement instrument. They consisted of the items in which either concepts or wordings were shared by English and Japanese and the items in which neither concepts, wordings, nor a combination of concepts or wordings appeared to be shared by the two languages.

Follow-up interviews were also conducted with the participants to complement the quantitative analysis with qualitative information. The interviews were designed to elicit further details of the interpretations and to investigate interpretation strategies, for example, asking individual interviewees semi-structured questions, such as whether or not they used the knowledge generated from their native language, what kinds of schemas they employed, and what mental/visual images they conceived at the time of interpretation. Interviewees' answers were recorded and notes were taken, details of which were analysed and classified at the time of the quantitative and qualitative data processing.

The participants were 56 native speakers of English: 19 from the United States of America (AmNSs), 18 from Australia (AuNSs), and 19 from Britain (BrNSs), representing speakers of three major geographical/regional varieties of English. That is, although all the speakers shared the same L1, the three different groups of participants have lived their lives in different parts of the world, and in different social, physical, and cultural environments, and thus might bring to bear different types of background knowledge when interpreting the Japanese figurative expressions.

The answers were collected between 2006 and 2007 at Queensland University of Technology and ALAA (at Perth) in Australia, the University of Nottingham in Britain, and Columbia University and the University of California at San Diego in the United States of America. Academics in the three countries assisted with the data collection.

The participants' responses were rated as follows: Two metaphor researchers (one British ENS and the author, a native speaker of Japanese JNS) scored the answers. They first established the appropriate boundary of correct interpretations (i.e. specimen answers) for each item and if there was any discrepancy between the boundaries, they reached an agreement through discussion. Then, the data was processed, giving one point for each correct answer and calculating the correctness ratio for each item. If all the interpreters provided a correct answer, the correctness ratio of that item was 100. The correctness ratio (%) is used in the analysis and discussion throughout this chapter.

3.2   The test items

Appendices A and B contain a list of all the test items in their original Japanese form, a gloss of their figurative meaning as offered by dictionaries or websites where available,

and the raw translations used in the study. The different test items were chosen in order to investigate the different strategies and types of knowledge the participants used in their interpretations and whether these varied depending on the type of figurative expression that was read in raw translation. These can be grouped into three types. First, there were six items (Appendix A, items 1–6) (henceforth A1) that display shared meanings and wordings in Japanese and English when translated literally. These were expected to result in few interpretative problems for the ENSs. The second group comprised 3 items (Appendix A, items 7–9) (henceforth A2) using body part terms ('leg' and 'head'), which, when translated literally, yield almost identical expressions but which have different figurative meanings in the two languages. They were thus thought likely to prove problematic, since L1 transfer effects might cause them to be misinterpreted. The last group consisted of 11 items (Appendix B) that were all expressions originating mostly in Japanese concepts and wordings (henceforth B1 and B2). These are all common expressions in Japanese and familiar to speakers of this language, but, because of their cultural uniqueness, they were anticipated to be most revealing in terms of the interpretative strategies brought to bear by the ENSs participating in the study. The motivations for these expressions, and the ways they are understood by JNSs, are discussed more fully in the section 'Qualitative analysis of the items'. They were also expected to be the most interesting as regards testing the feasibility of raw translations.

The literal translation of a figurative expression is not unproblematic, because the conceptual distinctions or highlighting of differences between entities and processes conventionally made by speakers of different languages is reflected in the words a language has to name them. So, for example, although the Japanese expression *manaita no koi* is similar to the English 'a fish on the chopping board', the choice of the subordinate term 'carp' in the Japanese wording was considered significant (in that it refers to a fish familiar to speakers of Japanese).[2] In the case of *tsuru no hitokoe*, the utterance or a signal emitted by a specific bird, the crane, could have been translated as its 'voice'. However, since 'voice' is used literally in English to refer to human voices, the translation, 'a *cry* of a crane', was chosen. English has a number of different verbs to denote the sounds made by birds (e.g. 'squawk', 'chirp', 'cluck', among others) making it necessary to choose among them. The consequence of this decision to render the noise by this verb is also discussed in 'Qualitative analysis of the items'. I found no translations of the figurative expressions included in group B1 in any dictionaries; however those in group B2 are all recorded in a Japanese-English Dictionary (Masuda 1988, Watanabe et al. 2003) and the glosses taken from these sources (in Appendix B [B.2] referred to as J-EDK).

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2.   Not all the ENSs consulted regarding the idiomaticity of this phrase in English agreed that it is a conventional, widely known metaphorical expression in English.

4.   Results, analysis, and discussion

4.1   Phenomena observed in the ENSs' interpretations and regional differences (RQ 1)

This section looks at the overall features of the ENSs' interpretations of the raw translations of figurative expressions in Japanese. Since regional differences in interpretation may be involved in the discussion of these overall features, this issue is dealt with first, and then the overall results and the participants' interpretation strategies are discussed. Tables 1–2 show the descriptive statistics and the correlations among the regional groups.

From Table 1, we can see there were slight differences among these speakers from different parts of the English-speaking world in terms of the means and the Std. deviations.

Table 2 shows how closely the correctness ratios of these regional groups were correlated to each other.

The strong correlations revealed in the regional varieties (Table 2) showed tendencies common to all the ENSs. This is quite an interesting finding. The probable reasons for the similar tendencies revealed in the interpretations are that, even though time and space has passed across the continents, there still remain basic linguistic and cultural

Table 1. Descriptive statistics of the 20 test items

Region	Mean	Std. Deviation	N
AmENS19	58.43	38.70	20
AuENS18	60.01	41.78	20
BrENS19	62.60	38.29	20

Table 2. Correlations between the different regional groups

Region		AmENS19	AuENS18	BrENS19
AmENS19	Pearson Correlation	1	.936(**)	.962(**)
	Sig. (2-tailed)		.000	.000
	N	20	20	20
AuENS18	Pearson Correlation	.936(**)	1	.949(**)
	Sig. (2-tailed)	.000		.000
	N	20	20	20
BrENS19	Pearson Correlation	.962(**)	.949(**)	1
	Sig. (2-tailed)	.000	.000	
	N	20	20	20

** Correlation is significant at the 0.01 level (2-tailed).

traits shared in these speakers' brains/minds that are rooted in their cognition and that have led them to make the same or similar interpretations. However, there may be small interpretative differences among speakers from different parts of the English-speaking world that might be revealed in a qualitative examination, and this may signify that we must be cautious about the use of raw translations, as is indicated by the low correctness ratios. The differences may be due to the issues of cognitive differences and other variables, such as age.

Since 55% of the participants in this study from the different regions were aged between 21–25 (N = 31) and overall only 15.5% over the age of thirty, the similarities among the regional groups may well have more to do with the age of the participants than with their shared language background. Table 3 shows the overall results in relation to the age variable.

As can be seen, two regional groups, the AuNSs and BrNSs aged under 20 and all three regional groups aged 21 to 25 showed quite similar interpretative phenomena in A1, A2 (i.e. with equivalent figurative expressions available in English), and B1 (i.e. common Japanese figurative expressions); and all three groups aged 26 to 30 showed similar interpretation phenomena in A1, A2, and B2, indicating that the younger generation interpreted the figurative expressions in similar ways.

The interpretation phenomena differed to a greater or lesser extent in terms of the item's characteristics, depending upon whether the test item belonged to B1 or B2 (raw translations of Japanese figurative expressions), or upon the age of the participants.

Table 3. Age differences

Region	Age group (y.o.)	N of subjects	Category of items			
			A1)	**A2)**	**B1)**	**B2)**
AmNSs	a ~20	0				
N = 19	b 21~25	10	92	90	38	2
	c 26~30	5	93	100	30	25
	d 31~40	3	78	100	17	23
	e 41~	1	100	100	50	57
AuNSs	a ~20	7	95	95	21	33
N = 18	b 21~25	6	94	94	25	38
	c 26~30	1	100	100	25	29
	d 31~40	1	100	67	25	29
	e 41~	3	100	100	10	2
BrNSs	a ~20	12	88	100	29	36
N = 19	b 21~25	5	93	100	35	51
	c 26~30	1	100	100	50	29
	d 31~40	1	100	100	50	57
	e 41~	0				

The number of subjects in some age groups was so small that no firm conclusions can be reached in relation to this variable and the summary offered here can only indicate some tendencies that might bear further investigation. The results of the table indicate that about one third (or more than one third in some cases) of the regional groups understood the figurative Japanese expressions through their raw translations: the medium correctness ratios are found in the AmNSs aged 21 to 25 and the BrNSs in the B1; the highest correctness ratios are found in the AmNSs aged over 41 and the BrNSs aged 31 to 40, followed by the BrNSs aged 21 to 25 in B2; the medium correctness ratios are found in the AuNSs and the BrNSs aged under 20, and the AuNSs aged 21 to 25. The lowest correctness ratios in B1 were given by the AmNSs aged 31 to 40 and the AuNS aged over 41; those in B2 were given by the AmNSs aged 21 to 25 and the AuNS aged over 41.

Tables 4–7 show how successful the participants from the three regional groups were in interpreting the different types of figurative expression. Table 4 summarizes the results for the interpretation of the 6 expressions that, when translated into English, were identical.

Five of the six items showed fairly similar results. These items accumulated a correctness ratio of 95% or more. However, one item, 'a body blow' was slightly different. The AuNSs' correctness ratio was the highest, while the correctness ratios of the AmNSs and BrNSs were lower (68.4%). This was because there were more literal interpretations in their answers, even though the participants were invited to interpret all the phrases figuratively. No specific reasons could be found in the interviews with these groups of participants as to why they preferred a literal reading, and interpreted it as a physical blow. They took it as they did.

Table 5 shows how the ENSs interpreted the metaphorical expressions that could be read either as a conventional metaphor in English or as an unfamiliar one in Japanese.

As can be seen, none of the ENS participants interpreted these expressions in accordance with the sense they have in Japanese. Rather, most respondents offered interpretations matching the English meanings, although not all of them were consistent with the conventional meaning of the phrases, as can be seen in the discrepancy among the

Table 4. Similar wordings & shared concepts between English and Japanese: 6 items

items	Au N = 18	Br N = 19	Am N = 19	ENSs av. N = 56
1 time is money	100	100	100	100
2 bear fruit	100	89.5	94.7	94.7
3 crossroads	100	94.7	100	98.2
4 bolt blue	94.4	94.7	94.7	94.6
5 slip fingers	100	94.7	100	98.2
6 body blow	100	68.4	68.4	78.9

Table 5. Similar figurative expressions with different meanings

items	in English meanings				in Japanese meanings
	Au N = 18	Br N = 19	Am N = 19	E NSs av. N = 56	E NSs av. N = 56
7 come to head	77,8	100	94,7	90,8	0
8 pull leg(s)	100	100	100	100	0
9 soft in head	100	100	100	100	0

ENSs with regard to the item to 'come to a head'. The correctness ratio of the BrNSs was the highest, that of the Am NSs was slightly lower, and that of the AuNSs was the lowest (77.8%). The reason for this may be due to their relative frequency of use in different parts of the English-speaking world, a supposition that would need to be verified with the use of large corpora. Furthermore, there were two participants among the AuNSs who came to Australia at the age of five and who said in the interviews that they did not know this expression. However, their answers for the other items did not seem to be affected by this aspect of their background.

Table 6 summarizes the ENSs' interpretation of the group of common Japanese expressions for which no dictionary translations had been found. Two of the 4 items, 'At the age of 96, she *set out on a journey to* her husband' and 'You and I are *united with a red thread*' were unexpectedly well interpreted. The first expression may have been taken successfully as a euphemism, and interpreters may have made use of the clue 'the age of 96' and a conceptual mapping LIFE IS A JOURNEY/DEATH IS DEPARTURE. The second one also provides a clue by including the words 'united', 'red', and 'thread'. In contrast, the interpretations of the other two, ('I *cannot sleep with my feet turning toward him*' and 'the Prime Minister made *iridescent* remarks on the matter') were not as good. Probable reasons are that the first one has a specific cultural element indicated by a body part, the foot, in a Japanese sense and the second may have a translation problem, a cultural connotation of the word 'iridescent'. These results are discussed in greater detail in the section 'Qualitative analysis of the items'.

The results of items grouped in category B2 (Table 7) seemed to show similar tendencies to those already discussed. In addition, the characteristics of the items must be taken into account: most of the expressions are metonymy-based, and they stimulate the interpreters to draw clear images in their mind. These features seemed to result in more successful interpretations.

As can be seen, the items that were best interpreted were 'a weak worm', 'to cast a shrimp to catch a bream', and 'a carp on the cutting board'. Following these was 'a horse out of a bottle gourd'. We must note here that there were some ENSs who did not know what a bottle gourd was. If they lacked this background knowledge, the expression would have been difficult to interpret, and there was no contextual clue to help.

Table 6. Common Japanese expressions

items	Au N = 18	Br N = 19	Am N = 19	ENSs av. N = 56
10 set out journey	38.9	63.2	58	53.4
11 feet toward	0	5	0	1.7
12 iridescent	5.6	15.8	26.3	15.9
13 united with a red thread	61.1	57.9	47.4	55.5

Table 7. Japanese figurative phrases

items	Au N = 18	Br N = 19	Am N = 19	ENSs av. N = 56
14 a frog in well	0	5	0	1.7
15 shrimp catch bream	72.2	68.4	47.4	62.7
16 horse bottle gourd	16.7	36.8	31.6	28.4
17 eyebrow saliva	0	0	0	0
18 a weak worm	88.9	94.7	58	80.5
19 cry of crane	5.6	0	0	1.9
20 carp cutting board	38.9	63.2	47.4	49.8

Participants were unsuccessful in interpreting 'a cry of a crane', 'a frog in the well', and 'to wet eyebrow with saliva'. Weak clues were sometimes given by the presentation of the items, that is, whether they were used in the context of a clause or whether they stood alone: 5 items out of the 6 were presented as stand-alone items without any contextual support. The difference in the way the items were presented may thus have influenced the results.

4.2   Qualitative analysis of the items and their interpretations

This section looks in more detail at aspects of the ENSs' interpretations of the culture-bound figurative expressions. They are divided into five categories: highly successful, successful, a medium level of success, unsuccessful, and most problematic and risky.

4.2.1   *Highly successful*
One item (18 'He is a weak worm' in B2).

A possible reason for the successful interpretation of this phrase is that it was embedded in a sentence (a kind of contextual support): the mapping between 'He' and 'worm' or vice versa was easy; the word 'weak' indicates the characteristic of the person. This possibly led to better understanding. Furthermore, the English proverb 'even the worm will turn' and variations on it cast a meek or humble person as a worm, and,

although this does not necessarily signify 'cowardice', it is sufficiently close to have possibly aided interpretation.

4.2.2 *Successful*

Four items: (15 'to cast a shrimp to catch a bream' [B2], 13 'You and I *are united with a red thread*' [B1], 10 'At the age of 96, she *set out on a journey* to her husband' [B1], 20 'a carp on the cutting board' [B2]).

Two of the 4 items were embedded in a sentence (13 and 10), but the others were presented as stand-alone expressions (15 and 20). On the one hand, there seemed to be prominent contextual effects, but these did not account for all the expressions. The two stand-alone expressions have unique features, that is, the combination of the words 'shrimp' and 'bream' with metonymic connotations, the contrast of the sizes: small, therefore, cheap, for a 'shrimp', and big, therefore, more costly (if the interpreters know what kind of fish a 'bream' is). The bream is an important element of Japanese cuisine, being considered the king of fish, *sashimi*, an ingredient in Japan, or as an art object. In this sense, the expression is culture-bound.

The other stand-alone expression, 'a carp on the cutting board', is similar to an English expression, 'a fish on the chopping board'. This feature seems to have made its interpretation easier. According to one Japanese dictionary (Shinmura 2008), this expression began to be used in the 10th century, using 'fish (rather than a 'carp') on the cutting board'. However, nowadays the usual form is 'a *carp* on the cutting board'.

The other two expressions are embedded in a context. Items 13 ('You and I *are united with a red thread*') and 10 ('At the age of 96, she *set out on a journey* to her husband') are presented within the context of a clause. This might have assisted the participants' successful interpretation; in particular, 10, a euphemism, was successfully interpreted. Item 13, in which there is a clue, 'united', hinting at a relationship, was interpreted well, too, although there was a difference in the interpretations of the relationship, caused by the use of 'red'. Some participants took it as a family relationship and others took it as a romantic one. Those who associated the word 'red' with blood, made reference to a family relationship; those who imagined 'passion' from the word 'red' made reference to a love relationship. The Japanese meaning conveys the latter. It seems that the border between the correct and incorrect interpretations is blurred according to the degree with which they are true to the original meaning, after which branching-offs may occur. If an interpretation takes a branching-off that is related to the original meaning, it is taken as a successful interpretation of the expression in that language, as in the case of 'a love relationship', but if an interpretation takes a branching-off not commonly used in the original meaning, as in the case of 'a family relationship', it is taken to be unsuccessful.

4.2.3 *Medium level of success*

Two items (16 'a horse out of a bottle gourd' [B2], 12 'Prime Minister made *iridescent* remarks on the matter' [B1]).

The combination of a 'horse' and a 'bottle gourd' in 16 can be traced back to a Chinese episode, where a hermit rode on a white horse and ran thousands of miles a day. When he rested, he magically kept his white horse in a bottle gourd (a big horse in a small bottle gourd). There remain some pictures depicting this scene. Another episode is about a warrior, Toyotomi Hideyoshi, in the Sengoku Jidai (the mid–16th century) who used a bottle gourd for his banner symbol. A bottle gourd, or *hyotan*, symbolizes prosperity. The whole phrase means a surprise because a large creature comes out of a small fruit, meaning to make something impossible possible. As has already been pointed out, lack of familiarity with the meaning of 'bottle gourd' resulted in some incorrect interpretations; otherwise, as in the case of the pair 'shrimp/bream', the relative size of the entities referred to provided some clue as to the meaning of the expression.

The colours and textures of 'iridescent' originate in the various segmental colours of the wings of an insect, chrysochroa. Looked at from different angles, different colours can be seen; therefore, it suggests alterations, ambiguity, camouflage, in the sense of making things ambiguous to opponents or blurring inconvenient remarks. It is often used to describe ambivalent political issues in journalism. The term for this spectrum of colours, and the image it may evoke among the Japanese, is culture-bound. Some ENSs were surprisingly successful in interpreting the meaning through analogy or logical thinking (15.9%).

4.2.4 *Unsuccessful*

Four items (19 'a cry of a crane' [B2], 11 'I cannot *sleep with my feet turning toward him*' [B1], 14 'a frog in the well' [B2], 17 'to wet eyebrows with saliva' [B2]).

Only one of these expressions was embedded in the context of a clause. However, the contextual surrounding support of item 11 did not seem to work well, probably because the original Japanese meaning is highly culture-bound. To place the lower part of the body toward someone you talk to means disgrace in Japan. In Western movies, there are scenes where cowboys put their feet on the desk facing their interlocutors. These scenes tended to arouse negative reactions from the Japanese, as they were not used to seeing such manners. The interpretation of this expression by the ENSs was that the persons 'I' and 'him' were not in a friendly relationship; for example, they had quarrelled so they did not face each other. At the end of a quarrel, a speaker would turn his/her face away from his/her interlocutor in a disgusted way. The mental image stimulating the ENSs by this expression was a physical posture of feet pointing toward him, which figuratively extended to the posture of turning away from the person 'him', due to the emotion of dislike or no comfort between 'I' and 'him'. Thus, the ENSs resorted to the position of body parts in their interpretation. This is quite reasonable. However, the Japanese meaning of this expression refers to the depth/degree of thankfulness of the person 'I' feeling toward 'him'. The person 'I' owes 'him' so much that the 'I' cannot put the lower part of 'my' body toward 'him' while sleeping. The metonymic and metaphorical meaning resides in 'sleep' (not only physical 'sleep' but the positioning of a

person's physical and mental state) and 'feet' (the lower part of a body), which connotes, in some Japanese expressions, being inferior to the upper part of a body, for example, a brain.

The other two expressions, 'a cry of a crane' and 'a frog in the well' got a few correct interpretations. The same phenomena as in 'iridescent' were found in 'a cry of a crane'. The correct interpretation is derived from the analogy or logical thinking of the bird, 'crane', and its sounds. The crane has a long neck, which emits a sonorous sound with a high pitch; therefore, it stands out in the crowd. However, the majority of the answers said it meant sad sounds. This may have been due to a problem with the translation, which used the word 'cry'. As the word 'cry' may be associated with sadness, it is quite natural for it to be interpreted this way. Regarding the other expression, 'a frog in the well', this was interpreted as a contamination of the water. This interpretation is also quite reasonable in the sense that, if there were a frog or something similar in a well, the water might well be contaminated. However, the original expression is part of a larger one: 'a frog in the well does not know the ocean', (see also Alm Arvius this volume for remarks on the clipping of well-known proverbs) but if the interpreters did not know the whole proverb, the interpretation may take a wrong turn. If this phrase had been presented in the whole string or within a context, the interpretation might have been different. The expression 'to wet eyebrows with saliva' was translated literally from the original Japanese and presented as a stand-alone phrase; therefore, it provided no clues to which the interpreters could resort, and so proved hard for non-NSs to interpret. The ENSs interpreted it to mean grooming a body or dressing up, imagining a scene where comedians groom their eyebrows with saliva.

4.2.5   *The most problematic expressions or risky area*
The riskiest is the expressions with the same wordings but different concepts/ meanings between English and Japanese. Three items in A2 (7 'to come to a head', 8 'to pull someone's leg(s)', 9 'Tim must be *soft in the head* to do such a thing').

As has been seen, the majority of the ENSs interpreted these expressions according to their idiomatic meanings in English. It seems to me that this kind of phenomenon is due to the characteristics of the culturally fixed phrasal meanings, which may make them phraseological 'false friends' (see Dobrovol'skij and Piirainen 2005: 108–113).

The motivation for the figurative meanings of the three phrases is quite different in English and Japanese. The Japanese meaning of the expression 'to come to a head' indicates that blood comes up to the head. When this happens and blood circulates there, the brain is vitalized, therefore, a good idea may occur. Alternatively, if blood comes up to the head (*chi ga noboru*), the state of mind is not sane, therefore, people may lose their temper or become angry. Both motivations make sense and it seems quite logical to think this way, though the correct interpretation did not match the English meaning.

The item to 'pull someone's leg(s)' (the plural form is used in translation in accordance with the physical movements of pulling someone's legs) means to obstruct others' movements, to be a nuisance to the group. In Japanese, this is a metonymy-based metaphor, where a physical action stands for a more general, abstract notion. It may well be taken as an EVENT structure metaphor.

Item 9 'being soft in the head' is literally translated from the Japanese expression meaning to be flexible in one's thinking. The basic sense of the word 'soft' is tactile ('soft touch'), and is synaesthetically extended to denote properties of other organs, e.g. acoustic properties ('soft melody'), palatal organs ('soft drink'), and to the mind ('soft' or 'flexible thinking').

In summary, it seems that people have a tendency to resort to familiar knowledge. If there is a certain fixed meaning for a particular expression in their mother tongue, they are so accustomed to the fixed meaning that they take the meaning of the expression as being that one. This is the riskiest area in interpretation.

4.3   Strategies used in the interpretations (RQ2)

The test items were selected in order to include, on the one hand, some idiomatic or conventional expressions that would stimulate visual images and others in which general knowledge would aid interpretation. On the other hand, an effort was made to include some expressions that would require interpreters to have sufficient knowledge of cultural connotations or the cultural background if they were to understand them.

A great deal has been written and researched on language learning strategies (e.g. Oxford 1990, 1996) as well as on the specific strategies used in interpreting metaphors (e.g. Gentner et al. 2001 or Littlemore and Low 2006). Terms such as 'analogical reasoning' or 'logical thinking', used by metaphor researchers, are similar to Oxford's (1990) classification of what she identifies as 'cognitive' strategies, which include 'analysing' or 'reasoning', but also overlap with 'comprehension' strategies such as 'guessing intelligently'. In this study, rather than starting from an already existing classification, the participants' responses were grouped according to the common features mentioned; however, classification was difficult except in very broad terms. For example, a three-way division of the respondents' strategies could be identified: (i) conceptual interpretations of the expressions (involving intuition, lexical comprehension, and/or knowledge of the mother tongue), (ii) analogical reasoning or logical thinking, and (iii) image associations or visualizations. The first is a feature of general cognition. The second, analogical reasoning or logical thinking, involves a basic operation supporting the other two and may function in an overlapping manner or concurrently, and was thus not treated as a separate category. As Oxford (1995: x) has observed in relation to language learning strategies, "[s]trategies are not a single event, but rather a creative sequence of events that learners actively use", which highlights some of the difficulties involved in teasing them apart, particularly when the identification of different strategies involves respondents' subjective and conscious recollection of what

they actually did in response to twenty different items. For this reason, a two-way clas-
sification was adopted in this study: conceptual interpretations and visualization.

Primarily, the test used for the investigation was of a descriptive type and was in-
tended to be a primary source to obtain quantitative data but, at the same time, to seek
for qualitative information from the written answers as a secondary source, using a
semi-structured interview method. Its aim was to reveal covert aspects of the answers,
in which the following investigative questions on each test item were asked individu-
ally. This was done both as an overall question, regarding what strategies the intervie-
wees used in interpretations, and as detailed questions, regarding whether or not the
interviewees used the knowledge generated from their native language combined with
the details of the knowledge used for specific expressions, what kinds of analogical and
schematic knowledge they employed in interpretations, what kinds of mental/visual
images they drew in their mind, and finally, whether or not there was any other cogni-
tive operations when they read the test items. The interviews were planned to be un-
structured to assist or ensure the flexibility of the responses; therefore, described in
this section, were two prominent aspects of the strategies, as stated above, such as the
use of native-language knowledge, schematic knowledge (K stands for knowledge in
Table 8) and mental/visual images (V stands for mental/visual images in Table 8).
These aspects coincide with interviewees' most frequently used strategies: utilization
of general knowledge, mother-tongue knowledge, schematic knowledge, and image
associations. As stated earlier, the separation of one strategy from the others is diffi-
cult, because cognition is intertwined in the brain/mind and its mechanisms and op-
erations are complex. Therefore, the classification depended solely on the interviewees'
comments, regarding which strategies they used, for example, simply the strategy of K
or V, or rather the combination of K with V (K + V). The following table shows the
results of the strategies used in the interpretations.

As a whole, the ENSs used general knowledge or schematic knowledge (including
analogical reasoning) as shown by K, and drew images for the expressions featured
with clear images as shown by V; however, their schematic knowledge (or analogical

Table 8. Strategies used for interpretations

strategies	K			V			K + V		
item groups	N	item no.	correctness ratio	N	item no.	correctness ratio	N	item no.	correctness ratio
A1	2	1, 6	89.5	4	2, 3, 4, 5	96.4			
A2	2	8, 9	100				1	7	90.8
B1	2	10, 11	55.1				2	12, 13	35.7
B2	2	17, 18	80.5				5	14, 15, 16, 19, 20	28.9
total/ave.	8		81.3	4		96.4	8		51.8

reasoning) was weak in the culture-bound expressions; they seemed to make efforts to interpret Japanese expressions with K, V, or even K + V but they were not successful in culture-bound expressions.

Conceptual interpretations included such strategies as resorting to general knowledge or schematic knowledge. So, in interpreting 'a horse out of a bottle gourd', for example, participants reported using logical thinking to arrive at an interpretation (correctness ratio: 28.4%). Likewise, these participants reported looking for a similar expression in their mother tongue, and linking or associating the meaning of the target expressions with those already familiar to them. Some also mentioned that they derived meaning from a connotation, for example, in interpreting 'a carp on the cutting board', they thought of a fish being placed on the chopping board and this led them to a correct interpretation of the expression (correctness ratio: 49.8%). Analogical reasoning, logical thinking, and knowledge of the mother tongue were particularly important features of the conceptual interpretations.

Image associations or visualization of the scene evoked by the expression was another type of strategy the participants reported using, either on its own or in addition to resorting to general or schematic knowledge. In general, these ENSs used a holistic/global strategy in interpreting these figurative expressions, surveying the entire expression and interpreting it as a whole.

5.   Conclusions

'Raw' translations of Japanese figurative expressions preserve subtle cultural nuances of their use in Japanese. This chapter has attempted to shed some light on whether it is feasible to include such translations in bilingual dictionaries along with an indication that they are figurative, as an alternative to providing a literal paraphrase of their meaning or an equivalent figurative expression in English. It has been seen that a number of factors make correct interpretation of such raw translations more or less likely.

One interesting finding that emerged from this research was that the interpretations offered by speakers of English were very similar, despite the fact that the participants came from different parts of the English-speaking world (Australia, Britain, and the United States) and the background knowledge they might be expected to bring to bear in their interpretations in terms of their social, cultural, and physical background experiences would be somewhat different. This underlines the importance of knowledge of their language and particularly the way it expresses figurative ideas for speakers of English worldwide. Their familiarity with English conventional metaphors also affected the ways that the participants in this study interpreted figurative expressions from Japanese which, when translated, result in virtually identical wordings of a conventional metaphor in English. When the meaning of these metaphors is the same in both languages (for example, 'time is money' or 'to bear fruit'), ENSs had no difficulty in interpreting them. In a similar way, when presented with a familiar expression

that has a different meaning in Japanese (for example, 'to be soft in the head' or 'to pull someone's legs'), the speakers of English interpreted this in ways consistent with its meaning in English. This shows that figurative 'false friends' are the riskiest type of metaphorical language for use in cross-cultural communication, a finding not only in line with earlier cross-linguistic studies of metaphor use (e.g. Deignan et al. 1997 or Charteris-Black 2002) but that also has implications for foreign language teaching and cross-cultural communication generally. Further research aimed at identifying metaphors with identical wordings but different meanings in a number of different languages would be desirable.

The figurative expressions that had no close equivalents in English were interpreted more or less successfully. Those with metonymic features or those that stimulated mental images (for example, 'weak worm' or 'a horse out of a bottle gourd') were successfully interpreted by the ENSs to a certain extent. That is, conceptual interpretations (for example, analogical reasoning) and visualization could lead to correct interpretations of the Japanese expressions. The interpretation of some of the expressions ('you and I *are united with a red thread*' or 'I *cannot sleep with my feet turning towards him*', for example) involved the activation of schematic and cultural effects that led to correct interpretations up to a particular point (for example 'red' and 'thread' as signifying a relationship) but interpretations diverged after this ('family' versus 'romantic' relationship). This suggests that further contextual support would be necessary to prevent the activation of irrelevant associations in cases such as these.

The strong cultural traits of expressions such as '*iridescent* remarks', 'a cry of a crane', or 'to wet eyebrows with saliva' caused some interpretation problems. The ENS participants applied general knowledge or logical thinking in their interpretations, but if their knowledge of the vehicle term was weak or different from that of Japanese speakers, interpretation was simply a matter of guesswork and success or failure depended on the accuracy of their guessing.

In short, speakers of English seem able to interpret many Japanese culture-bound figurative expressions in ways consistent with their meanings in the source language, even when they are presented without a supporting context or in a short sentence. If people invest cognitive effort in interpreting unfamiliar metaphors used by another language-speaking group, they are often able to understand them. However, as this study has shown, more or less contextual support will be necessary for understanding. If the figurative expressions used by a different culture have metonymic features or clear images, it seems that they could safely be used in cross-cultural communication. However, others would need a supporting context to guide appropriate interpretations. In the case of metaphorical expressions with the same wording but different meanings, context alone may not be enough to counteract the strong effect exerted by knowledge of the mother tongue in interpretations. As these are the metaphorical language uses that have been seen to be the most problematic and most likely to be

misinterpreted, further research into this would be necessary, in order to facilitate cross-cultural understanding.

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Appendices A and B: Appendix A1 lists the test items in Japanese (in romaji and 日本語) and in English; Appendices A2, B1, and B2 list the test items in Japanese (in romaji and 日本語) and their translations into English with information (if any) from the dictionaries (Kenkyusha Japanese-English Dictionary [J-EDK] [Masuda 1988, Watanabe et al. 2003]).

Appendix A.

Figurative expressions instantiating shared concepts in English and Japanese

A.1   (Presumably) less problematic: similar wordings, same concepts, and same meanings in English and Japanese

(1)   *Toki wa kanenari*, 時は金なり
Time is money

(2)   *mi o musubu*, 実を結ぶ
to bear fruit

(3)   *Watashitachi wa jujiro ni iru*, 私たちは十字路にいる。
We are *at the crossroads*

(4)   *seiten no hekireki*, 晴天の霹靂
a bolt from the blue

(5)   *yubi o surinukeru*, 指をすり抜ける
to slip through one's fingers

(6)   *bodi buro*, ボディーブロー
a body blow

A.2   (Presumably) problematic: Similar figurative expressions with different meanings in English and Japanese

(7)   *atama ni kuru*, 頭に来る
to come to a head

(8)   *ashi o hipparu*, 足を引っ張る
to pull someone's leg(s)

(9)   *Sonoyona koto o surunodakara Tim wa kitto atama ga yawarakai ni chigainai*, そのようなことをするのだからティムはきっと頭が柔らかいにちがいない
Tim must be *soft in the head* to do such a thing

Appendix B.

Figurative expressions featuring Japanese concepts

B.1   Common Japanese expressions

(10)   *Kanojo wa 96 saide otto no moto e tabidatta*, 彼女は96歳で夫の もと へ 旅立
った。
At the age of 96, she *set out on a journey* to her husband

(11)   *Watashi wa kere no honi ashi o mukete neraremasen*, 私は彼のほうに足を向
けて寝られません 。
I cannot sleep with my feet turning toward him

(12)   *Shusho wa sonomondai nituite tamamushiiro no hatsugen o shita*, 首相は その
問題について玉虫色の発言をした。
Prime Minister made *iridescent* remarks on the matter

(13)   *Anata to watashi wa akaiito de musubareteiru*, あなた と 私は赤い糸で結ば
れ て いる 。
You and I *are united with a red thread*

B.2   Japanese figurative phrases

N.B. Entries of translations in J-EDK 1988 and 2003 editions (if any) are cited here.
The term vs. refers to the translations used in this chapter.

(14)   *ino naka no kawazu*, 井の中の蛙
A frog in the well: part of the whole proverb: "*A frog in the well* knows nothing
of the great ocean" (J-EDK 1988: 503) vs. a frog in the well

(15)   *ebi de tai o tsuru*, 蝦で鯛を釣る
"*throw a sprat to catch a whale* (mackerel); give an egg to gain an ox" (J-EDK
1988: 225); "catch a bream with a shrimp" (J-EDK 2003: 372) vs. to cast a
shrimp to catch a bream

(16)   *hyotan kara koma*, 瓢箪から駒
"Unexpected things often happen" (J-EDK 1988: 501); "A thing said (done) in
jest comes true" (J-EDK 2003: 2331) vs. a horse out of a bottle gourd

(17)   *mayutsuba*, 眉唾
"a fake" (J-EDK 2003: 2472) vs. to wet eyebrows with saliva

(18)   *yowamushi*, 弱虫
"a weakling; a weak fellow; a sissy" (J-EDK 1988: 2010); "a coward; a wimp; a
sissy" (J-EDK 2003: 2690) vs. a weak worm

(19)   *tsuru no hitokoe*, 鶴の一声
"a word from the throne; the voice of authority" (J-EDK 1988: 1892); "the
voice of authority; an authoritative pronouncement" (J-EDK 2003: 1751) vs. a
cry of a crane

(20) *manaita no koi,* 俎板の鯉
   "be doomed; be left to one's fate" (J-EDK 1988: 1050, J-EDK 2003: 2467) vs. a
   carp on the cutting board. The equivalent English expression is 'a fish on the
   chopping board', but the Japanese expression uses 'carp' instead of 'fish' as a
   common term.

Appendix C

Metaphor Cognition Test, M-Cog Test ENSs
Instructions for Part A:
Write the meanings (especially, the figurative meanings, if any) of the *italicized portions* of the following expressions (whole phrases or whole sentences) in the space provided for Meaning. Adding your comments on the use of the expressions, for example, on what occasions or how the expressions are used, will be appreciated.

(1) *Time is money.* Meaning: N.B. Answer space is provided in the actual test.
(2) to *bear fruit.* Meaning:
(3) We're *at the crossroads.* Meaning:
(4) *a bolt from the blue.* Meaning:
(5) to *slip through one's fingers.* Meaning:
(6) *a body blow.* Meaning:
(7) to *come to a head.* Meaning:
(8) to *pull someone's leg(s).* Meaning:
(9) Tim must be *soft in the head* to do such a thing. Meaning:
(10) At the age of 96, she *set out on a journey* to her husband. Meaning:
(11) *I cannot sleep with my feet turning toward him.* Meaning:
(12) Prime Minister made *iridescent* remarks on the matter. Meaning:
(13) You and I *are united with a red thread.* Meaning:
(14) *a frog in the well.* Meaning:
(15) to *cast a shrimp to catch a bream.* Meaning:
(16) *a horse out of a bottle gourd.* Meaning:
(17) to *wet eyebrows with saliva.* Meaning:
(18) He is *a weak worm.* Meaning:
(19) *a cry of a crane.* Meaning:
(20) *a carp on the cutting board.* Meaning:

N.B. Listed are 20 items in Part A of the Metaphor Cognition Test. Part B (20 multiple choice type questions) followed Part A in the test, but it is not discussed in the study, and therefore not included in this appendix.

The limits of comprehension in cross-cultural metaphor
Networking in drugs terminology

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This chapter examines the conceptual patterns involved in the interpretation of metaphors primarily in English, French, German, and Italian from the field of drugs terminology. It suggests that the process defined here as conceptual networking constitutes a substantial aid in cross-cultural comprehension. Many features of networks are shared among languages, such as similar analogies, cultural overlap in linguistic metaphors, and universal components in both specific and more generalized metaphors. However, there are cases in which shared conceptual metaphors display considerable cross-language variation with regard to the types of linguistic metaphors linked to their networks. These cases demonstrate the limits of cross-cultural comprehension and reveal that non-contextual features are required to establish a reasonable interpretation of the metaphor in question.

Keywords: context, cross-linguistic variation, linguistic metaphors, metaphor networks, newspaper texts

1. Cross-language and internal variants of metaphor creation

The conceptual distance between languages and cultures, and the degree of mutual comprehension that results from it, can depend on various factors. One of the main features that spring to mind is the extent to which languages share the same type of culture in the form of values, customs, work and eating habits, or other human activities in general. The way we conceptualize our environment with regard to variation in cultural systems constitutes a major impetus for whether we share conceptual metaphors or not. Even when conceptual metaphors are shared, however, languages produce a surprising number of different variants in the linguistic metaphors that are generated from the underlying conceptual structure.

In addition, the complexity of patterns in cross-cultural conceptualization is further enhanced if internal variants are taken into account. On the one hand, there are metaphors that are created and then become part of the mainstream stock of the general language community. A new creation may spread quickly across the whole spectrum of language users, gaining in saliency. Different models have been devised in the past to assess the propagation of metaphoric innovation, particularly in the process of language change. Traugott developed a model of Invited Inferencing Theory of Semantic Change, (see Traugott and Dasher 2002: 38–39 for details), whereby an innovation may occur on behalf of an individual and be gradually accepted by the entire language community as it becomes more salient. The "locus of change" in the system is constituted by a single speaker, the process of change starts when it has been adopted by more than one speaker, and, in the case of semantic change, an actual change 'in the language' is established once the innovation has spread through the community. These mainstream innovations, as in the case of metaphors, become part of the standard language. There are, however, a large number of metaphorization processes that are limited to internal variants.

Internal variants are taken here to denote linguistic metaphor usage that becomes fixed or stabilized in particular sections of a language community. The range of the creation of such metaphor creation is extremely wide and may involve very personal usage, as in the case of poetry. This would constitute a form of idiolect. Metaphors can also be restricted to geographical areas in the shape of regional dialects. Other expressions are found in the specialized language of the business world or in technical terminology (see Philip this volume, for discussion). Yet another variant is that of sociolects, which are restricted to a certain section of society, as in the case of drugs users. Metaphors from all these variants may be found across different languages, although some, as in the case of regional dialects, tend by definition to be more language-specific than others. In addition, a mixture of mainstream and non-mainstream metaphoric lexis may be found in all internal variants. My focus in this study is on the last type of internal variant, the sociolect of drugs users, whose terminology spans, to a large extent, many languages in Western society.[1]

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1.   The choice of the field of drugs terminology and the aspect of cross-cultural comprehension for this paper originates from discussions held during a presentation given on metaphor translation at the annual conference of the SAES (Société des Anglicistes de l'Enseignement Supérieur), University of Avignon, France, in May 2006. The present analysis stems from the idea at the time that, although obviously not identical, there appear to be similarities between the translation process and cross-language comprehension that, in turn, are both linked to theories of conceptual networks.

2.   Context in comprehension

It is clear that a major factor in the successful comprehension of a metaphor involves contextual features. If we consider the two metaphors using colour in drugs terminology, 'white spot', (discussed below), and 'white girl', it can be seen that there is a common feature of the colour white in the two items, but it is difficult to understand what the metaphors might refer to. Regardless of the language or culture involved, we may at first assume, if we are told that the first item is not being used in a literal sense and the second does not refer to the colour of a girl's skin, that the figurative use of 'white' may very well have roughly the same meaning if an identical semantic field is involved.

With the help of contextual information, however, it becomes clear that almost the opposite is true: the first refers to something that is not involved in the drugs scene while the second expression is a metonym for cocaine, because of its colour. Two completely different associations are involved. The first association is linked to a general conceptualization process in Western society according to which the black-white colour spectrum, together with a related dark-light contrast, is equated with a negative-positive attitude to human activities or states. This is reflected in an example from the American press in our drugs terminology corpus (described in Section 4 below) in connection with the physiological effects of cocaine:

(1)   With higher doses and chronic use, the alertness and exhilaration so prized by coke's connoisseurs quickly turn into *darker effects*, ranging from insomnia to full-fledged cocaine psychosis.   (*Time Magazine*, July 6, 1981)

The interpretation of 'darker effects' is a generally negative one, at least in European languages, and there is a parallel with 'black-white', which, in a context like the following, would normally be easily understood across languages. The following example of the 'white spot' metaphor, (AREA OF COCAINE CONSUMPTION = WHITE), is taken from the German press, (*weisser Fleck*), and can easily be understood in English or other languages:

(2)   *Dass die "Todesdroge Crack" ( ) nun aktenkundlich auch Europa erreicht hat, war zwar ein "historisches Datum" in der westdeutschen Rauschgiftsbekämpfung, doch für die amtlichen Drogenfahnder nicht überraschend. Für sie verschwand nur ein weiterer **weisser Fleck** auf der Landkarte der Weltdrogenmärkte und des Rauschgiftkonsums.*   (*Der Spiegel* November 17, 1986)
'The fact that the "death drug" crack (...) has now officially reached Europe was, on the one hand, "an historical date" in the history of the West German fight against drugs but not, on the other, surprising for the drugs squad. As far as they were concerned, just another *white spot* had disappeared on the map of the world drugs markets and drug consumption.'

This is, of course, a very different interpretation of the colour white in contrast to the 'white girl' metonym, which is helped by having contextual information at hand. There

are other cases when the context may give an indication of the sense intended, but other linguistic and conceptual information is required for at least an attempt at their interpretation. This non-contextual information may vary substantially between languages. Consider the following example from the French press:

(3) *Pour vérifier la qualité de sa cuisine, Jo pratique ce qu'il appelle "l'érection caudale".*   (*Le Nouvel Observateur* May 11, 1989)
'In order to test the quality of his cooking, Jo carries out what he calls the "*caudal erection*".'

An English reader of this text would probably find it difficult to interpret the metaphor "caudal erection". What exactly is involved here and how does this test the quality of his cooking? The fact that the expression is in quotation marks will make us realize that it may be difficult for a French reader to interpret as well.

The cooking metaphor makes it clear that the production of drugs is involved and that Jo wants the drugs to have a good physical and mental effect. The term *caudal*, which is not so common in English, would refer to a tail.[2] In fact, English has two contrasting figurative expressions using the lexeme 'tail': "with one's tail up", meaning in good spirits or happy, and the opposite, "with one's tail between one's legs", meaning dejected or humiliated (*Oxford English Dictionary*). These expressions can be transferred from the animal to human domains. On this basis, and after a puzzling deductive process, we may arrive at a reasonable interpretation of the expression that the analogy with a dog's tail refers to a state of happiness.

Unfortunately, the term 'tail' (*queue*) in colloquial French also has a sexual connotation so that the inference may be related to the human male rather than to canine anatomy. The analogy could therefore be ambiguous, even though similar meanings may be inferred. However, this ambiguity could arise in the two languages for different reasons: in English, the cognate lexis of 'erection' and in French, the polysemy of *queue* ('tail'), could both lead to the same analogy.[3] In the final analysis, this particular

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2.   Editors' note: "Caudal", meaning "of or belonging to the tail; situated in or near the tail" (*Oxford English Dictionary*) is most commonly found in English in collocations such as 'caudal fin', 'caudal peduncle' or 'caudal vertebrae'.

3.   The term 'tail' as a reference to the human male genitals was often found in earlier forms of English, as in Chaucerian and Shakespearian texts. According to the Oxford English Dictionary, it was more often a reference to females. This can be found, for example, in Chaucer's *The Wife of Bath's Tale* (ll. 464–466), when the Wife of Bath recounts how her libido increases after drinking wine:

> And after wyn on Venus moste I thynke,
> For al so siker as cold engendreth hayl,
> A likerous mouth moste han a likerous tayl.
> (And after wine on Venus must I think,
> For as surely as cold engenders hail,
> A gluttonous mouth must have a lecherous tail.)

analogy may be wrong, considering the contextual features in question. However, context cannot give us the final answer.

In this particular example, correct interpretation is therefore not straightforward and different non-contextual features come into play that may, or may not, lead to the same deduction in both languages. This rather roundabout way of interpreting a metaphor means not only that a given context may be unable convey the whole picture, but also that we are forced to rely on associated concepts and metaphors in our language and culture. In many cases, and depending on the degree of cultural specificity of the item involved, a native speaker may have a certain amount of trouble in understanding a particularly creative metaphor, but this may be even more difficult for a non-native speaker. Cross-language differences in conceptual systems and language structure are often the cause of these comprehension difficulties.

This chapter looks at different processes of non-contextual features that aid cross-language comprehension of metaphor, but one major type will be the focus of attention: metaphor networking. This is a useful framework with which to analyse the extremely creative field of figurative language in drugs terminology and it is a feature that operates in the production of all the cross-language and internal variants mentioned earlier.

3. Metaphor networking

I first give a brief overview of this process, although finer details of networking models still require further research, as in the case of defining the nature of metaphor paths in the diachronic dimension (Trim 2008). It is this diachronic dimension that can help to explain why certain cross-language differences in mappings exist and is one of the mains aspects that differentiate conceptual networking models from major works on Conceptual Metaphor Theory. An in-depth diachronic analysis is beyond the scope of this chapter but it could be argued that this dimension makes mapping scenarios of shared conceptual metaphors more explicit. This can be seen in the marriage metaphor illustrated below, which appears to form part of a much larger BUSINESS CORPORATION = FAMILY mapping in this particular semantic field. Varying cultural influences have led to divergence between English and French in this model (Trim 2007: 86–90). Furthermore, the comprehension of sets of mappings both within one language and across languages is dependent on salience at any given point of time, a factor that can be made explicit by diachronic networking models, (see Trim 2011: chs. 4, 5). The state of continual fluctuation of intra- and interlingual mapping influences degrees of comprehension. In the same vein, it can render the task of a translator, for example, more difficult as to the choice of the right metaphor in the target language.

From a synchronic perspective, the starting-point of a network consists in the existence of conceptual metaphors, such as the MOTHER = ORIGIN metaphor (Lakoff 1987: 79–90). This links linguistic metaphors, i.e. metaphors found in the languages themselves, to the core mapping process of conceptual metaphors. In this example, we

have linguistic items such as 'mother tongue' and 'mother country'. According to the approach outlined here, this would form a basic metaphor network. As far as cross-linguistic comparison is concerned, variations may be seen in this particular conceptual metaphor. For example, German has the 'mother' concept as in 'mother tongue' (*Muttersprache*), but uses a FATHER = ORIGIN conceptual metaphor for countries as in *Vaterland* ('father country').

Networking units of this kind may be extended in different ways and subsequently create varying levels of cross-language interpretation of the conceptual metaphor. Indeed, secondary conceptual clusters of the core mapping process can differ considerably across languages even if the base conceptual metaphor is shared. If we take the metaphor BUSINESS CORPORATION = FAMILY, which is often used in journalistic texts to describe the different mergers and changes in the business world, it can be seen that the model is much more highly developed in French than in English (Trim 2007: 72–79). The concept of marriage might possibly be used in English for a merger between corporations, although the latter term, (i.e. 'merger') is probably more common. Thus, the French sentence "*ce **mariage** donnera naissance au huitième établissement bancaire de la zone euro*" (*Le Monde*, 17/1/1999) could possibly be rendered in translation as 'this *marriage* will produce the eighth largest banking institution in the euro area'. However, the conceptual metaphor is often extended in French to associated fields such as politics. The sentence "George Bush and 'Schwarzy' made a good '*marriage*'" is a direct translation from the French "*George Bush et 'Schwarzy' ont fait un bon 'mariage'*". This refers to the political affiliation between the President of the United States and Arnold Schwarzenegger, who was elected Governor of California. Although it is possible in French, it appears inappropriate or unidiomatic in English.

Other extensions in networks involve the chaining of items to the core metaphor. The term 'computer virus' has attracted metaphors from the entire medical field, such as 'contamination', 'epidemic', 'injection', 'infected', and so on (Humbley 2004: 205). Networked units can also be extended in discourse in the form of phraseological units based on idioms (Naciscione 2004: 4–5). However, since the same idiomatic expressions are not used across all languages, other images are created from different idioms to express identical meanings. The exception is where cultural overlap in the form of borrowed calques is involved. The idiom 'his life hangs on a thread', which has exact replicas in German *sein Leben hängt an einem Faden* and in French *sa vie ne tient qu'à un fil*, is a case in point (Newmark 1985: 304).

The chaining of metaphors in discourse can, however, become language-specific even if the same conceptual metaphor is shared. As was seen in the marriage metaphor, the conceptual metaphor MARRIAGE = MERGER might be shared between English and French but extended discourse metaphors often become strange and inappropriate in translation. The following passage of discourse-chaining in French makes full use of the marriage metaphor in celebrating mergers between banks:

(4) *Accueillant, Michel Pébereau offre aux dirigeants des banques "**un repas de** *mariage**". La banque dirigée par Michel Pébereau veut éviter, pour **réussir son** *mariage, de commettre les mêmes maladresses que les équipes de la Société* *générale. Ayant tourné, non sans regrets, la page de son projet de **mariage à** *trois, la BNP concentre ses forces sur la réussite de la fusion avec Paribas.*

(*Le Monde* August 31, 1999)

Lit. 'As a welcoming gesture, Michel Pébereau (CEO) invited bank managers to a "*wedding feast*". In order to *make a success of its marriage*, the bank's manager, Michel Pébereau wants to avoid making the same mistakes made by the staff at SocGen. Having turned the page, not without some regrets, in connection with his project involving a *three-way marriage*, the BNP is concentrating its energy on making a success of its merger with Paribas.'

Although these metaphors are easily understood, the extended use of this metaphor in discourse does not fit each language in the same way. Extended use of the 'marriage' metaphor would be a case in which, for example, literal translation of the metaphors would be inappropriate.

How metaphors may develop in varied patterns in different languages and countries has been studied by Musolff (2004) in relation to the discourse of the European Union in English and German. The former Soviet leader Mikhail Gorbachev employed the metaphor 'Common European House' to promote the idea of Europeans living together in harmony. However, the conceptualization and interpretation of this metaphor turned out to be different in Western and Eastern Europe for cultural reasons. The Soviet concept of 'a house', (*dom* in Russian), is usually associated with a communal tenement block containing separate apartments, whereas the concept of 'a house' in Britain, the United States, and possibly other parts of Western Europe is one of a one-family, owner-occupied house on its own fenced land. The different conceptual structures led to misunderstandings and mistrust between the West and East about what Gorbachev's real intentions about a common Europe really were (Musolff 2004: 127–140). According to Chilton and Lakoff (1995: 54), Gorbachev's image of the house is thus represented by the notion of collective responsibility within a common structure having the same roof, entrance, and so on, but with separate independent units. Western reception of the metaphor was an image of a single unit bordered by walls and fences with no internal separations. It can be imagined that the latter interpretation would create confusion as to the idea of a common house. If the mapping is interpreted according to Russian culture, it is also conceived by some politicians to represent a COMMON HOUSE-AS-TENEMENT BUILDING metaphor. In the field of power politics, who is therefore going to be the 'tenant' in the house, and who will be the 'landlord'?

With regard to the marriage metaphor, two types of cross-language matching processes are involved in its translation. Lakoff (1987: 312) offers one approach to this dichotomy:

> The difference between translation and understanding is this: translation requires a mapping from one language to another. Understanding is something that is internal to a person. It has to do with his ability to conceptualize and to match those concepts to his experiences, on the one hand, and to the expressions of the new language on the other. Translation can occur without understanding, and understanding can occur without the possibility of translation.

If this approach is accepted, cross-language comparison involves the mapping of language systems, in the case of translation, and the mapping of conceptualizing capacities with regard to comprehension. However, it is argued below that the way language systems in the form of conceptual networks become established over the course of time can also influence conceptualizing capacities, and therefore the comprehension of metaphors.

Before turning to this issue in greater detail, let us consider one other aspect of network structures. An additional and very common form of extended metaphor networks, also proposed by Lakoff (1987: 285), involves the structure of scenarios. They may represent a particular purpose as in the source-path-goal schema described by Lakoff or simply the consequences of a series of events. In the case of languages with shared cultures, as in Western society, the series of events are usually common in the scenario as well. This gives rise to similar or identical conceptual metaphors in many instances. However, as was seen in the marriage metaphor, even closely related languages can vary considerably in their linguistic metaphors. Perhaps surprisingly, some linguistic metaphors are not very easy to interpret even when based on common conceptual metaphors.

To summarize, networks thus consist of a basic conceptual metaphor from which different linguistic metaphors are derived. They may be very restricted in the form of two or three items or range to extremely extensive structures that become almost infinite. The latter type is well represented by the field of drugs metaphors.

4.   Metaphor in drugs terminology

The following analysis is based on a corpus of data compiled from a comparative study of metaphors in the international press (for further details on the drugs metaphor network, see Trim 2007: 33–47). The languages of English, French, German, and Italian were analysed and metaphors were taken from major international newspapers and magazines, including *Time* (TM)*, International Herald Tribune* (IHT), USA; *Le Monde* (LM)*, Le Figaro* (LF)*, l'Express* (EX)*, Le Nouvel Observateur* (OBS), France; *Der Spiegel* (SP)*, Die Welt* (DW), Germany; and *La Reppublica* (LR)*, l'Espresso* (ES), Italy. In the following analysis, the examples taken from the data are followed by the abbreviated references in brackets outlined above to denote the specific publication together with its date. The original corpus was taken from the archives of these publications

spanning a 20-year period from 1970 to 1990 during the height of the American anti-drug campaign initiated by the Nixon administration. All types of metaphoric expressions were recorded from articles relating directly to the drug problem. Items were classified according to language and the context of the overall drugs scenario. The study of different types of drugs metaphors in these European languages revealed that it is possible to organize them into a sequence of events that extends from the physical effects of drugs-taking, through the social attitudes resulting from these effects, to the consequences of a drugs war against the negative consequences of their consumption. In addition, the actual drugs war phase involves a chain of events in the ongoing fight between the drugs producers and the authorities engaged in the conflict. This comprises the production of drugs, their transportation, their distribution, the wealth they create, and the resulting power acquired by drugs bosses around the world.

The conflict between drugs producers and the authorities is an ongoing conflict around the world that goes back at least to the days of US President Nixon. At that time, the American administration attempted to curb production and distribution centred on geographical areas such as South America and South-East Asia. The CIA invested a great deal of time and money, for example, in fighting the drug bosses in Colombia in order to reduce drugs smuggling into the USA. More recently, geopolitical events have changed and a glance at news items on the Internet in 2008 shows that the focus is now also on Afghanistan:

(5)   NATO defence ministers Friday authorized their troops in Afghanistan to attack drug barons blamed for pumping up to US $100 million a year into the coffers of resurgent Taliban fighters. (...) Afghanistan supplies 90% of the world's heroin, a trade worth billions of dollars. (...) Troops will only be able to act against drug facilities if authorized by their own governments; only drug producers deemed to be supporting the insurgency will be targeted...

(yahoo.com; retrieved October 10, 2008)

This is a very different investment of time and money from that of the Colombian drugs war but many of the same metaphors continue to be used through the course of time. One network referring to drug bosses involves a large range of associated aristocratic terms in the form of 'drug kings', 'drug princes', 'drug lords', and even 'drug dons'. It can be seen that the expression 'drug barons' in the news item above, for example, continues to be used in this network.

5.   Shared cross-language concepts in drugs metaphors

The fact that drugs have become a common problem in Western society has naturally led to the borrowing of metaphors between European languages. In the past, this occurred particularly from Spanish and English to other languages. As was noted earlier in Section 4, South America has been a major area of production for a long time and

this led to Spanish terms, such as *mulas*, to designate carriers of drugs who swallow them in plastic bags to escape detection at border controls. The term has been calqued into other languages as in English 'mule', French *mulet* and German *Maultier*. The conceptual metaphor DRUGS = WAR has likewise led to substantial loaning of military metaphors from English to other languages. A comparison of the international press indicates, for example, that the German title *Drogenzar Bennet* came from English 'drugs czar Bennet', referring to former President Bush's (senior) right-hand man in leading the drugs war.

Apart from the large amount of loaning resulting in a common stock of shared conceptual and linguistic metaphors in different European languages, it is also clear that a great deal of drugs terminology has been created independently in each language due to common trends or even universals of metaphor creation. This would support the assumption mentioned earlier that shared idioms may create language-specific extended units. It is likely, for example, that identical physiological models involving spatial orientation fit into the conceptual system of a large number of languages according to Lakoff's Spatialization of Form Hypothesis (1987: 283). UP = POSITIVE and DOWN = NEGATIVE are schemas that are frequently found in the physical effects of drugs (e.g. 'coke picks you up', 'the postcrack letdown'), whereas CONTAINER schemas involving INSIDE = CONVENTIONAL SOCIETY and OUTSIDE = NON-CONVENTIONAL (e.g. 'the underground of the drugs world', 'the fringes of society') are typical bases for metaphors that express social attitudes. Conventional society would thus involve a three-dimensional orientation since 'underground' is vertically outside it.

Cross-language comprehension of drugs metaphors is thereby facilitated by loaning, universally based processes, and common conceptualizing capacities, to use Lakoff's term, in Western society. Of course, this is contingent upon the existence of an equivalent image in the native language that is also understood, such as in the case of the term 'mule' for a drugs-carrier. If data from the corpus of drugs metaphors is considered, concepts involving vertical orientation have equivalent identical images in all the languages concerned. Upward movement, in expressions such as 'coke picks you up' for a good sensation, and downward movement in 'the postcrack low' for negative sensations, is found in all the languages examined in this study. Spatial orientation appears to be a particularly good example of more uniform patterns in conceptual and linguistic metaphors.

6.   Non-contextual factors that aid cross-language comprehension

Once factors outside the framework of these uniform patterns are considered, however, it is possible to discern the difficulties in the comprehension of metaphors created in another language. The sociolect of drugs, which displays features of both these universal and cultural aspects, contains metaphors that may not be understood even by all members of the same language-speaking community. Indeed, this particular sociolect

shares similar features across the different languages under study due to the international phenomenon of the drugs war, but it also reveals considerable variation in cross-language networks.

The analysis of metaphor comprehension and interpretation here takes a hypothetical situation as its starting point: a native English speaker is faced with the task of trying to understand the metaphors created in the other foreign languages.[4] This is regardless of whether he/she has insider knowledge of the drugs scene in the English-speaking world. The categories of metaphors will be compared with contextual information to ascertain the extent to which the latter is essential for comprehension purposes. Assuming the English native speaker has a good knowledge of the other languages in question, which metaphors are likely to be understood if he/she reads an article on this particular subject?

Using the three languages of French, German, and Italian in the study, the hypothesis that conceptual networks can help in the cross-cultural comprehension of metaphor is demonstrated. This implies that there are non-contextual features that aid such comprehension, whether the context is an additional help or not. Among the features in this particular semantic field I discuss are: (i) similar cross-cultural analogies in the type of conceptual metaphor used, and (ii) the presence of cultural overlap between the languages in question. In addition, there is also the question of the conventionality of the metaphor in question, which is the first to be examined.

6.1   Conventional metaphors

Conventional metaphors are those items that are entrenched in the standard language and were included in the drugs metaphor corpus. It is assumed that a good level of the foreign language has been acquired and the metaphor is consequently relatively familiar and hence easy to understand.

An example in this category is the French item *brûlant* ('burning') in a HEAT = CONTROVERSY conceptual metaphor:

(6)   *C'est précisément ce jour-là que la Cour suprême était sur le point d'ouvrir le* ***dossier brûlant*** *des extraditions de "narco-traficantes".*   (EX March 27, 1987)
'It was on that day that the Supreme Court was on the point of opening its "*burning case*" (i.e. controversial case) on the extraditions of drugs traffickers.'

In English, 'a burning case' would not normally make a great deal of sense but the context might help in making the meaning clear. This is a case of variation in

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cross-language collocations since there is also the term 'a burning question' with the sense of 'controversial' in English.

There are a number of other expressions that are related to similar images of danger in French; e.g. '*brûler un feu rouge*' (to burn, i.e. 'go through', a red traffic light). If the conventional metaphor is not known, cross-cultural interpretation is made easier with shared connotations of the HEAT image as in 'hot spots', (dangerous areas to be in) or in other collocations such as 'a burning question'. However, a good knowledge of the language would clarify the meaning, as this is a standard conventional metaphor in French. Standard collocations in the form of conventional metaphors therefore aid comprehension. It could be said that they also form part of conventional networks. If more dynamic networks are taken into consideration, the other patterns outlined earlier play a role in cross-language comprehension.

6.2 Similar analogies

Even though two languages do not share the same conceptual metaphor, they may use very similar ones that should not cause a great deal of difficulty in comprehension. An example here involves the production of drugs, which is equated with cooking in French, (COOKING = DRUGS PRODUCTION), discussed in Section 2. The following situation refers to the idea of a sauce being used for a concoction of ingredients mixed together by an amateur drugs producer:

(7) *Dans les garages équipés* (...) *il manipule les ingrédients de sa **sauce**.*

(OBS May 11, 1989)

'In fully equipped garages (...) he mixes the ingredients of his *sauce*.'

In French, there are a number of conventionalized expressions networked to this image that makes comprehension clear to a native speaker: *mettre quelqu'un à toutes les sauces* (to use all kinds of sauces on someone = 'to treat someone in all kinds of ways'); *varier la sauce* (vary the sauce = 'vary the presentation'). In English, a term like 'brew' might be used in English rather than 'sauce'. This term also appears in the corpus in English in relation to the same activity:

(8) After dissolving a substantial quantity of coke in an alkaline "basic" solution, they boil the *brew* until a whitish lump, or freebase, is left. (TM July 6, 1981)

There is a cultural difference between the two languages in this context in which the brewing of beer represents a more relevant image in an English-speaking culture than cooking. However, the two conceptual metaphors, COOKING/BREWING = DRUGS PRODUCTION are very similar, particularly as the notion of ingredients is used in the sentence, and interpretation of the French item is likely to be relatively easy.

6.3 Cultural overlap

It was seen earlier that many idiomatic phrases and figurative expressions overlap amongst languages. This is usually due to language contact and borrowing but it is also conceivable that some identical expressions may have developed independently if they contain more universally based elements. The following item, 'into the blue', may be of this kind due to the deep unknown of the blue sky, although it is more likely to have been borrowed in one direction or the other at some time in the past. This example in German uses the expression to denote an injection of drugs that could lead to unknown or unexpected consequences:

(9) *Der mit Stoffen fixt, die mit Puderzucker oder Strychnin verstetzt sind, riskiert den* **Schuss ins Blaue** *– einfach weil sich für den Trip erforderliche Menge nicht akkurat genug dosieren lässt.* (SP May 24, 1982)

'Those who inject themselves with substances that are mixed with castor sugar or strychnine take the risk of a *shot into the blue* – simply because the dose required for the trip cannot be determined accurately enough.'

The German *Schuss ins Blaue*, or literally 'shot into the blue', is a play on words with the term *Schuss* meaning both an injection and a sudden movement forwards or upwards. It includes a standard expression used in ordinary language, *ins Blaue*, meaning a random or uncertain destination. In English, there exist similar expressions like 'to go off into the blue' or 'out of the blue', which signify the unknown. There is therefore a certain degree of overlap between the two languages, which tends to aid cross-language comprehension.

However, the nature of the sentence and its explicit content could give the impression that something more drastic was involved. Blue might represent the sky and therefore possibly heaven. This, in turn, would signify death and so its literal translation in a foreign language may be slightly ambiguous.

Cultural overlap can also refer to specific jargon used in the drugs scene. The notion of being under the influence of drugs may be expressed by Italian *la scimmia sulle spalle* ('the monkey on one's shoulders'). American English also appears to use the monkey image to express this sense in the same context.[5] The inclusion of 'being on one's shoulders' may vary across the languages, but the central image of the monkey could help comprehension in this case. The same kind of image is also used in expressions such as 'to go ape' ('to go mad with anger'), signifying a state that does not imply normal behaviour.

Apart from these features of cross-language metaphor, the actual structure of networks may help comprehension in a number of different ways. The next section looks at universal trends first.

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5. Personal communication from a member of the audience during the presentation of this study at the RaAM7 conference.

7.   Cross-language universals in conceptual networks: Individual creations

Certain individual metaphors in a foreign language, in the same way as interpretation of creative metaphors in one's own language, may be deciphered by characteristics that are of a more universal nature. Universals may be present in what may be defined here as individual creations, or neologisms, limited to the drugs sociolect, and in more generalized networks, which are very common in drugs metaphors but which are also present outside this variant.

The feature of orientation was discussed in Section 5 and it is clear that positive physical effects from drug consumption are portrayed by upward movements in cross-language concepts. Sometimes this feature occurs in language-specific neologisms. The drugs scene not only involves the poor or down-and-outs on the streets; it encompasses people from many walks of life. Apart from its consumption by rock stars and other celebrities, cocaine has been fashionable among the rich for a long time, including certain sections of the 19th century European aristocracy, according to information in the corpus. It is also present in the business world.

The following image of rockets in German gives the impression that cocaine is used as a 'pick-me-up' due to its upward movement. Contextual information helps in this example but universal knowledge of UP = POSITIVE can help to clarify the exact meaning:

(10)   *... als **Zwischendurchrakete** im Büro oder vor einer wichtigen Geschäftsbesprechung.*   (SP June 21, 1982)
'... as an *in-between rocket* in the office or before an important business meeting.'

Traditionally, modern businessmen have used alcoholic stimulants such as whisky and cocktails as 'pick-me-ups', as portrayed in Hollywood movies. The 'cocaine rocket' here symbolizes the sniffing of cocaine as a stimulant between business meetings and its image is in line with the UPWARD movement for a positive sensation. This metaphor was not found among the English data in the corpus regarding the physical effects of drugs and is therefore most probably a German neologism. This use of the metaphor, in fact, goes back to the 1980s when cocaine sniffing was fashionable among businessmen. It may have gone out of fashion in these circles now, or at least it is no longer reported in the media, but the ordinary consumption of cocaine continues today, often in different forms and with different names.

8.   Universals in generalized networks

In addition to universal features, such as orientation, in individual creations and neologisms, drugs terminology reveals large networks of more generalized metaphors that have more uniform patterns across different languages. This will tend to increase

cross-language comprehension. Vast numbers of these metaphors are produced, a case in point being the whole range of military terminology used to talk about the drugs 'war': 'armies', 'crusades', 'battles', 'beachheads', 'blockades', 'counter-offensives', 'sieges', 'truces', 'front lines', 'assaults', and so on. All of these are used in some form or another to describe different aspects of the drugs war scenario.

A few examples illustrating social attitudes towards drugs users are cited here. They often manifest themselves in the form of binary concepts and include conceptual metaphors such as health/disease or dirt/cleanliness. Social attitudes toward the habits of drug taking are thus associated with disease and dirt, an image that is reflected across European languages generally:

(11) We are committed to getting rid of the *cancer* that would destroy our very existence as a nation. (TM/04/09/89)

The cancer metaphor is one that is frequently used in many semantic fields to denote a deep-rooted problem in different aspects of society. Likewise, the opposite connotation of health is used in the following context of being 'free of drugs'. The following French example of 'healthy' (*sain*) is used to describe a school that is reputed to have no children taking or trading drugs:

(12) *La mère de Julien, 15 ans, a pris des renseignements dans trois lycées parisiens avant d'inscrire son fils dans un établissement réputé "**sain**".*

(EX March 25, 1988)

'The mother of 15-year-old Julien made inquiries among three Parisian schools before putting her son's name down for an institution reputed as being "*healthy*".'

Further contextual information makes this connotation of a conceptual metaphor HEALTH = DRUGS-FREE easy to understand in any European language. These kinds of conceptual metaphors can very easily build up large networks of linguistic metaphors. 'To clean (oneself)' may develop slightly different connotations in different languages but such development will be along the same lines. The following two examples in the English data signify 'getting rid of corruption' and 'being disassociated from drugs':

(13) In Bolivia and Peru, where the cocaine trail begins, governments have made considerable progress toward *cleansing* themselves of corruption.

(14) In a wash cycle that often takes less than 28 hours, the drug-smugglers can turn coke-tinged $20 and $100 bills into *squeaky-clean* assets.

(TM December 18, 1989)

This may be developed further as in the Italian expression *mi sono ripulito* ('I have cleaned myself'), signifying 'giving up drugs' in the relevant context. This type of conceptualization is similar to figurative language used outside the field of drugs. In general, HEALTH is positive and DIRT negative as the following examples quoted by Deignan (1997: 36–39) show:

1.   Written and produced by John Hughes ... the film is good *clean* family fun.
2.   He was a *filthy* pervert. God knows how many women he molested.

These various examples show that different languages have similar links in the conceptualization of their networks. However, common conceptual metaphors can also produce a considerable amount of variation in interpretation. The following discussion now looks at how metaphors in different languages may challenge ordinary comprehension.

9.   The limits of comprehension: Variation in cross-language networks

It was seen in the marriage metaphor described in Section 3 that this particular image in the business world appears to be more common in French than in English. Metaphors can thus become more entrenched in some languages than others. There may be a number of cultural reasons for this but the result is that one conceptual metaphor may set off a kind of "snowball effect" in metaphor creation. The more linguistic metaphors are created in the network, the more their presence in a language's lexicon tends to induce others to follow suit, in the same way as chaining processes.

In addition to lexical variation, further developments may not only introduce new words linked to the underlying conceptual metaphor, the various lexemes can undergo different morpho-syntactic changes that can not only modify the semantic component but also their relative transparency.

The HEAT image was discussed in Section 6.1 in relation to controversy and danger. The interesting point about this image is how its network may be extended into areas that may be less easy to interpret. The same image is used in Italian to denote DRUGS-RIDDEN or, in a wider sense, dangerous urban places that have no future since they have been overtaken by the drugs scene:

(15)   *Mentre la zona di piazza Euclide, nel quartiere Parioli, sembra essere una piazza* **bruciata**.   (ES January 10, 1982)
        'While the area around Euclid Square, in the Parioli district, seems to be a *burnt* (drugs-ridden) square.'

It was also seen that the v-ing form of 'burning' from the HEAT metaphor has the sense of 'controversial' as in French *brûlant*. A further syntactic extension to the form 'burnt', or *bruciato* in Italian, produces the sense of 'drugs-ridden' or, reading deeper into this particular case, 'a drugs-ridden district with no future'. The change from present to past participle thus not only changes the meaning, it arguably makes the metaphor more difficult to interpret than the metaphor 'burning' without further contextual information. It is clear that the item is not a conventional metaphor like 'burning'. The change in inflectional ending in this case has rendered the metaphor semantically more opaque.

Other terms that have been conceptualized with varied meanings across languages include French *raide* ('stiff'), meaning 'high on drugs'. This could lead to ambiguity or confusion across languages. In English, a 'stiff' is usually a reference to a corpse and an initial reading of the metaphor may give the idea that death is to be inferred.

Similarly, the Italian metaphor *secco* ('dry'), which does not mean 'high on drugs' but, in this case, 'dead', in drugs terminology, may also prove problematic. Other language-specific items include the notion of 'horse-riding' in French and Italian that, again, signifies being under the influence of drugs: *marcher au cheval* (Fr. 'horse-riding'), *a cavallo* (It. 'on horseback'). If the term 'horse-riding' were employed in English in this context, it would probably not make sense.

A closer look at the structures of these items often reveals that they form part of substantial networks in the language concerned. This raises a further issue in that, although the metaphor may appear to be strange to someone reading it from the viewpoint of another culture, it is likely that native speakers are able to interpret them more easily.

10. Native versus non-native comprehension

If the first language-specific item of 'burnt' mentioned in the previous section is considered, an analysis of dictionary attestations in Italian shows that it is used in a number of figurative expressions:

(16) a. *carriera bruciata*   (burnt career = 'ruined career')
      b. *speranze bruciate*   (burnt hopes = 'lost hopes')
      c. *gioventù bruciata*   (burnt youth = 'lost youth')
      d. *bruciare gli avversari* (burn the enemy = 'conquer the enemy')

The connotation of 'no future' in drugs-ridden areas can already be seen in a number of other standard expressions in the language although they are not specifically related to the drugs field. These constitute a BURNT = NO FUTURE conceptual metaphor in Italian that is fairly extensive. The result is that a native Italian speaker may more readily interpret the 'burnt' metaphor than a non-native speaker, even if this specific instance had not previously been encountered.

The same would probably apply to the French item *raide* ('stiff'). The connotation is likely to be more familiar to French speakers since the term is also used for drunkenness. It is thus a term used for a mental state that is not a normal conscious one due to the influence of alcohol or narcotics.

The metaphor of dryness has a long history behind it within the area of European languages.[6] There are well over a hundred metaphors that refer to dryness, and different languages have split off into divergent networks through time. The Italian item *secco* ('dry') can be seen in other related expressions such as *restarci secco*

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6. For further details on the comparative history of the dryness metaphor, see Trim (2005).

(to remain dry = 'to die suddenly') or *fare secco qualcuno* (to make someone dry = 'to kill someone'). Several centuries ago, English also had the notion of a 'dry person' referring to a corpse, but this metaphor has died out. Consequently, an English speaker may find it difficult to find the correct interpretation of this figurative use of *secco* at the present time. Cross-cultural comprehension therefore varies considerably along the time dimension.

The items discussed so far are metaphors that are not used exclusively to talk about the drugs scene but are metaphors in common use that are also used by drugs users to describe different states or situations. The 'horse-riding' metaphor, however, can be categorized as terminology used exclusively by drugs users. Again, further research into the item reveals that it is conceptually linked to extensive networks in French and Italian.

In English, there are not many comparable figurative expressions with the same meaning. There is the expression relating to being on horseback, 'to be on one's high horse', meaning haughty or arrogant. However, this does not have the same connotation of having a strong effect as in the Italian examples:

(17) a.   *medicina da cavallo*   (horse medicine = 'strong medicine')
      b.   *dose da cavallo*   (horse dose = 'strong dose')
      c.   '*febbre da cavallo*'   (horse fever = 'strong fever')

This can be extended to other collocations in Italian such as 'significant errors', i.e., the errors are serious ones, reflecting the interpretation of strength:

      d.   *spropositi da cavallo*   ('horse errors' = 'grave errors')

Similar attributes of strength can be found in French:

(18) a.   *fièvre de cheval*   ('horse fever' = 'strong fever')
      b.   *remède de cheval*   (horse remedy = 'strong remedy')
      c.   *haleine de cheval*   (horse breath = 'strong, i.e. badly-smelling, breath')

Although the idea of strength may be seen in English idiomatic expressions such as 'to work like a horse' ('to work very hard'), it is doubtful whether this connotation would be reflected in the interpretation of the 'horse-riding' image concerning drugs having a strong effect on the drugs user. The point here is that the presence of extended networks in the HORSE = STRENGTH conceptual metaphor in French and Italian no doubt helps a native speaker to interpret the drugs metaphor more readily than a non-native speaker.

11. Conclusions

This study suggests that, in the light of new creations illustrated in the drugs sociolects of European languages, the way in which metaphoric mappings are networked can influence their ease of interpretation. This is particularly the case when contextual information

is missing or cannot help interpretation. The more conceptual networks are shared cross-culturally or are known to speakers of other languages, the greater the level of cross-language understanding. The conceptual metaphors of 'burning' and 'horse-riding', in contrast, may be at the limit of comprehension for speakers of languages who do not have these concepts, while a large number of similar expressions to these metaphors in a language may considerably help native speakers in their interpretation.

Sharing may, however, vary between the conceptual and linguistic levels. Morpho-syntactic variation in lexemes, such as 'burning' and 'burnt' from the verb 'burn', can considerably influence the degree of interpretation. If two languages already share the 'burning' variant but only one has the 'burnt' metaphor, a considerable amount of flexibility in deducing the meaning of the latter may be required on the part of the non-native speaker.

It may therefore be argued that networks, in both their conceptual and linguistic forms in the figurative lexicon, have a major role to play in the comprehension of cross-language metaphors. The notion of networks represents the types of associated mappings that are very often naturally understood by the native speakers of the language concerned. Their presence determines the course of ongoing fluctuations in mapping processes and a knowledge of their patterns can thus help identify meanings in metaphor that initially appear to be incomprehensible.

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Metaphor, topic, and discourse

Conceptual types of terminological metaphors in marine biology

An English-Spanish contrastive analysis from an experientialist perspective

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Metaphor can be analysed from a structural, functional, conceptual, or contrastive point of view. From a conceptual viewpoint, an experientialist account of conceptual metaphor includes: (i) mechanisms of metaphorization, (ii) image metaphors vs. multiple-correspondence metaphors, (iii) motivation for metaphorical transfer, and (iv) conceptual themes (Alexiev 2004). This chapter draws on Alexiev's parameters to analyse an inventory of metaphorical pairs in English and Spanish extracted from a bilingual corpus of specialized research articles and publications on marine biology. The results obtained point to the existence of cross-linguistic conceptual patterns in specialized discourse in the two languages studied. These findings and their implications are discussed in relation to some of the claims of Lakoff's (1993) Conceptual Metaphor Theory.

Keywords: image metaphors, metaphorical pairs, multiple-correspondence metaphors, cross-linguistic conceptual patterns

1. Introduction

Previous studies have shown that metaphor plays a pivotal role in the terminologization of lexical items in knowledge fields such as oncology (Faber and Márquez 2004, Tercedor 1999a,b, 2004), computer science (Meyer et al. 1997, Meyer and Foz 2001), and architecture (Caballero 2003a,b). This occurs because, apart from sometimes being just a matter of semantic extension, metaphorical analogy can also be a means of lexical creation both in general and specialized language. The research reported in this chapter provides evidence that metaphor is also pervasive in the domain of marine biology, thus reinforcing the claim that metaphor-induced terminologization is a widespread phenomenon that occurs to some extent in all specialized domains.

According to the Experientialist view of Conceptual Metaphor Theory (Lakoff 1993), metaphor is all around us, and underlies our conceptualization of reality. Not surprisingly, metaphor yields conceptualization patterns, which are believed to be shared by speakers across languages. Nevertheless, cognitivist studies of metaphor in general language also highlight the existence of cross-linguistic differences in this regard (see Al-Zoubi et al. 2006 for a contrastive study of English and Arabic lexical units used in politics and religion, or Kövecses 2002, 2005 for a contrastive study of everyday English, Hungarian, Chinese, and Spanish lexical units featuring bodily states). These differences seem to arise largely from cognitive and cultural aspects related to linguistic formalization.

According to Faber and Márquez (2004: 207), corpus data provide an empirical basis for research in specialized communication, and show that metaphor consistently occurs in specialized language texts in the field of oncology. The results of the present study show that this is also true for marine biology texts in which the same metaphors often occur in English and Spanish. However, at the same time, I also point out the existence of cross-linguistic differences in terminological metaphorization due to factors of a cognitive and cultural grounding, which give rise to subtle cross-linguistic differences in the domain of marine biology. This finding provides interesting insights into the nature of conceptual metaphor, showing that metaphorical thought is the result of neither nature nor nurture, but rather a combination of both.

2. Methodology

2.1 Text selection and corpus description

The texts analysed in the field of marine biology were: (i) research articles published in academic journals; (ii) (semi-)specialized books.

The *Journal Citation Reports* (JCR) website was used for the classification and quality evaluation of the journal articles.[1] The following factors were considered:

a. Citation index of the journal
b. Subject of the journals
c. Topic of the articles (only English-language articles)
d. Availability of complete on-line articles
e. Date of publication

All of the articles used in this study are complete articles published between 1994 and 2008. The JCR is an on-line service that provides a ranking of the most frequently cited journals published by over 3,000 publishers worldwide. Journals are ranked according to a citation index defined by the website itself.

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1. http://www.scimagojr.com/index.php.

Apart from the citation index criterion, the English-language journals used were singled out for their subject matter with a view to making it as varied as possible, for the analysis of a range of journals dealing with different subtopics within marine biology should guarantee a more varied set of metaphorical terms. The Mexican journal *Ciencias Marinas* was also used because it publishes bilingual articles in English and Spanish, and this facilitated the comparison of correspondences between both these languages. Nevertheless, only two articles from this journal were chosen because of its low impact.

Unfortunately, this type of classification could not be applied to the Spanish-language journals because of their low JCR ranking. Only three journals appeared on the list, and all had very poor rankings. In fact, one of them ranked 0.00. Although the rest of the journals in the Spanish corpus are not on the JCR ranking list, they are considered quality publications. The journal *Boletín del Instituto Español de Oceanografía* is published by the Spanish Ministry of Science and Innovation. The rest are published

Table 1. English language journals

English language journal	JCR Citation Index	Number of articles
Fish and Fisheries	0.423	3
Microbial Ecology	0.255	1
Fish and Shellfish Immunology	0249	3
Marine Biology	0.123	9
Helgoland Marine Research	0.111	1
Environmental Biology of Fishes	0.078	2
Ciencias Marinas	0.049	2
Total		21

Table 2. Spanish language journals

Spanish language journal	JCR Citation Index	Number of articles
Revista de Biología Marina y Oceanografía	0.041	8
Ciencias Marinas	0.049	2
Investigaciones Marinas	0.00	2
Revista de Biología Tropical	–	4
Boletín de Investigaciones Marinas y Costeras	–	1
Boletín del Instituto Español de Oceanografía	–	1
Interciencia	–	1
Total		19

either on the *SciELO* (Scientific Electronic Library Online) or *Redalyc* (*Red de Revistas Científicas de América Latina, el Caribe, España y Portugal*) websites. These websites follow a number of strict norms, guidelines, and selection criteria that guarantee the quality of the scientific journal articles they host.[2]

Four (semi-)specialized books were also selected. All texts were published between 1997 and 2007, and are mainly addressed to biology students and readers with some previous knowledge of marine biodiversity.

2.2   Corpus processing

An initial list of terms instantiating conceptual metaphors were extracted from the bilingual corpus and analysed. Once I obtained a list of keywords, I used these patterns to search for other similar ones in the corpus. In other words, I looked for candidate metaphorical terms. This was done semi-automatically with Wordsmith Tools*tm*, a lexical analysis programme. For example, I resorted to basic marine biology entity names such as 'crab', 'shark', 'fish', and 'sea' to find English-Spanish metaphorical term pairs (e.g. 'hermit crab'/*cangrejo ermitaño*, 'sand tiger shark'/*tiburón toro*, 'swordfish'/*pez espada* and 'sea cucumber'/*pepino de mar*). This was done by using Wordsmith Tools to obtain collocates for 'crab'/*cangrejo*, 'shark'/*tiburón*, 'fish'/*pez*, 'sea'/*mar*, and so on. Many of these collocates clearly indicated the existence of metaphor, which had been used to designate specific types of crab and shark as well as plants that grow in the sea. Another example is the pair 'species'/*especie*, which turned out to be recurrent, yielding terminological units like 'cosmopolitan species'/*especie cosmopolita* and 'invasive exotic species'/*especie exótica invasora*. It was also possible to identify other pairs stemming from the same root. This was the case for 'colon*' ('colony'/*colonia*, 'colonize'/*colonizar*) and 'migra*' ('migratory'/*migratorio*, 'migrant'/*migrante*, 'migrate'/*migrar*).

Using the names of common marine organisms as keywords did not always help in finding metaphorical pairs in the two languages. In fact, an organism may be assigned a metaphorical name in one language and a different name in another language. In this case, to identify the interlinguistic equivalents, it was necessary to turn to the scientific names of organisms, which usually co-occur with their metaphorical alternatives. For example, by using Wordsmith Tools to examine the co-text of all occurrences of the scientific name *Isistius brasiliensis* in the English and Spanish texts, I found out that 'cookie-cutter shark', the metaphorical alternative name in English for this scientific name, pairs with *tiburón cigarro* in Spanish.

The distributional behaviour of linguistic metaphors also facilitated the identification of metaphorical terms in the same text because they tended to occur in close

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2.   The *SciELO* website's criteria for journal evaluation and selection can be accessed on http://www.scielo.org/php/level.php?lang=es&component=44&item=2. Last accessed on 5 May 2008. The *Redalyc* website's criteria for journal evaluation and selection can be accessed on http://redalyc.uaemex.mx/redalyc/src/proyecto/criterios.html. Last accessed on 5 May 2008.

proximity. Metaphor distribution across texts has been examined by various researchers interested in identifying systematicity in the use of metaphor in discourse (Cameron 2007, Martin 2007, *inter alia*). They have found that linguistic metaphors are not evenly distributed but occur in clusters (Cameron 2007: 121), and that the occurrence of a given metaphor increases the chances for this metaphor to be used again in the subsequent discourse (Martin 2007).

In line with this, my research encountered linguistic metaphors that tended to occur together in the same discourse contexts both in English and Spanish. This is the case of the semantically related terms 'nutrient cycle (flux)'/*ciclo (flujo) de nutrientes*, 'organic cycle'/*ciclo orgánico*, 'food chain'/*cadena trófica*, 'energy flux'/*flujo de energía* and 'organic matter recycling'/*reciclaje de materia orgánica*. The same applies to linguistic metaphors such as 'monopolize'/*monopolizar*, 'capitalize'/*capitalizar*, 'parental investment'/*inversion paternal*, '(primary, secondary) production'/*producción (primaria, secundaria)*, and 'spend energy'/*gastar (invertir) energía*.

At the conceptual level, I was able to formulate generic, content-rich conceptual metaphors from linguistic evidence. For example, terms like 'elephant seal'/*elefante marino*, 'seahorse'/*caballito de mar* and 'sea lion'/*león marino* suggest that they could be subsumed by the cross-domain mapping SEA ANIMALS ARE LAND ANIMALS. I then introduced the names of a wide range of land animals in the Wordsmith Tools search option and found an extensive number of marine biology metaphors based on the names of land animals. These findings support Cameron's (2007: 127) theory of *systematic metaphors*: that is systematic metaphor as "a set of semantically-connected (vehicle) terms used across a discourse event or text to refer to a connected set of topics".

In short, it can be stated that, to identify and process marine biology terminological metaphor in a corpus of texts, I followed a methodology similar to that used by Charteris-Black (2004), inasmuch as he not only relies on keywords and candidate terms, but also formulates encompassing conceptual metaphors to give support to his findings in the linguistic structure.

3.   Analysis

The metaphors extracted from the texts were analysed according to: (i) mechanisms of metaphorization, (ii) image metaphors vs. multiple correspondence metaphors, and (iii) motivation for metaphorical transfer. This was done with a view to identifying and analysing similarities and differences between English and Spanish marine biology texts.

3.1   Experientialism and metaphorization

Two main commitments of Experientialism are embodiment and the ecological nature of conceptualization (Johnson 1987, Lakoff 1987, 1993, Lakoff and Johnson 1980,

1999). They are considered to be the underpinnings of conceptualization in general and of metaphorization in particular. Embodiment is a form of categorization inherent to human reason insofar as it is "a reason inextricably tied to our bodies and the peculiarities of our brains" (Lakoff and Johnson 1999: 17). In other words, concepts are created in our minds through the projection of our bodily structure and sensory perception onto *realia*. Furthermore, embodied categorization means that we interact with one another and with our environment, i.e., concepts arise as a result of our ecological nature. "Ecological" should be understood here in terms of "human ecology", viz. "the branch of sociology concerned with the spacing and interdependence of people and institutions" (*American Heritage Dictionary* 2006). As Lakoff and Johnson (1980: 125) state, "concepts are not defined solely in terms of inherent properties; instead, they are defined primarily in terms of interactional properties".

It should be pointed out that embodiment and interaction are generic concepts that must be understood as multi-modal phenomena. I use the term "multi-modal" along the lines of Barsalou (1999), who argues that concepts – or as he calls them, "perceptual symbols" – are experienced as "multi-modal". This means that they emerge because we receive information from different sensory-perceptual inputs. For instance, we conceive the concept 'hammer' based on characteristics such as shape, weight, and texture, and from sensory-motor patterns derived from our experience of using a hammer. In this sense, embodiment is fleshed out by different perceptual facets or sensory-motor experiences.

Lakoff and Johnson (1999: 91) establish a direct link between conceptual metaphor and "embodied realism". They consider that conceptual metaphor also fleshes out embodied realism along with perceptual and motor inferences. In turn, Grady (1997, 1999) affirms that two cognitive operations that give rise to metaphorical conceptualization are resemblance and experiential correlation. Resemblance is a traditional prompt for metaphorical conceptualization in both general language and specialized communication (see Sager et al. 1980, *inter alia*). Experiential correlation consists of a strong conceptual link between two distinct events that iteratively co-occur. This phenomenon usually gives rise to conceptual metaphors because after repeated co-occurrences in our experience of the world, we come to conceive one event in terms of another.

Since resemblance and experiential correlations may be similar among speakers of different languages, the same conceptual metaphors are often used in English and Spanish to refer to specific concepts in specialized domains. These similarities are further accentuated by the fact that both English and Spanish belong to the Western culture, which guarantees an overlapping set of beliefs, values, cognitive schemas, and specialized concepts deriving from these schemas. For example, by virtue of the nature of our visual system, which can be regarded as one aspect of our physical embodiment, the species *Hermodice carunculata* is usually referred to as 'fireworm'/*gusano de fuego* because of the reddish colouring of its skin. This is a case of metaphorical conceptualization based on resemblance.

Experiential correlation is also grounded in our sensory-motor experience. For example, the metaphor MORE IS UP is based on the correlation between QUANTITY and HEIGHT, which is evidenced when we say that we pile *up* books on a table. This metaphorical process is related to what Lakoff and Johnson (1999: 216) call "epistemic causation", viz. "deducing the existence of causation in the world from evidence proceeds from knowledge of the effect". This cause-effect correlation can be experienced by our bodies through *direct* interaction with entities around us. Consequently, because we know the result of touching a wasp (physical interaction), the species *Chironex fleckeri* (a kind of jellyfish) is called 'sea wasp'/*avispa marina*. In other words, one entity resembles another on account of an experiential correlation.

As can be deduced from this last example, resemblance and experiential correlation can sometimes jointly contribute to the creation of metaphorical concepts. Both cognitive operations are not incompatible and can simultaneously be at work in the metaphorization of marine biology concepts. Correlation and resemblance work together so closely that correlation can be regarded as part of the resemblance process. This fact seems to soften Grady's (1999) claim that resemblance metaphors and correlational metaphors must be considered separately on the grounds that in correlational metaphors the two domains have no shared characteristics. For example, as Grady claims, no aspect of the target concept 'more' is shared by the source concept 'up'.

Although resemblance and experiential correlation are two different conceptual operations in most cases, I provide further examples that show that on some occasions resemblance and experiential correlation work very closely together in the metaphorization of marine biology concepts. In the view adopted here, these two cognitive operations are interdependent. In the case of the 'sea wasp'/*avispa marina* example, the experiential correlation is based on a resemblance in behaviour between the two entities and the resulting experience of pain felt by the attacker (i.e., a jellyfish *behaves* like a wasp insofar as both produce the same effect when they defend themselves against possible danger). This type of resemblance is at the same time contingent on the comparison between two pairs of correlational actions (the hand touching a wasp and the hand touching the jellyfish, both followed by the subsequent experience of pain). This evidence points to the close relationship between resemblance and experiential correlation in metaphorization.

Despite the fact that basic aspects of experience-based metaphorization are believed to be shared by speakers across languages, "universal embodiment *can be overridden* by either social-cultural context (experiences) or cognitive processes (cognitive preferences)" (Kövecses 2005: 293). Indeed, the results obtained in my study show that interactional metaphorical conceptualization also yields conceptual differences, which can be ascertained through the analysis of metaphorical terms. In addition, cross-linguistic differences are sometimes constrained by cultural aspects too, which affect metaphorical conceptualization and linguistic designation. Here, resemblance and experiential correlation are also the motivations for metaphorical transfer, and they can both be at work at the same time as well.

According to Kövecses (2005: 285), "[t]hree important systems [...] play an important role in an account of the universality and variation of metaphors. The systems are bodily experience (embodiment), social-cultural experience (context), and cognitive preferences and styles". These words are a claim for the existence of both experienced-based, universal patterns and cross-linguistic cognitive and cultural differences involved in metaphorization.

3.2   Image metaphors vs. multiple-correspondence metaphors

Lakoff and Turner (Lakoff 1992, 1993, Lakoff and Turner 1989) distinguish between image metaphors and conventional (structural-conceptual) metaphors. Image metaphors are conceptually simple, i.e., only one concept of the source domain maps onto the target domain. This single mapping results in one expression. In contrast, conceptual metaphors emerge from the entire projection of one domain of experience onto another (domain-to-domain mapping). They involve the mapping of "rich knowledge and rich inferential structure" (Lakoff and Turner 1989: 91), which gives rise to a more or less extensive number of linguistic expressions.

Much of the cognitivist research on terminological metaphor is based on this two-fold distinction (Alexiev 2004: 190). In general language, Ruiz de Mendoza (1999) identifies multiple-correspondence metaphors, which correspond to Lakoff's structural-conceptual metaphors, and single-correspondence metaphors. Ruiz de Mendoza argues that "concrete" images (the term he uses instead of "image metaphors") are one type of single-correspondence metaphor because one very illustrative feature of the source concept serves as a mental picture, which generates the target concept. For the purpose of this study, reference is made to Lakoff's image metaphors and Ruiz de Mendoza's multiple-correspondence metaphors. The use of 'image' is a departure from Alexiev (2004: 203), who rejects this term for terminological analysis:

> The very concept "image TM" is inapplicable to a terminological analysis. It also is at variance with a basic assumption of "metaphorically structured concepts" in experientialism (Lakoff and Johnson 1980). We are aware of the fact that what Lakoff probably has in mind when speaking of "image (one-shot) metaphor" is something like a snapshot [...] Nevertheless, in view of observing the terminological principle of "precision of expression" we deem it necessary to replace the term "image metaphor" with the term "non-conventional metaphor". Thus we recognize two main types of TM: (a) *conventional TM* and (b) *non-conventional TM*.

Alexiev thus argues that by using the term "image metaphors" Lakoff seems not to regard these metaphors as concepts, which, as Alexiev explains, should not be the case. He concludes that since Lakoff views them as images or mental snapshots, these metaphors cannot be considered concepts from a terminological standpoint. As we shall see, this is not the case for marine biology image metaphors, which are specialized

concepts as well as *images*. Image metaphor is the type of metaphor that I pay closest attention to in the research reported here.

The boundaries between image metaphors and multiple-correspondence (structural-conceptual) metaphors are often fuzzy. Corpus-based studies conducted by Caballero (2003a, b) in the field of architecture and Deignan (2007) in general language show that there are many cases in which an image metaphor can be subsumed by a multiple-correspondence metaphor. In other words, "many expressions are both imagistic and realizations of structural-conceptual mappings" (Deignan 2007: 187). This contribution is very important because it challenges the traditional assumption of cognitive thinking that image metaphors are "second-class" metaphors because they do not organize thought. For example, Caballero (2003a: 151) illustrates this point with the metaphor 'weaving': "The decision to air-condition lower-floor public spaces required ingenious *weaving* of ductwork in the ceiling". Caballero argues that 'weaving' is an evident example of ARCHITECTURAL PRACTICE IS MAKING CLOTH, a recurrent multiple-correspondence metaphor in the architecture corpus analysed. From quite another perspective, this multiple-correspondence metaphor has a very visual quality, i.e., it evokes a very clear mental image. In marine biology I was also able to identify conceptual metaphors that combine a number of image metaphors (for example, SEA ANIMALS ARE LAND ANIMALS).

The term "image metaphor" is used by Lakoff (1993) and Lakoff and Turner (1989) to refer to those metaphors that arise as fleeting comparisons, never become stable, and consequently are not ultimately lexicalized in language. In this sense, they would correspond to what Ruiz de Mendoza (1999: 61) calls "situational metaphor". This idea of fleetingness also seems to be argued by Kövecses (2002: 38), who states that an image-to-image mapping is "of the *one-shot* kind that is generated by two images that are brought into correspondence by the superimposition of one image onto the other". A one-shot action implies that it is a one-off kind of action. However, as far as marine biology image metaphors are concerned, this would entail that they were one-off comparisons between two entities. As we shall see, this is not the case.

The term "conventional metaphor" is used by Lakoff to refer to well-entrenched metaphors that are frequently used. Therefore, they stand in stark contrast to Lakoff's notion of "image metaphor". As already explained, conventional metaphors also involve a rich system of correspondences. Thus, I consider the term "multiple-correspondence metaphor" to be more suitable than "conventional metaphor" because "multiple-correspondence metaphor" better explains the nature and number of cross-domain mappings that characterize this type of metaphor. To this it must be added that the dichotomy conventional metaphor vs. image metaphor cannot be applied to marine biology where image metaphors are also well-established, conventional expressions.

Finally, in my view, the term "conceptual metaphor" should not stand in opposition to "image metaphor". As Gibbs and Bogdanovich (1999: 43) write, "image metaphors are indeed understood via conceptual mappings – and thus are [conceptual]". In this

vein, marine biology image metaphors are conceptual (just like all other metaphors). Accordingly, the terminological metaphors analysed here are conceptual mappings.

3.2.1   *Image metaphors in marine biology*

In the study of marine biology image metaphors, I analysed terms designating organisms. In marine biology such organisms often have two types of designation: (i) a scientific name; (ii) a metaphorical name. Image metaphors are very transparent, something that facilitates the understanding and retrieval of concepts. These metaphors are rich in imagistic detail and function as mental snapshots of marine animals and plants. For this reason, they have a highly referential capacity, and can thus be called image metaphors.

3.2.1.1   Motivation for metaphorical transfer. Marine biology image metaphors fit the traditional categories for metaphorical motivation:

–   Resemblance to inanimate entities (object-like): shape, colour, and function.
–   Resemblance to animate entities (human-like, animal-like, plant-like): shape, colour, and habits/behaviour.

There are also cases in which resemblance and experiential correlation interact. In such cases, function and/or habits/behaviour are always the categories for metaphorical motivation. Habits/behaviour can sometimes combine with shape, but shape alone cannot combine effectively with correlation because it does not refer to (repeated) actions.

The image metaphors given as examples in the following sections were extracted from the marine biology corpus. They are representative of the following contrastive differences between image metaphors in English and Spanish:[3]

a.   Exact pairs: the metaphorical motivation and the subsequent terminological naming are alike in both languages (e.g. 'lantern fish'/*pez linterna*; see Section 3.2.1.3. for further examples).
b.   Partial pairs: the metaphorical motivation is the same, but named differently in each language depending on the degree of semantic specificity (e.g. 'Cooper's nutmeg'/*nuez de Cooper*; see Section 3.2.1.4. for further examples).
c.   Separate pairs: the metaphorical motivation is not the same in both languages. In the analysis of these pairs, a number of conceptual differences rooted in cultural aspects were identified (e.g. 'cookie-cutter shark'/*tiburón cigarro*; see Section 3.2.1.5. for further examples).
d.   Unbalanced pairs: just one term of the pair is metaphorical. Culture-derived conceptual differences were found as well (e.g. 'puffer'/*tamboril*; see Section 3.2.1.6. for further examples).

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3.   Examples of the four image metaphor types are given in Tables 3–6.

3.2.1.2 Previous experientialist considerations of image metaphors. Corpus data reveal that in marine biology there are many highly specialized concepts with basic-level category denominations. These categories belong either to the field of biology or to other related domains. For instance, bearing in mind that 'animals' and 'fire' are basic categories, it is hardly a coincidence that that individuals in the family Clariidae are often called 'catfish'/*pez gato* (exact pair) and the species Millepora dichotoma is usually referred to as 'fire coral'/*coral de fuego* (exact pair).

This fact is based on the Experientialist premise that "we have evolved to form at least one important class of categories that optimally fit our bodily experiences of entities and certain extremely important differences in the natural environment – what are called *basic-level categories*" (Lakoff and Johnson 1999: 27). Basic-level concepts form, along with spatial-relation concepts and event-structure concepts, the basis of our stable scientific knowledge (96). In fact, "we are better equipped to recognize plants and animals at the level of the genus, that is, at the basic level, than at lower biological levels" (90–91). For this reason, many of the image metaphors analysed in this study are basic-level categories. Accordingly, they adapt highly differential, specialized concepts to our experience with primary entities. Therefore, "the projection from basic-level categories to superordinate and subordinate categories" (Lakoff 1987: 268) occurs in both general language and specialized communication.

Lakoff and Johnson (1980: 52) state that "the metaphorical structuring of concepts is necessarily partial, and is reflected in the lexicon of the language, including the phrasal lexicon, which contains fixed-form expressions [...]". Likewise, Ungerer and Schmid (1997: 86) affirm that "subordinate categories are often expressed by compounds and other composite terms". Support for these statements can be found in marine biology discourse, where many of the image metaphors are lexicalized as multi-word structures with varying levels of fixedness or stability. Since image metaphor concepts are often basic-level concepts, greater specification is necessary to ensure accurate communication. Such conceptual specification is linguistically rendered in the form of complex designations, such as 'Portuguese man-of-war'/*galera portuguesa* (*Physalia physalis*), 'leatherback sea turtle'/*tortuga laúd* ['lute turtle'] (*Dermochelys coriacea*), and 'shamefaced crab'/*cangrejo real* ['king crab'] (*Calappa granulata*).

3.2.1.3 Exact pairs. As already mentioned, the corpus examined showed a high frequency of image metaphors. This seems to hold for marine biology as a whole. This confirms the existence of basic metaphorical conceptualization patterns grounded in our experience that permeate both general and specialized language. Given the status of English as the lingua franca for specialized communication, many English metaphorical terms are references for other languages. For these reasons, my corpus shows a high number of exact pairs.

Table 3. Exact pair: metaphor based on resemblance to an inanimate entity

English term	Spanish term	Taxonomic position and scientific name	Referent and metaphorical motivation
Lantern fish	*Pez linterna*	Family *Myctophidae*	Fish with light-producing organs with shoaling or courtship function (metaphorical motivation: function)
Sea-fan	*Abanico de mar*	Order *Gorgonacea*	Cnidarian whose polyps are one-lined arranged, so resembling a fan (metaphorical motivation: shape)
Lemon shark	*Tiburón limón*	Species *Negaprion brevirostris*	Shark named for its yellowish upper side (metaphorical motivation: colour)

Table 4. Exact pair: metaphor based on resemblance to a living entity

English term	Spanish term	Taxonomic position and scientific name	Referent and metaphorical motivation
Sea lettuce	*Lechuga de mar*	Species *Ulva lactuca*	Green alga that looks like a lettuce both in shape and colour (plant-like)
Seahorse	*Caballito de mar*	Genus *Hippocampus*	Fish with a horse-like head (animal-like)
Hermit crab	*Cangrejo ermitaño*	Super family *Paguroidea*	Crab with a vulnerable abdomen living inside a conch for protection. This animal behaves like a hermit (human-like) in that both live a solitary existence in their refuges

3.2.1.4   Partial pairs. Although not abundant in the marine biology corpus, partial image metaphors can reflect subtle cross-linguistic conceptual differences in specialized discourse on account of the degree of semantic specificity. Each language construes a partial metaphorical concept from the overall metaphor by focusing on a specific conceptual trait of the domains mapped.

It is sometimes necessary to consider basic-level categories when a cross-linguistic comparison is made between types of motivation for metaphorical transfer. When it comes to partial image metaphors, it is necessary to ascertain subcategories derived from basic-level categories. These subcategories are related to what Kövecses (2005: 154) calls "degree of specificity" in his research into the "cross-linguistic differences in the expression of the same conceptual metaphor". According to Kövecses, this degree of specificity involves a hierarchy of things or events, which is also found in the partial term pairs in the marine biology corpus. For instance, the coral *Alcyonium digitatum* is often called 'dead man's fingers' in English because of its finger-shaped branches. In

Spanish this designation usually alternates with *mano de muerto* ['dead man's hand'], which constitutes a clear case of meronymy.

Regarding the degree of semantic specificity in terminological metaphor, it is also useful to take into account Felber's (1984: 117–118) definition proposal for 'shape', which is perhaps the most frequent prompt for metaphorical conceptualization in marine biology. Felber conceives of shape as a set of "intrinsic features" included in a wide range of concepts, such as design, form, size, and type of material. In this sense, the conceptual difference between 'Hungarian capshell' and *sombrero húngaro* ['Hungarian hat'], which is a type of mollusc, arises from specific features mainly concerning the design and form of the objects referred to.

3.2.1.5 Separate pairs. While partial pairs are concept names with slightly different metaphorical nuances in English and Spanish, construal in separate pairs implies two entirely different metaphors. Of course, both metaphor and metaphor variation are manifestations of what Langacker (1987: 487–488) calls "construal". "Construal" refers to different ways of conceptualizing reality, and reflects "the relation between a speaker (or hearer) and the situation that he conceptualizes or portrays, involving focal adjustments and imagery". Conceptual metaphor is an example of construal: "Within Cognitive Linguistics, metaphor is a dimension of construal since it reflects a very general ability to conceive of and structure one entity against the background of another" (Faber and Márquez 2004: 202).

Table 5. Partial pair: metaphor based on resemblance to an inanimate entity

English term	Spanish term (literal English translation)	Taxonomic position and scientific name	Referent and metaphorical motivation	Conceptual difference
Cooper's nutmeg	*Nuez de Cooper* ('Cooper's nut')	Species *Cancellaria cooperi*	The colour of this snail's shell is orange with cream or brown strips, like the inner part of a nut(meg)	*Nut* is a generic concept. A nutmeg can be considered a type of nut (metaphorical motivation: colour)
Hungarian cap-shell	*Sombrero húngaro* ('Hungarian hat')	Species *Capulus ungaricus*	This mollusc looks like a head covering	The English term refers to a specific covering. The Spanish term refers to a generic one (metaphorical motivation: shape)
Triggerfish	*Pez ballesta* ('crossbow fish')	Family *Balistidae*	When threatened, this fish deploys two dorsal spines like a weapon	The English term refers to a part of a weapon. The Spanish term refers to the weapon itself (metaphorical motivation: functioning)

Table 6. Partial pair: metaphor based on resemblance to an animate entity

English term	Spanish term (literal English translation)	Taxonomic position and scientific name	Referent and metaphorical motivation	Conceptual difference
Croaker	*Corvina* ('raven-like')	Family *Sciaenidae*	Fish producing a croaking sound that resembles the sound of a raven's (habit/behaviour + animal-like)	The English term refers to the ravens' sound. The Spanish term refers to ravens in general
Dead man's fingers	*Mano de muerto* ('dead man's hand')	Species *Alcyonium digitatum*	Coral with finger-shaped branches	The Spanish term is a hyperonym of the English term (metaphorical motivation: shape)
By-the-wind sailor	*Velero* ('sailing boat')	Species *Velella spirans*	Polyp colony whose shape resembles the sail of a boat	The English term is a personification of the man steering the boat. The Spanish term refers to the boat itself

Lakoff and Johnson (1980: 52) also point out "the partial nature of metaphorical thinking" and affirm that such partiality is "reflected in the lexicon". Tables 7 and 8 give examples of metaphorical terms that show cross-linguistic differences in metaphorical construal.

Culturally derived differences between languages can also be transmitted in terms of basic-level categories. As Boyd (1993: 235) states, when talking about scientific communication: "we may explain this basic level dominance by the speakers' primary physical and cultural interactions with these categories". Cases of image metaphors in marine biology show that culture-bound factors may arise in the interactional projection from basic-level to subordinate categories.

For example, the popular name for *Carcharias taurus* is 'sand tiger shark' in English and *tiburón toro* ['bull shark'] in Spanish. While in English this shark is compared to a tiger because of the transversal, dark stripes on its back, in Spanish the qualities of aggressiveness and stoutness are highlighted. Thus, this shark is compared to a bull, which is a culturally prominent animal in Spain. As can be seen, the motivation for metaphorical conceptualization present in the scientific name (*Carcharias taurus*) is reinforced culturally in Spanish, which gives rise to a cross-linguistic culturally based cognitive difference.

The English term in Table 7 is a case of terminological metaphor based on both resemblance and experiential correlation. A cookie-cutter is a tool for cutting cookie dough into different shapes. When a cookie cutter is used, it leaves marks on the dough (repeated co-occurrences in experience). In a similar way, a shark resembles a cookie-cutter because when it bites its prey (cause), it leaves patterned marks on its flesh (effect). Here, function/behaviour and shape combine to give rise to a metaphorical concept.

Table 7. Separate pair: the English term is culturally motivated

English term	Spanish term (literal English translation)	Taxonomic position and scientific name	Referent and metaphorical motivation in English	Metaphorical motivation in Spanish
Cookie-cutter shark	*Tiburón cigarro* ['cigarette shark']	Species *Isistius brasiliensis*	This shark leaves cookie-shaped wounds on the bodies of its prey (behaviour and shape + object-like)	Elongated shark with a dark collar marking around its throat resembling a cigarette tip (shape + object-like)

Table 8. Separate pair: the Spanish term is culturally motivated

English term	Spanish term	Taxonomic position and scientific name	Referent and metaphorical motivation in English	Metaphorical motivation in Spanish
Bottlenose dolphin	*Delfín mular* ['mule-like dolphin']	Species *Tursiops truncatus*	The length of this dolphin's nose makes it resemble a bottle (shape + thing-like)	Dolphin as robust as a mule (offspring of male donkey and female horse frequently found in Spain) (shape + animal-like)

3.2.1.6   Unbalanced pairs. In the same way as separate pairs, the unbalanced pairs found in the marine biology corpus support the claim that cognitive and cultural aspects are major factors that model languages and yield cross-linguistic conceptual differences. As Kövecses (2005: 160) states, both cognitive and cultural elements are fused to make up speakers' conceptual schemas:

> Metaphor is not only cognitively but also culturally motivated. As characteristics of cultures change, so can the metaphor and its linguistic expression. In it, the cognitive and the cultural are fused into a single conceptual complex. In this sense, what we call conceptual metaphors are just as much cultural entities as they are cognitive ones.

Interaction with the entities around us is the basis for concept formation. If one entity is prominent in a certain culture, this entity is likely to be used for metaphorical conceptualization. In fact, "the interactional properties result from our interaction with our physical and cultural environment due to our cognitive abilities" (Alexiev 2004: 198). Table 9 and Table 10 show examples of unbalanced term pairs in English and Spanish.

The examples in Tables 9 and 10 show how cognitive and cultural factors in one language or another can constrain the formation of a specialized concept through

Table 9. Unbalanced pairs: only the English term is metaphorical

English term	Spanish term (literal English translation)	Taxonomic position and scientific name
Anglerfish	*Rape* (–)	Genus *Lophius*
Sea gooseberry	No common name associated	Species *Pleurobranchia bachei*

Table 10. Unbalanced pairs: only the Spanish term is metaphorical

English term	Spanish term (literal English translation)	Taxonomic position and scientific name
Brown shrimp	*Camarón café* ['coffee shrimp']	Species *Penaeus californiensis*
Puffer	*Tamboril* ['small drum']	Family *Tetraodontidae*

metaphorization. In Table 9 only the English terms are metaphorically conceptualized. 'Anglerfish' received its name because of the foremost spine of dorsal fin of this fish, which resembles a 'fishing rod' with fleshy 'bait' at its tip. This spinal 'fishing rod' is used as a lure for prey, which stray close enough for the anglerfish to swallow it. The motivations for metaphorical transfer are shape + object-like (spine like a fishing rod) as well as habit/behaviour + human-like (fish like an angler). 'Sea gooseberry' refers to a jellyfish that received its name on account of its roundish shape. The motivation for metaphorical transfer is thus shape + object-like.

In Table 10 it is the Spanish terms that are metaphorically conceptualized. While in English the species *Penaeus californiensis* is simply called 'brown shrimp', in Spanish the brownish colour of this shrimp is the metaphorical motivation for calling this animal 'coffee shrimp'. Concerning 'puffer' and *tamboril* in this table, a highly marked cultural factor is at work. In English, fish of the family *Tetraodontidae* are called 'puffers' because they acquire a roundish shape when they blow or puff themselves up to scare away predators. Thus, there is no metaphorical motivation operating here. The meaning of this term is literally 'an animal that puffs up instinctively'. In contrast, in Spanish this type of fish is referred to as *tamboril*, which is a typical round Spanish musical instrument. Therefore, the metaphorical motivation is shape + object-like. As can be seen, both languages exploit the same physical feature to conceptualize an entity: roundness. However, only Spanish brings metaphor and a cultural aspect to bear.

3.2.2   *Multiple-correspondence metaphor in marine biology*
According to Ruiz de Mendoza (1999), multiple correspondence metaphors are conceptual metaphors that arise from multiple mappings between two very rich and highly structured cognitive domains. These mappings are linguistically rendered by a set of metaphorical lexical units contingent on the conceptual metaphor at issue.

The corpus used in this study yielded a great number of multiple-correspondence metaphor terms both in English and Spanish. Furthermore, my analysis showed that most of these terms presented no cross-linguistic conceptual differences. The multiple-correspondence metaphors found are the following:

<div align="center">

MARINE HABITATS ARE COMMUNITIES

LIFE/SURVIVAL IS WAR

VITAL ACTIVITIES ARE ECONOMIC ASPECTS

MARINE BIOLOGICAL PROCESSES ARE A CYCLICAL FLUX

</div>

In accordance with Lakoff's (1993) "inheritance hierarchies", general conceptual metaphors engender more specific ones. Likewise, according to Kövecses (1995), a specific metaphor can emerge from the interaction between two or more general ones. These theoretical premises lay the basis for the hierarchies I found in marine biology multiple-correspondence metaphors, represented in Figure 1.

Table 11 includes the aforementioned conceptual metaphors and a non-comprehensive list of English and Spanish terms found in the corpus that realize such conceptual metaphors:

Table 12 contains a number of fragments of texts extracted from the corpus. These contexts illustrate how the instantiations of certain multiple-correspondence metaphors call for the participation of instantiations of other conceptually related multiple-correspondence metaphors in discourse. Instantiations of these metaphors are bold-typed in the contexts. The contexts also reveal that the multiple-correspondence metaphors ascertained in this study are lexicalized in the same way in English and Spanish. The exact interlinguistic pairs are bold-typed and underlined.

The first pair of contexts in Table 12 is a good example. The Spanish context includes the metaphorical terms *comunidad* and *colonias* as well as *defender* and *ataques*, which belong to the multiple-correspondence metaphors MARINE HABITATS ARE COMMUNITIES and LIFE/SURVIVAL IS WAR, respectively. Thus, instantiations of MARINE HABITATS ARE COMMUNITIES prompt the participation of instantiations of LIFE/SURVIVAL IS WAR.
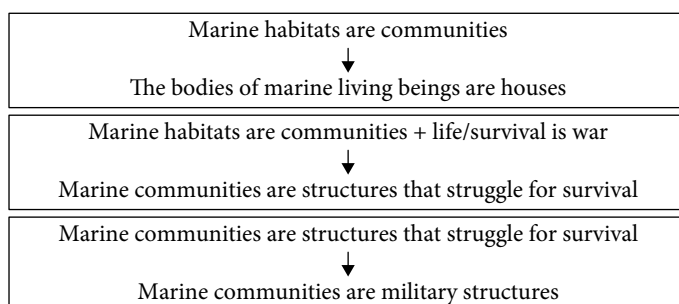
Figure 1. Multiple-correspondence metaphors in the domain of marine biology

Table 11. English/Spanish terms that realize the multiple correspondence metaphors

Multiple correspondence metaphor	English term/Spanish term
MARINE HABITATS ARE COMMUNITIES	community/*comunidad*, population/*población*, guild/*gremio*, association/*asociación*, family of organisms/*familia de organismos*, colony/*colonia*, settlement/*asentamiento*, individual/*individuo*, cosmopolitan species/*especie cosmopolita*, visitant species/*especie visitante*, tourist species/*especie turista*, resident species/*especie residente*, native species/*especie nativa*, indigenous species/*especie indígena* (*autóctona*), migrant/*migrante*, migratory route/*ruta migratoria*, peregrinate/*peregrinar*, solitary species/*especie solitaria*
THE BODIES OF MARINE LIVING BEINGS ARE HOUSES	host/*hospedador* (*huésped*), housing/*hospedaje*, inquiline/*inquilino*, commensal/*comensal*
MARINE COMMUNITIES ARE STRUCTURES THAT STRUGGLE FOR SURVIVAL (MARINE HABITATS ARE COMMUNITIES + LIFE/SURVIVAL IS WAR)	struggle/*lucha*, competitor/*competidor*, dominant species (competitive, dominant)/*especie dominante*, competitive exclusion Principle (Gause's Law)/*Principio de exclusión competitiva* (*Ley de Gause*), opportunistic species/*especie oportunista*, oust/*excluir*, associational resistance, gregarious species/*especie gregaria*, colonize/*colonizar*, refuge/*refugio*, alimentary strategy/*estrategia alimentaria*
MARINE COMMUNITIES ARE MILITARY STRUCTURES	Intrusion/*intrusión*, recruit/*recluta*(r), recruitment/*reclutamiento*, cohort/*cohorte*, sentry organism/*organismo centinela*, evolutionary arms race/*carrera armamentística/evolutiva*, deterrent/*elemento disuasorio*, equipped with/*equipado con*, defense/*defender*, line of defence/*línea de defensa*, attack/*atacar*, invasive exotic species/*especie exótica invasora*, invade/invadir, invasive species/*especie invasora*
VITAL ACTIVITIES ARE ECONOMIC ASPECTS	monopolize/*monopolizar*, capitalize/*capitalizar*, (offset energetic) costs/(*compensar*) *gastos* (*energéticos*), trade-off/*compensación*, reproductive effort/*esfuerzo reproductivo*, reproductive output/*rendimiento reproductivo*, parental investment/*inversión paternal*, (primary, secondary) production/*producción* (*primaria, secundaria*), energy demand/*demanda de energía*, spend energy/*gastar* (*invertir*) *energía*
MARINE BIOLOGICAL PROCESSES ARE A CYCLICAL FLUX	nutrient cycle (flux)/*ciclo* (*flujo*) *de nutrientes*, carbon cycle (flux)/*ciclo* (*flujo*) *del carbono*, nitrogen cycle (flux)/*ciclo* (*flujo*) *del nitrógeno*, organic cycle/*ciclo orgánico*, biogeochemical cycle/*ciclo biogeoquímico*, food chain/*cadena trófica*, energy flux/*flujo de energía*, organic matter recycling/*reciclaje de materia orgánica*, water flow/*flujo de agua*

The Spanish terms *comunidad* and *colonias* have 'community' and 'colony' as their interlinguistic correlates in the English context. This is hardly a coincidence, and shows that English and Spanish tend to conceptualize marine biology entities and processes in similar ways.

Table 12.   Contexts of multiple-correspondence metaphors

Context in English	Context in Spanish
Single stranded conformation polymorphism (SSCP) and real time quantitative polymerase **chain** reaction (qPCR) analyses were used to examine the genetic diversity of the Symbiodinium **community** in *hospite* across an individual **colony** of *Acropora valida* at the spatial scale of single polyps.	*Entre estos vegetales y sobre ellos vive una compleja* __comunidad__ *de peces, crustáceos y pequeños animales solitarios o en* __colonias__ *que encuentran en la penumbra, creada por estas praderas, el refugio ideal para cuidar y* **defender** *a sus pequeñas crías de los* **ataques** *de las especies mayores.*
At the end of their larval stage, these fish **settle** on the reef and directly enter their echinoderm **host** where they undergo an important metamorphosis. The aim of this study was to get further insight on the type of symbiosis (**commensal** vs. parasite) between these fish and their **hosts**.	*La relación básica entre estos dos organismos puede ser de espacio, de sustrato,* **defensa**, **protección**, *transporte o alimento. Si la* **asociación** *es sólo de transporte pasivo del* __comensal__ *por el* __huésped__ *se le llama foresis.*
Species were classified as **native**, non-**invasive exotic** or **invasive exotic**. We found that sites without any disturbance did not support exotic plants. Physically disturbed sites on low fertility soils supported only one exotic species, suggesting that nutrient enrichment is a critical prerequisite for exotic species **invasion**.	*A. franciscana es una especie americana* **autóctona**, *distribuida ampliamente en Norte y Sudamérica y el Caribe. Se ha convertido en una* **especie exótica invasiva** *en expansión en el Viejo Mundo. Es hoy la especie de Artemia dominante en las salinas costeras atlánticas portuguesas, a lo largo de la costa mediterránea francesa y en la Bahía de Cádiz (SO de España), desplazando a las formas* __nativas__.
Evidence for unique genetic variation for each trait was also found, supporting an ongoing **evolutionary arms race** between **defense** and **offense**. Reproductive **conflict** between males can strongly influence female fitness.	*Existen otros mecanismos distintos de los consumidores y los recursos, que determinan el uso de la* **producción primaria** *[...] Todos estos mecanismos forman parte de la* __carrera armamentista evolutiva__ *entre productores y consumidores que mantiene a la naturaleza en estado pulsátil.*
The **society** of blue-gilled wrasse is by no means the most complicated in sexual terms. Animal **societies** with up to three male genders and two female genders have been described. Even when only two genders exist, there are cases where male choice of females is the norm. For example, sea-horse males incubate the young in a special pouch and thus provide **parental investment** that is worth **competing** for in case of females.	*El estudio aborda la ecología reproductiva de las* __sociedades__ *complejas de aves marinas dimórficas, en relación a las teorías de* __inversión parental__ *y proporción de sexos en las nidadas.*
Sea ice contains the free-floating, aquatic plants (a **primary production** level of the arctic **food chain**). Through these plants, the sun's energy is converted, by the process of photosynthesis, from light energy to chemical energy that can be passed and utilized by animals in the **nutrient cycle**.	*Mediante redes, mangas, tamices, etc., se pueden extraer de la masa de agua elementos pertenecientes a los* __productores__ *y* __consumidores primarios__, *interrumpiendo la* __cadena trófica__ *al disminuir la* **población** *de algunos nichos del ecosistema.*

4.   Conclusions

As is the case of general language uses, in marine biology our categorization system is largely based on basic-level categories, which are highly metaphorical and subject to interactional properties. As Lakoff (1987: 8) affirms, categories arise in our minds from (i) interaction with our environment; (ii) cognitive phenomena that stem from our imagination, such as metaphor and metonymy, and that are linguistically rendered in the form of figurative language (imagery). In other words, there are common mechanisms of conceptualization through metaphor across languages, in the form of perceptual and motor inferences (i.e. embodiment). This also applies to specialized language, and concretely, to the discourse of marine biology.

Nevertheless, cognitive and cultural aspects can also constrain conceptualization through metaphorization, giving rise to cross-linguistic differences. This is the case of the image metaphors analysed in this chapter. Marine biology image metaphors present cognitive and cultural differences between English and Spanish. The features of image metaphors in both these languages can be summarized as follows:

1. Resemblance and experiential correlation are involved in the metaphorization of marine biology image metaphors in English and Spanish. They are compatible, which means that sometimes both cognitive operations work very closely together. In such a case, function and/or behaviour are necessary because they refer to (repeated) actions.
2. Comparison to an inanimate entity on account of resemblance in shape is the most recurrent pattern motivating the metaphors found in English and Spanish.
3. Spanish seems to have more culturally motivated metaphorical terms than English.
4. When it comes to invertebrates, it is easier to find image metaphor terms as alternatives to taxonomic designations in (semi-)specialized English texts than in Spanish. This seems to indicate a tendency in English to give (marine) organisms a metaphorical designation. However, this is not always true for Spanish. In fact, more often than not, the Spanish terms are literal translations of their corresponding English image metaphor (exact pairs). If they do have a separate metaphorical motivation in Spanish, this term often coexists with the literal translation, since English is currently the language of science discourse.

In contrast, the range of marine biology multiple-correspondence metaphors identified in this study presented no cognitive or cultural differences between both these languages. This strengthens the initial claim that metaphor yields common cross-linguistic conceptualization patterns. Thus, it should not come as a surprise that the multiple-correspondence metaphors studied in this work respond to the same conceptualization patterns in English and Spanish, these patterns involving not only marine biology entities (substantives), but also processes (verbs) and attributes (adjectives). This allows for the formulation of encompassing conceptual metaphors shared by both languages.

Finally, the results obtained in this corpus-based study shed light on two major assumptions in Conceptual Metaphor Theory, and have theoretical implications for metaphor research. Specifically, the analysis of marine biology metaphorical terms revealed that: (i) two different mechanisms – resemblance and correlation – are not incompatible, i.e. can both be at work in certain cognitive processes, giving rise to the conceptualization of marine biology entities; (ii) there is a need to rethink and relabel "image" metaphors, since some of them are specialized *concepts* as well as *images*. In other words, they are as imagistic as they are realizations of structural-conceptual mappings and have more in common with structural metaphors than acknowledged in the cognitivist literature so far. Thus, the boundaries between image metaphors and multiple-correspondence (structural-conceptual) metaphors are often fuzzy.

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Gestures, language, and what they reveal about thought

A music teacher's use of metaphor in Taiwan*

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Music is abstract and elusive enough that we are often forced to describe it using metaphors, referencing more concrete and familiar experiences. The research reported in this chapter aims to apply cognitive, sociocultural, and applied linguistic theories to metaphor use in music classrooms in Taiwan, where Mandarin Chinese is used. Analysing data recorded in a junior high school classroom in Taiwan, in this preliminary study I seek to develop (i) an understanding of how teachers talk about, describe, and construct meanings of music as reflected by the use of metaphor and metaphorically-used gestures in music classrooms, and (ii) an understanding of the functions, distribution, and clustering of the metaphors used. The results indicate that metaphor is an essential instrument in teaching music.

Keywords: functions of metaphor, junior high school classroom, Mandarin Chinese, music teaching

1. Introduction

Gesture studies indicate that "gestures can play a crucial, although typically unacknowledged, role in teaching and learning" (Goldin-Meadow 2004: 314, McCafferty and Stam 2008). In addition, gesture has been found to play an important role in communication and thought (McNeill 1992, 2005), and by investigating verbal and gestural metaphors together, recent studies (Cienki 1998, Cienki and Müller 2008) have supported the view that gesture forms an active part of speaking and thinking.

The functions of metaphors in discourse vary, but from an educational point of view, metaphors have been found to externalize thinking (Roth 2001), facilitate learning (Ortony 1975), label new concepts (Clark 1981, 1982, Dirven 1985), and provide frameworks for ideas (Cameron and Low 1999). Furthermore, some researchers have gone so far as to claim that the acquisition of new knowledge is not possible without the use of metaphor (Ortony 1975, 1993).

To date, both metaphors and gestures have been found to be used by music teachers in teaching (e.g. Haviland 2007, Sakadolskis 2003) for at least two purposes. First, language plays a significant role in music classrooms. Studies conducted in both English and non-English speaking countries indicate that music teaching relies predominantly on verbal instruction (e.g. Davidson 1989, Rostvall and West 2003, Tait 1992) because language allows teachers and students to conceptualize, to think about, and to analyse the music (Tait and Haack 1984). Metaphors in verbal instruction create and evoke affective images for students to match with techniques taught through modelling (Davidson 1989). Second, gestures frequently co-occur with speech in music classrooms, where they are one of the various expressive modalities commonly used (Haviland 2007). However, little research (Corts and Pollio 1999) has looked into how metaphors and gestures are used *together* in any classroom discourse, let alone in the context of music teaching. Yet such a combination – the co- presentation of gestures with speech – seems to be inevitably how music teachers express their thought and communicate information and knowledge. This combination is thus expected to be found in the present study.

By analysing one general music session at secondary level in Taiwan, where Mandarin Chinese is the official and most commonly used language, the present chapter reports on a study that examined if any metaphors and gestures were used together as part of instructional sequences, and if so, how they were used. The main questions asked included (i) what metaphors and gestures were used, (ii) what functions they appeared to serve, and (iii) the relations (if any) between metaphors in gesture and speech.

2.   Background

2.1   Gesture

Referents of the term *gesture* vary. It can refer to various body movements, from self-movement (e.g. adjustment of posture) or contact between two body parts (e.g. patting one's hair) to contact between body parts and other objects (e.g. manipulating an object) (Kendon 1997). It can, in contrast, be restricted to movements of the hands and arms, including *gesticulations* accompanying speech, *emblems* (e.g. the 'thumbs up' gesture), and *sign language* (Kendon 1988). Kendon placed these three along a spectrum:

<div align="center">gesticulations – emblems – sign language</div>

In this scheme, gestures are classified on a continuum ranging from spontaneous, idiosyncratic movements accompanying speech (gesticulations), to highly socially

regulated and structured gestural languages such as American Sign Language. In the middle are the artificial but conventionalized signs that Kendon called "emblems", such as the American 'OK' sign made by placing the thumb and index finger in contact. Emblems share the same meaning among users within the same cultural group or discourse community. Between the two extremes of the spectrum, two key changes occur. First, movements become increasingly independent of speech. Second, movements increasingly show the properties of a language (Roth 2001).

Among gestures, gesticulation (that is, non-conventional hand and arm movements that lack language-like properties and that are made spontaneously by speakers while speaking) is the one that has been looked into in most studies aiming to explore how gestures are used together with speech to reveal thought (e.g. Cienki and Müller 2008, Iverson and Goldin-Meadow 1998, Rimé 1982). These studies indicate that besides speech, gesticulations can function as an active and independent dimension of discourse. Gesticulations are, on the other hand, not completely independent of speech, because their meaning and/or functions cannot be established by their visual presentation alone (Eisenstein and Davis 2004) and this is one of the main characteristics that distinguish them from emblems and sign languages. In the present study, the term 'gesture' will be used to refer to a non-conventional hand and/or arm movement that speakers make while speaking. What the movement reveals depends on the accompanying speech.

A gesture, being a kinetic movement, usually starts from a *preparation* phase, in which the gesturing limb or limbs move away from its/their rest position to a different and particular position. This is followed by the kinetic peak of effort in the gesture, which is referred to as the *stroke* (Kendon 1980, McNeill 1992). The stroke is an obligatory phase because it is the meaning part of a gesture (McNeill 1992), in which the shape and movement patterns are performed with greatest clarity (Kendon 2004). The return of the hand to a rest position is called the *retraction* or *recovery* (Kendon 2004, McNeill 1992). This entire *excursion* of the articulator of the gestural action, from the moment of moving away from a position of rest until it finally returns back to relaxation, is known as a *gesture unit* (Kendon 2004). A gesture unit contains one, or more than one, *gesture phrase*.

Gestures are thus not merely random movements of hands. They can be either semantically or pragmatically (or both) connected to the accompanying speech to 'reveal' thought, and, like language, they can have structural patterns. They may be combined with each other and form gesture phrases, or they may stand alone as independent units, as long as each contains the obligatory stroke. From a figurative point of view, recent studies on gesture, and especially gesticulations, suggest that it may provide supplementary, rather than independent, evidence of how conceptual metaphor works.

2.2   Metaphor

The word *metaphor* has been used to refer to a linguistic phenomenon since at least Aristotle, but it has been used differently in much contemporary metaphor research.

In the cognitive view, metaphor is considered as a mental structure and believed to play an important role in organizing human thought. In other words, metaphor is not merely a linguistic phenomenon, but more fundamentally, a conceptual and experiential process that structures people's idea of the world (Gibbs 1998, Lakoff and Johnson 1980). More than a decorative linguistic device, metaphor relates to links between groups of ideas, or cross-domain mappings, in the conceptual system. For the past two decades, evidence of this conceptual hypothesis has been drawn not only from verbal sources, but also from visual sources such as gestures.

However, the prevalence of the conceptual metaphor view does not mean that the linguistic form of the metaphorical expressions is irrelevant to metaphor study or that it no longer needs attention from researchers. Rather, the applied linguistic view argues that there is important variation at the linguistic and discourse level that is not captured by the conceptual approach (e.g. Cameron 1999, 2003, Deignan 2005, Ritchie 2003, 2004, Semino et al. 2004). This view insists on the essentiality of metaphorical expressions, indicating that they are at the heart of finding and justifying conceptual metaphor; they are the starting point for metaphor identification whatever theoretical approach is adopted (Steen 1999b, 2007).

2.3   Metaphor, gesture, and thought

Most research to date has treated metaphor and gestures separately. Corts (1999) and Corts and Pollio (1999), however, are two of the rare studies looking into the joint use of metaphors and gestures in educational discourse. These studies examined the relationships between spontaneous figurative language and gestures in three American college lectures. Questions asked included when and why metaphors and gestures occurred in bursts, what the characteristics of these bursts were, and what functions metaphors and gestures served in the lectures. The statements that (i) metaphor and gesture related to bursts, and (ii) gestures took an active role in communication more than simply paraphrased or decorated, which are further confirmed later by Corts (2006), seem to imply a dynamic view of metaphor and gesture.

More recently, Müller has provided a dynamic view of metaphor, gesture, and thought, arguing that language, shaped by cognitive processes and by interactive constraints, is "an integration of speech and gesture at the level of the system and of use, and a dynamic product of modality-specific forms of thought" (2007: 110). Adopting this dynamic view and applying Lakoff and Johnson's conceptual metaphor theory, Cienki and Müller (2008) redefined the concept of a 'metaphoric gesture' and identified four relationships between metaphoric gesture and speech. The data were from a number of examples obtained from a range of conversations about honesty and relationships to story re-telling, and discussions about novels in English, German, and Spanish. The four relationships were: (i) the same metaphor expressed in speech and in gesture, (ii) a metaphor expressed in gesture, but not in the co-occurring speech, (iii) different metaphors expressed in speech and gesture, and (iv) a metaphor expressed

in gesture but not used conventionally in the language. These findings are in accord with the results of the previous study by Cienki (1998), although definitions of metaphoric gesture in these two studies are not exactly identical.

The aforementioned examinations of how metaphoric gesture relates to speech support Lakoff and Johnson's (1980) claim that metaphor is a cognitive representation that reflects how we think. From the examples taken from the three different languages (English, German, and Spanish), it is clear that language and gesture do not always share the same conceptual metaphors and there are occasions when the metaphor in gesture does not exist in speech: either the metaphor used in speech is different, or the metaphor instantiated by a gesture never appears in linguistic form. These studies thus indicate that besides being manifested by language, metaphor can be separately manifested by gestures. Hence metaphor is not a question of language only, but of thought. The present study aims to examine how metaphoric gestures and their accompanying speech relate to each other in a different context.

2.4   Gesture classification systems

There are a number of gesture classification systems (e.g. Efron 1941, Ekman and Friesen 1969, Freedman and Hoffman 1967, Krauss et al. 2000, McNeill 1992) which all focus on gesticulation. The main differences between these systems lie in the size and number of the categories involved (Goldin-Meadow 2003), that is, in the strategies used to group and subdivide them (McNeill 1992). Among the systems, McNeill's is the one that has been most frequently applied to studies of educational discourse (e.g. Corts and Pollio 1999, Haviland 2007, Lazaraton 2004).

Unlike these classification systems, in which categories are established following mixed criteria of meanings and functions of gestures, Müller (1998) categorizes gestures into three groups – *discourse gestures*, *performative gestures*, and *referential gestures* – purely by function. Müller's system seems more likely to provide a consistent guide than the others by being based on one single criterion. That is, by pointing out one specific aspect that can be considered as prime when coding a gesture, the system aims to resolve the problem of overlaps. However, it still does not guarantee the discreteness of the categories. Rather, it raises another problematic issue of gesture classification: the multi-functional nature of gestures. As Cienki found in his (2003) study, for example, the consistency between two coders when identifying the function of gestures was low because it proved difficult to decide whether the primary function of a gesture was to present an idea (performative) or emphasize an idea (discourse). It seems therefore that it is difficult for any system to provide discrete categories because of the multi-dimensional nature of gestures. The coding policy used in the present study is described in Section 3.3.

2.5   Metaphor identification methods

The Pragglejaz Group's (2007) 'Metaphor Identification Procedure' (MIP), Cameron's (2006) metaphor identification through vehicle terms (MIV), and Steen's (1999a)

metaphor focus and idea identification are all methods for identifying linguistic metaphors.[1] In all of these methods, linguistic metaphors are identified on the basis of incongruity and a connection between a word's semantic meaning and what the word refers to in context (see Steen 2007 for further discussions on similarity, contiguity, and comparison). These methods also suggest that the context where the word/phrase is employed is as essential as its linguistic form to decide if it is metaphorically used.

MIP and MIV make different assumptions about the role of metaphor. MIP treats language as a system consisting of lexical units, while MIV emphasizes the dynamic nature of the discourse in which a linguistic metaphor is used. One of the differences in the outcomes of MIP and MIV relates to the precision with which the actual boundary of the vehicle term or metaphorically used word can be specified (see MetNet Group 2006, Pragglejaz Group 2007 for detailed examples). In MIP, the words are not established as metaphorically used until the sentences are divided into lexical units, while in MIV, a vehicle term is signalled first and then the boundary is extended from the core component. However, MIV does not really provide a resolution of how to establish clear metaphor boundaries, i.e. where the exact boundary of a linguistic metaphor might lie. Indeed, this different approach to precision is one of the main differences between the two methods. Further issues about the method used in the present study to identify metaphorically used words are discussed in Section 3.4.

3.   Method

3.1   The participants and setting

The nine-year compulsory education system (or 'Grade 1–9 Curriculum') for children in Taiwan starts from the age of six, including six years of elementary school and three years of junior high school. Junior high school, the level that the present study focuses on, represents the last half of the compulsory education period and students at this level are normally aged between 12 and 15.

Major subjects taught at junior high schools are divided into seven 'Learning Areas' based on the content. Music belongs to the category of Arts and Humanities, which also contains visual and performing arts. One of the main purposes claimed by the Ministry of Education for grouping subjects into categories for compulsory education is to increase the diversity of teaching and to encourage the teaching to become closer to students' real-life experiences (Ministry of Education of Taiwan 2004). The teaching materials for these three subjects in the category of Arts and Humanities are integrated, meaning that concepts in the teaching units are connected. Generally speaking, the objectives of the learning area of Arts and Humanities in the Grade 1–9 Curriculum

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1.   Compared with MIP and MIV, Steen's method better explains *why* metaphor should be identified through conceptual propositions but is at the time of writing less useful as a guide to *how* to identify metaphor (guidelines are in preparation).

are "to cultivate students' interests in the arts and encourage them to participate enthusiastically in related activities, thus promoting abilities such as imagination, creativity, and appreciation for the arts" (Ministry of Education of Taiwan 2004, my translation).

The data were collected from one general music session taught by Wang (a pseudonym). Wang had received her MA four years previously and since then had been teaching music in the same junior high school. Being very open-minded about taking part in research and about being observed, Wang agreed to have a video camera set up in the back of the classroom. However, due to the fact that only one camera was permitted, it proved to be impossible later to monitor gesture uptake or production by students. Gesture and metaphor interaction between Wang and the students were accordingly not tracked.

Situated in a middle- to upper-middle-class suburb of a major northern city, Wang's school was founded in 1988, with 4,268 students on roll and 113 classes in 2006. It is considered to be a big school, relative to the official average of 1,299 students per junior high school in Taiwan for the school year 2005–2006 (Ministry of Education of Taiwan 2006). The class contained 33 students, and lecturing was the main teaching approach. Wang was told that the study was about classroom talk and the idea was to observe a session with as much talk involved as possible. She therefore suggested a session mainly covering music history and music appreciation.

The main equipment in the music classroom included a piano, an electronic piano, a blackboard with blank musical staff, an LCD projector, a DVD player, and a few portraits of classical musicians and illustrations of musical instruments on the walls. Wang had to provide her own laptop.

Neither the teacher's nor the students' seats were moved. As a non-participant observer, I tried to keep the classroom the way it was with no observer present. I sat at the back of the classroom next to the video camera, to take field notes that might be helpful during the preparation of the transcripts. Photos were also taken before and/or after sessions. The video camera began recording when the students started to walk into the classroom. It was not turned off until the class was dismissed and the classroom was empty.

The session started with playing the recorder. Wang reviewed the piece she had taught in the previous session with the whole class and then selected a few students to stand up and play individually, in order to discover how much students had learned.[2] Then she taught one new piece by demonstrating and playing along with the whole class. After the recorder playing, the lecture "episode" (Lemke 1990) started. Wang began by introducing the recorder ensembles: bass, tenor, alto, soprano, and sopranino recorders. Then she introduced some important eras in musical history, with a focus on the Baroque. To this end, Wang gave students some background knowledge about the characteristics of the music, musical instruments, and some famous musicians, before introducing Vivaldi and his concerto, "The Four Seasons".

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2.   Wang explained the purpose of this activity in Interview 2 (cf. Section 3.2)
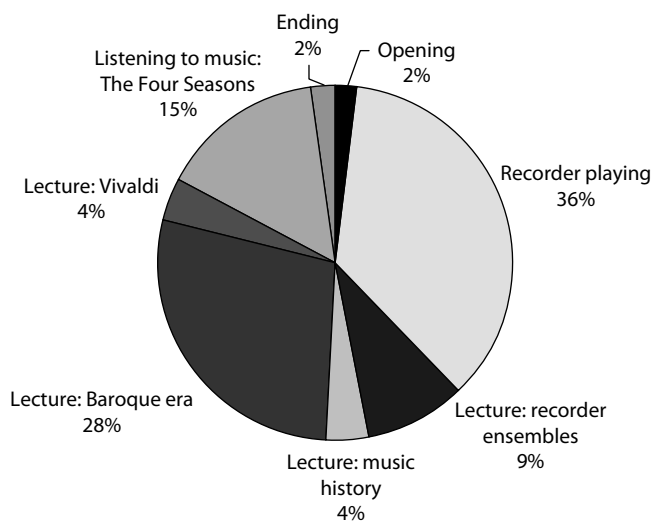
Figure 1. Relative time spent on activities in Wang's session

Figure 1 shows the relative amount of time Wang spent on different activities in the session. It can be seen that the two main activities were recorder playing and a lecture on the Baroque era, which together accounted for almost two thirds of the total time.

3.2   Procedure

The classroom observation was conducted in 2007. One month before the observation, Wang and I had met to discuss which class to observe, including when I should arrive, where I should sit, and how best to set up the recording facility. In addition, Wang roughly explained what kinds of classroom activity would be involved and what she intended to teach. This meeting is coded as Interview 1.

A real-time observation schedule was designed, with the purpose of linking the classroom activities and metaphor use. Both start and end times of the activities needed to be specified and, during each activity, tallies of metaphors and gestures needed to be made, so that I could get a basic sense of where clusters of metaphors and gestures most often occurred (though in the event it proved almost impossible for me to count them during the class). In addition, the observation schedule covered: organization of the class, materials and musical instruments used, and the language used by the teacher and students.

A follow-up interview (Interview 2) with Wang was conducted after the classroom observation. The face-to-face semi-structured interview took place in Wang's music classroom during her break, lasting 42 minutes. Again, I was permitted to record it, and at the same time made notes while Wang was talking. Information was sought

about Wang's educational background and working experience, and questions covered how Wang prepared for the class and aimed to explain new concepts, how Wang thought about metaphors and gestures, and if she used them to help her teach. Mandarin Chinese was used throughout the interview.

Both the gestures and speech recorded in the class were transcribed. Speech was transcribed from the videotape in Mandarin Chinese, and the texts were then broken into tone groups. The transcription of gestures included three steps: (i) identification of the movements that were gestures (here gesticulations), (ii) identification of the stroke of the each gesture, and (iii) location of the boundaries of the gesture phases in the relevant part of the phonological transcription.

For ease of understanding, each utterance is presented in Section 4 as four lines: Chinese characters, Hanyu Pinyin without tone marks, the literal English equivalent of each Chinese element, and a translation of the utterance, attempting to preserve the 'flavour' of the Chinese utterance whenever possible. Linguistic metaphors that were identified by applying MIP are underlined. The beginning and end of a gesture phrase are transcribed by a left/opening bracket and a right/closing bracket ('[]') respectively, and the main stroke phase of a gesture is marked by bold type. Brackets and bold type are marked on the first three lines, but only on the English translation if applicable. The abbreviations used throughout the paper are: PRT = particle; Q = question marker; 3SG = third person singular pronoun.

3.3   Identifying and coding gestures

As has been said, in this study, 'gesture' specifically refers to gesticulation. Thus, any fingering the teacher used to demonstrate how to play the recorder, or the conducting gestures often used while the class was playing the recorder were beyond the scope of this study and excluded. The interpretation of Wang's gestures was made from the researcher's perspective, and it is worth noting that this might differ from the interpretation from the speaker's or the addressee's perspectives (A. Cienki, personal communication, June 3, 2008).

Müller's system was not applied because the text of Müller (1998) was not available in English and very few examples of the system in use had been published. Moreover, as stated above, the system does not resolve the general problem of overlap also found with McNeill's (1992) system. It was therefore decided in this case to base the categories on McNeill's system, because it provided a clear and detailed procedure for gesture transcription.

McNeill (1992) defines three main types of gesture: "deictics", "iconics", and "metaphorics". Deictics are pointing gestures referring to either concrete entities and locations, or abstract spaces relating to an idea or concept. Both iconics and metaphorics create images, but those created by iconics relate to the current semantic content of the speech, while metaphorics create images referring to abstract concepts. In other words,

iconics depict some features being described in speech, while the concepts that meta-phorics represent usually have no physical form.

As described, iconics and metaphorics are more semantically oriented, while de-ictics are more pragmatically oriented. In fact, as discussed earlier, the multi-dimensional nature of a gesture seems to make it almost impossible for a classification system to have a simple system of mutually exclusive categories. Because of this, one of the most common conventions of gesture coding for researchers is to classify a gesture on the basis of the single most highlighted feature (e.g. Eisenstein and Davis 2004). Before identifying the features of each gesture, a coding policy was set up to handle the dis-tinction between deictics and metaphorics, on the one hand, and iconics and metaphorics, on the other.

3.3.1   *Metaphorics*

Metaphoric gestures were defined as gesticulations that present a more abstract refer-ent in terms of a more concrete image and involve a cognitive process of understand-ing one thing in terms of something else. This definition dovetails reasonably well with Lakoff and Johnson's conceptual metaphor theory, the theoretical framework on which this present study was built, and at the same time does not contradict the Pragglejaz definition of metaphorically-used lexical items applied in the study (discussed in Section 3.4).

One example is when Wang said "*gangqin de yinse yuelaiyue xizhi*" ('the timbre of the piano becomes more and more *delicate*') and gestured using a round and half-open palm facing up accompanying the word 'delicate'. Here, the gesture carries the dual structure required by a metaphoric, in which the representation of the delicacy of the timbre (a more abstract referent) by the gesture is presented as what appears to be an image of a bud waiting to open (a more concrete base).

3.3.2   *Deictics versus metaphorics*

According to McNeill (1992), abstract pointing gestures that imply a metaphorical picture are included in the category of deictics; for example, gestures used to point at an existing physical place, but referring to an abstract concept of where the speaker had been before. Pragmatically speaking, these gestures are pointing gestures (deictics), but semantically speaking, the place that the gestures point to can be interpreted con-textually as somewhere else (metaphorics). In the present study, gestures were used to point at music (the invisible melody in the air) and to indicate different historical pe-riods in time. The former were categorized as deictics. The length of a pointing gesture unit seemed usually short and was generally performed with an index finger. The ges-ture indicating a period of time, which involved understanding one thing (the musical periods of Renaissance and Baroque) in terms of something else (the physical place that the gesture pointed at), was classified as a metaphoric.

3.3.3 *Iconics versus metaphorics*

Gestures in a context where the visible vehicle of a metaphor is explicitly flagged both by the hands and by speech were classified as iconic. Usually the vehicle is depictable in such case. That is, if a teacher says "music is a container" and gestures a container, the gesture was categorized as iconic because the gesture represents the literal form of the word 'container'; however, if the same gesture accompanies the sentence "we can feel the sadness *in* his music", where the gesture has an implicit referent, the gesture was classified as metaphoric. An attempt was thus made to distinguish between gestural illustrations of verbal metaphors and gestures that were themselves metaphoric.

3.4 Identifying metaphorically used words

Verbal metaphors in Wang's teaching were identified in order to analyse the relations between them and gestural metaphors. MIP provides an explicit procedure, and it is a consistent guide to identifying and deciding whether lexical units used in spoken language are metaphorically used in various fields. For these reasons, a version of MIP was applied.

Generally speaking, MIP defines metaphoric use by examining "whether the word has one or two basic meanings which differ markedly from the contextual sense" (Littlemore and Low 2006: 11) and at the same time, whether the contextual meaning of the word can be understood with reference to the basic meaning(s). Only indirect metaphors were included; i.e., simile and extended metaphorical use of pronouns were excluded.

The steps of the entire procedure given by the Pragglejaz Group (2007) were followed, and each lexical unit was examined using the questions to decide if the lexical unit concerned was metaphorical. However, MIP does not determine a procedure for deciding when words comprise a single lexical unit.

3.4.1 *Lexical units*

In Mandarin Chinese, lexical units can be one or more characters organized into groups/units. For example, the term *piaoliang* ('beautiful') is treated as one unit, although it consists of two characters, because the meaning of *piaoliang* is lost if the term is taken apart into two independent characters, *piao* and *liang*. Further examples are *shoufa* ('technique', 'skill') and *kaitou* ('beginning'). These two-character terms both contain one character that refers to body parts, like *shou* for 'hand' and *tou* for 'head', and each of these would be classified as metaphoric if one goes below the level of lexical units. The transcription of Wang's speech was accordingly divided into lexical units before identifying the verbal metaphors.

3.4.2 *Basic sense of the lexical unit*

One of the four questions in MIP is to decide whether the word/term has a basic (e.g. concrete) sense. This can be a difficult question to answer because in many cases

a certain character/word may be used by a speaker simply just because everyone else uses it, and as time goes by, the character/word is associated with so many different meanings that no one knows, or is conscious of, the 'basic' meaning of the character/word. In addition, what counts as 'basic' is problematic, too. *Gen* is just one example of this difficulty: it is a word that is often used as a conjunction, functioning as 'and'. Thus, it is easy not to pick up the basic meaning of *gen*, which stands for 'heel' (the rear part of the foot), indicating 'following behind' and 'going with'.

In order to decide on this issue, dictionaries were used. The idea was to choose and consult the same dictionary whenever the coders were not sure about the basic meaning. The first more concrete meaning listed in the dictionary was always adopted and taken as the word's basic sense. The dictionary used for this study was the on-line *Concise Chinese Dictionary* developed by Ministry of Education of Taiwan. The target users of this dictionary are primary and high school students, and overseas learners, so explanations of each character are simple, clear, and often colloquial. In addition, the dictionary is claimed to be corpus-based (Ministry of Education 2000). Since the data for this study were from classroom discourse in junior high school, and the main purpose of using a dictionary was to suggest basic meanings of Chinese words/terms, this dictionary was considered to be an appropriate choice.

Taking *gen* as an example, the dictionary lists four meanings and their corresponding examples: (i) 'the rear part of objects'; for example, *jiaogen* ('foot heel') and *xiegen* ('shoe heel'); (ii) 'to follow'; (iii) 'and' (a conjunction), and (iv) 'to' (a preposition). Thus, the first meaning is taken as the basic meaning of *gen*.

Another example was when the two coders disagreed on whether the term *tese* ('characteristic', 'distinguishing feature') was metaphorically used or not. Wang used *tese* when asking her students about the special features of music in the Baroque. One coder included the term in her metaphor list because she believed that the term had a basic meaning of colour and it was different from the contextual meaning of the term, 'characteristics/features'. On consulting the dictionary, however, only one definition was found: the unique image/feature. This is irrelevant to colour and also suggests that the term has no other extended meanings. As a result, it was agreed that the term was not metaphorically used.

3.4.3   Technical terms

Technical terms were examined on an individual basis to see if they were metaphorical, depending on the context they were used in, as the metaphoricity can change from line to line.

3.4.4   Translated terms

Some terms, especially technical terms, were translated from other languages. Such terms are used as conventional terms in the target language (here Mandarin Chinese), but in fact may carry some other different and relevant basic meanings in the source language. *Baluoke* ('Baroque') is an example. In music, it is used to designate the style of

music composed during a period that overlaps with that of Baroque art, beginning around 1600 C.E. Derived from the Portuguese noun '*barroco*', a pearl that is not round but of unpredictable and elaborate shape, the term was not applied to music in English until the 1940s (Bukofzer 1939–40, 1948, Lang 1942, *Oxford English Dictionary Online* 2009). However, the term has been borrowed into Mandarin Chinese where it does not carry the meaning of pearl. In this case, 'Baroque' was excluded from the metaphor list.

3.4.5 *Expressions in other languages*
Although Mandarin Chinese is the official language of Taiwan and the one most often used in schools, teachers may occasionally use other languages in class. Examples of Taiwanese and English were both found in the data. Expressions in languages other than Mandarin Chinese were taken into consideration on a case-by-case basis.

3.5   Reliability of metaphor and gesture coding

To increase the reliability of coding, two more coders were involved in the metaphor and gesture identification (one for each). Both were students in the Department of Educational Studies at the University of York, both were native speakers of Mandarin Chinese, and both had taken courses on metaphor and metaphor identification. Definitions of metaphor and training in the use of MIP were given by the author. Coder A coded two extracts consisting of 1,275 characters. With respect to gestures, McNeill's three main gesture categories – deictics, iconics, and metaphorics – were explained to coder B before being applied to a clip of the session that lasted eight minutes and 34 seconds.

The result was 30.9% and 13.5% disagreement for the metaphor and gesture codings respectively. Each disagreement was then compared and discussed and a final solution agreed. Identification problems were thus resolved by discussion, and notes were made of the results. Each gesture was classified into one of the three categories. The gestures were then highlighted on the transcript using different colours, to facilitate density and distribution analysis. Finally, functions of the gestures were noted.

4.   Results

The duration of Wang's instruction in the recordings was 46 minutes, totalling 8,964 characters transcribed. In the session, 89 gestures were identified and categorized; 43% were iconics, 30% metaphorics, and 27% deictics.

4.1   Deictics

Wang used deictics to point at objects. Her eyebrows rose when she started the question "Can you see this word, Baroque, in the textbook?" and looked at the students.

Her left index finger pointed forwards. Then when Wang said the focus of the question *zhege zi* ('this word'), she raised her right hand and pointed at the screen behind her with her index finger. When she uttered the word, 'Baroque', she turned her upper body, half facing the screen, and looked for one second at the Chinese characters for 'Baroque' written on the screen.

However, deictics were not always used to point to something concrete. For example, when listening to the first movement of "The Four Seasons", Wang compared the violins' trill to birds chirping in the spring. When she asked the class to pay attention to a certain part of the melody, she repeatedly put the index finger of her right hand next to her right ear and pointed to the air. Wang kept repeating this gesture whenever she tried to draw the class's attention to the music. Thus, it appeared to be the music she was pointing at, although it was not concrete or even visible at all.

The following extract is another example of pointing to the invisible. Wang asked the class if they still remembered what instruments she had mentioned earlier in the same session. The first answer "harpsichord" came from a student and, as soon as Wang heard it, she raised her right index finger, pointing. Wang then repeated the answer and gave her response, "very good". It is not clear whether Wang's finger was pointing to the word, 'harpsichord', or the student who gave the answer, but in either case the gesture was categorized as deictic:

(1)   T: 我們 剛才 說 流行 的 樂器 有 哪些？
　　　　　women gangcai shuo liuxing de yueqi you naxie
　　　　　we just say popular (PRT) instrument have (Q)
　　　　　'What are the popular instruments we just mentioned?'

　　　S: **大鍵琴。**
　　　　　dajianqin
　　　　　harpsichord
　　　　　'Harpsichord.'

　　　T: 大鍵琴，很好！還 有 呢？
　　　　　daijianqin *henhao hai you ne*
　　　　　harpsichord very good still have (Q)
　　　　　'**Harpsichord**. Very good! What else?'

　　　S: 弦 樂器。
　　　　　xian yueqi
　　　　　string instrument
　　　　　'String instrument.'

　　　T: **弦 樂器，**非常 好！
　　　　　xian yueqi *feichang hao*
　　　　　string instrument very good
　　　　　'**String instrument**. Very nice!'

4.2   Iconics

Iconics were the most common type of gesture in the class, and most of these appeared in the lecture on the Baroque era and "The Four Seasons" section. Gestures that often fall in this category are those indicating numbers and for demonstration. For example, in the following case, Wang compared the difference between the flute and recorder while she was explaining why the recorder was translated as *zhidi* ('vertical flute'). A flute, however, is held horizontally by the player, which is why it is also named *hengdi* ('horizontal flute') in Mandarin Chinese. When she asked the following question, she used both hands to imitate gestures of both flute and recorder players, to emphasize the different directions in which two musical instruments were played:

> (2)   長笛 它 是 ［**直**著 吹］還 ［**橫**著 吹］？
> *changdi ta shi* [*zhizhe chui*] *hai* [*hengzhe chui*]
> flute (3SG) is [**vertical** blow] or [**horizontal** blow]
> 'Do you play the flute [**vertically**] or [**horizontally**]?'

4.3   Metaphorics

4.3.1   SPACE AS TIME

TIME IS AN ENTITY MOVING TOWARD THE SPEAKER is one of the conceptual metaphors shared by both English and Mandarin Chinese. For example, in Mandarin Chinese people say *shengdanjie kuai lai le*, which means 'Christmas is approaching', and *xingqitian guo le* means 'Sunday passed'. Time is then thereby conceptualized as something moving in space, and this can be seen even more clearly with gestures. Extract 3 is from Wang's session when she introduced the different periods in musical history. She explained the order of the Renaissance and the Baroque. First she raised her left arm, straightened out her five fingers, with the palm facing down, at approximately eyebrow height, and then moved her hand down to the height of her chest. The two points in the space indicated the two different time ranges in musical history and TIME is thus represented as SPACE by the gesture. However, it is interesting in this example that time travelled in different directions in speech and gesture; in speech, time moved toward the speaker, but in the gesture it moved on a vertical path from up to down. In fact, the metaphor that the gesture expressed here exists exclusively in terms of gesture, not in speech. That is, one would not say in Mandarin Chinese "the Baroque is *at the bottom of* the Renaissance" to mean the same thing:

> (3)   **文藝復興** ［過來 才 是 **巴洛克**］。
> ***wenyifuxing*** [*guolai cai shi* ***baluoke***]
> **Renaissance** [come yet is **Baroque**]
> 'The Baroque comes after the Renaissance.'

4.3.2   SPACE AS IMPORTANCE

Another conceptual metaphor suggested by the gestures is SPACE (UP) AS IMPORTANCE. This has a very close relation with the common conceptual metaphor in speech: SIZE (BIG) AS IMPORTANCE. In Mandarin Chinese, *da* ('big') can be used as an adjective to describe something important. In Extract 4, Wang told the class that there were some important periods in musical history. When she said that "there are some important and *big* periods", she lifted up her left arm with her open palm facing down, then moving progressively downwards, stopped at different heights. Instead of ranking the periods from big to small by gestures, she ranked them from up to down. It was another example of different metaphors being used in speech and co-speech gestures:

(4)   音樂 歷史 上 的 分期 喔 有 幾個 [**重要的 大的** 時期]
      yinyue lishi shang de fenqi o you jige [***zhongyaode dade** shiqi*]
      music history up (PRT) period (PRT) have several [**important big** period]
      'About the periods in musical history, some are important and **big**.'

4.3.3   Separated spaces as different parts of an exposition

Metaphoric gestures that separate different parts of an exposition appeared more than once, and although in speech Wang always said "First...moreover...and then...", she did not always use the same gestures for them. Sometimes she gestured the numbers 'one', 'two', and 'three' even though she did not verbally say any numbers. At other times, she just turned over the other palm from facing the ground to facing upwards, when moving to a new concept or idea in speech. Such metaphoric gestures distinguish different parts of an exposition being made as separate (downwards and upwards, or right and left) spaces. For example, when Wang reviewed the main points she had mentioned in class about Vivaldi, and asked the class to write the main points down in their own textbooks, she said "first...moreover...and then...", and gestured with her right index finger pointing to different fingers of her left hand, to indicate changes of topic.

4.3.4   Functions of gestures in classrooms

In Wang's session, different functions of co-speech gestures were examined and the following three were found: (i) to emphasize, (ii) to visualize, and (iii) to give feedback.

First, gestures helped emphasize what Wang wanted to say. Usually, emphasizing gestures accompanied a verbal expression containing numbers, which highlighted different aspects of a topic. These gestures could be metaphorics or iconics. They were used when the teacher helped the students either to preview the main points or to review the main ideas that were going to be introduced. These gestures seemed intended not only to help point out the important main points, but also to make it easier for the class to follow the teacher's exposition. Deictics that pointed out the topic being talked about in speech also seemed to emphasize points and encourage listeners to pay more attention to the topic.

Secondly, gestures were used to visualize the abstract. Wang made a big horizontal 'S' shape with her left arm when telling the class that the melody they were listening to was describing the spring breeze. The metaphoric gesture suddenly made the line of the melody visible. Wang also drew straight lines in the air while she was explaining the simplicity of the school's building compared with the Baroque's complexity. These gestures thus seemed to be used to help students visualize the abstract idea of simplicity.

Finally, gestures were used by Wang to express (positive) feedback. As shown in Extract 1, instead of pointing to a student after she asked the question, in order to nominate a specific student to answer, Wang pointed after hearing the response from the students. Almost as soon as she completed the gesture, she repeated the answer from the student. It seemed that Wang's finger was activated by the voice that produced the answer, and the index finger stopped in the air and headed in the direction of where exactly the answer had come from. By doing so, the attention of the class was drawn to the answer, followed by the positive response, "very nice", made by Wang to the student concerned.

4.3.5 *Relations of metaphoric gestures and speech*

As the focus of this study is on metaphor and metaphoric gestures, Table 1 shows the relations between utterances and co-occurring metaphoric gestures.

Table 1. Relations between utterance and co-occurring metaphoric gestures

	Relations	Example	Notes
1	The same metaphor expressed in speech and gesture	"The timbre of the piano becomes more and more **delicate**".	The gesture depicts a source domain ("delicate") in speech by a round and half-open palm facing up.
2	A metaphor expressed in gestures but not in the co-occurring speech	"First...moreover...and then..."	The index finger of one hand points to the fingers of the other hand. The metaphoric gesture distinguishes different parts of an exposition being made by representing them as separate spaces.
3	Different metaphors expressed in speech and gesture	"About the periods in musical history, some are important and **big**". (Extract 4)	Speech and gesture share the same target domain of the metaphor (importance), but the source domain is characterized differently in speech (big, i.e. size) and the gesture (high, i.e. height).
4	Metaphors expressed by gestures never appear in linguistic form in Mandarin Chinese	"The Baroque **comes after** the Renaissance". (Extract 3)	What the gesture expresses here is that "Baroque is **at the bottom of** the Renaissance". Such an expression is not normally used in speech to mean that the Baroque **comes after** the Renaissance.

5.   Discussion and conclusion

The distribution was such that 77% of the gestures came in the sections on listening to "The Four Seasons" (42%) and the lecture on the Baroque era (35%), which took more than 3/5 of the session. However, the metaphoric gestures were less clustered. In total, 30% of the gestures were metaphorics and these were used in almost all the eight different classroom activities. The only two exceptions were Wang's opening and ending remarks; specifically speaking, she used no gestures at all in her opening remarks.

The present study has examined the gestures accompanying speech used in one music session at secondary level in Taiwan, and deictics, iconics, and metaphorics were all found. Deictics pointed to concrete objects such as text printed on the screen and abstract concepts such as the invisible music. Iconics depicted explicitly the referent in speech, e.g. the vertical and horizontal directions. The conceptual metaphors the metaphorics instantiated included SPACE AS TIME, SPACE AS IMPORTANCE, and SEPARATED SPACES AS DIFFERENT PARTS OF AN EXPOSITION. The pedagogical functions of these gestures were to emphasize, to visualize, and to give feedback.

Examples of four relations of metaphoric gestures and their accompanying speech were identified: (i) the same metaphor expressed in speech and gesture, (ii) a metaphor expressed in gestures but not in the co-occurring speech, (iii) different metaphors expressed in speech and gesture, and (iv) metaphor expressed by gestures that never appear in linguistic form in Mandarin Chinese. These results correspond to what Cienki (1998) and Cienki and Müller (2008) found. However, it is important to note that McNeill's classification scheme was not applied in these studies when coding the gestures. Rather, metaphoric gestures were defined, and then the author double coded the gestures simply as metaphorics or non-metaphorics.

Three implications can be drawn from the research methods and findings of the present study. First, the difficulty of taking field notes about gestures when observing Wang's class suggests the necessity of using multiple video cameras to collect and analyse gesture in educational discourse. It is almost impossible for researchers to sit in a classroom with an observation schedule to keep tallies of gestures and note down other information at the same time. Actually, to increase research validity, a study using a behavioural research software programme is being developed. Second, the present study reconfirms the results of previous studies, namely, that music teachers use metaphors not only in oral instruction, but also in their gestures. Third, the gestural evidence supports the idea that metaphor functions in the realm of thought (Cienki 1998, Cienki and Müller 2008) for two reasons: (i) language and gesture may present either the same or different metaphors, and (ii) the phenomenon is not restricted to Indo-European languages. However, further studies based on larger samples are needed before further conclusions are reached.

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Metaphor and culture

Armed with *patience, suffering* an emotion

The conceptualization of life, morality, and emotion in Turkish

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This chapter examines the significance of two concepts for the target domains SELF and LIFE in Turkish. More specifically, the Turkish words *sabır* 'patience' and *çile* 'suffering' are identified as source domains that structure not only emotion metaphors but also other target domains. We analyse conventionalized metaphorical expressions that employ these two source terms in data collected from Google searches and the two-million-word M(iddle) E(ast) T(echnical) U(niversity) corpus of Turkish. Data from contemporary dictionaries and the Turkish National Corpus at Mersin University are also examined. Taken together, these data reveal that *sabır* and *çile* are culturally salient concepts that serve to structure Turkish speakers' understanding of life, morality, and emotion.

Keywords: çile, corpus evidence, culturally salient concepts, sabır, self

1. Introduction

The cultural motivations for many conceptual metaphors have become the major theme for a number of recent studies. The problems discussed mostly centre around cross-linguistic variations in metaphorical expressions and their potential sources. While basic level conceptual metaphors are ultimately grounded in bodily experiences and are thus expected to be universally shared, cultures are observed to differ in their interpretation of source domain entities and events, as well as in the linguistic means that they utilize to verbalize their specific experiences (Gibbs 1999, Kövecses 2005, Maalej 2004, Yu 2007). The role of culture-specific experiential domains becomes more evident in the conceptualization of complex abstract concepts like LIFE, TIME, IDEAS, and RELIGION, to name but a few.

There are many cases in which a number of source domains may characterize a single target domain. However, what has not been made "an empirical and a theoretical issue" is the case in which a single source concept may apply to distinct target

domains (Kövecses 2000: 79). To address the problem, Kövecses proposes the notion "scope of metaphor", and displays its working in the analysis of complex abstract systems. A complex abstract system is understood to be a non-physical domain with various constituents interacting with each other in complex ways. In such systems, even a single factor can produce significant changes within the system (Cameron and Deignan 2006). Religion is one such system. It is a "highly abstract domain quite removed from sensual experience" (Jäkel 2002), and one that is almost entirely dependent on metaphorical conceptualization, where metaphor is the "primary means by which the unknown can be conceptualized in terms of what is already known" (Charteris-Black 2004: 173).

In this chapter, we present the metaphorical mappings of two intricately connected concepts, *çile* 'suffering' and *sabır* 'patience', in Turkish. These culturally salient abstract concepts function as guiding principles of self-control in the spiritual domain and, when carried over to domains other than the spiritual, contribute to creating a complex metaphor network with significant entailments and implications. The analysis presented in this study aims to uncover the major components of this complex metaphor network by focusing on the source domains of *çile* and *sabır* in the construal of LIFE, MORALITY, and EMOTION in Turkish.

2.   Background: The linguistic data

The linguistic evidence that illustrates the mapping of *çile* and *sabır* onto different target domains has been gathered from various sources. First, we examined reference works to identify phraseological units that contain figurative uses of the lexemes *çile* and *sabır*. To this end, we utilized the official dictionary of the Turkish Language Institute (*Türkçe Sözlük* 2005) and the Ötüken Turkish Dictionary (Çağbayır 2007). We also referred to the Dictionary of Proverbs and Idioms (Aksoy 1971), the Dictionary of Idioms (Sözer 2000), and Pala's (2000) dictionary of idioms entitled *İki Dirhem Bir Çekirdek*. We should note that the reference works we used do not contain corpus evidence illustrating the contemporary uses of phraseological units in Turkish. In order to verify their currency and how these units in the language are used by contemporary speakers, we gathered independent corpus evidence for the occurrence of *çile* and *sabır* units from two different sources: the Middle East Technical University (METU) Turkish Corpus and WebCorp.[1] The METU Turkish Corpus is a corpus of contemporary written Turkish compiled by the Middle East Technical University (Say et al. 2002), which consists of two million words gathered from books and newspapers, and allows queries on various types of text produced between 1990 and 2000. WebCorp, created and maintained by the Research and Development Unit for English Studies in the School of English at Birmingham City University, is a suite of tools that allows access to the World

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1.   http//: www.webcorp.org.uk.

Wide Web as a corpus. It works on web search engines such as Google, Alta Vista, Yahoo, and Metacrawler. Query results of the WebCorp returned from Google pages include forums, blogs, online newspapers, online lyrics, and special interest magazines devoted to religion, literature, and other fields of specialization. The corpus data reveal that while most uses of *çile* and *sabır* conform to the definitions given by the reference works, there are certain other figurative uses of these units as well. As shown by Deignan (2005), Koller (2006), or Semino (2006), the data derived from corpora such as this can help confirm the entrenchment of a conceptual metaphor.

Corpus-based data, particularly linguistic instantiations brought together from online lyrics, revealed that the *çile* and *sabır* source domains are pervasively mapped onto the target domain LIFE. This finding led us to elicit data on the construal of LIFE in Turkish to see whether modern and popular descriptions of life appeal to these mystical religious source domains as much as those observed in the corpus data. To this end, we carried out research among 150 Turkish college students (aged 18–25) at Mersin University in the academic year 2007. They were asked to give a written account of how they view life, and what life means to them. We discovered that those young Turkish students' portrayals of LIFE resonated with mystical religious conceptions of life and self. The same conceptual schemas informing the medieval metaphors of LIFE and SELF found in the dictionaries of proverbs and idioms also exist in the contemporary descriptions of LIFE in Turkish. Such evidence underscores how deeply entrenched some linguistic and conceptual metaphors are in Turkish.

Thus, the Turkish examples used in this study are all naturally occurring contemporary utterances taken from the METU Turkish Corpus, WebCorp, and the data elicited from young native speakers of Turkish. They provide evidence for the conventionality of the mapping of *çile* and *sabır* onto a wide range of target domains.

We discuss our findings as follows: In Section 3 we present the ontologies and relevant image schemas that underlie the figurative realizations of *çile* and *sabır*. The linguistic manifestations indicate that the Anatolian Sufi tradition still plays a crucial role as the socio-cultural basis for the proposed metaphors in Turkish. Section 4 displays the broad scope of the complex abstract concepts *çile* and *sabır* and their applicability to a wide range of circumstances. The following sections focus on different target domains, LIFE, MORALITY, and EMOTION respectively. Section 5 illustrates that the LIFE IS A PAINFULLY AND PATIENTLY PACED JOURNEY metaphor in Turkish encompasses the philosophical and spiritual aspects of the mystical tradition even if it has not been an active practice in contemporary society. Section 6 introduces the MORAL STRENGTH IS *SABIR* metaphor, and discusses the interaction between a highly complex and culturally established notion of *sabır* and *çile*. Section 7 displays how LOVE and ANGER are metaphorized through *çile* and *sabır*. This section shows that the LOVE IS SUFFERING metaphor identifies the distressing and compelling force of love as something desirable for a Turkish lover. ANGER IS AN OVERFLOW OF *SABIR*, on the other hand, conceptualizes cases of possessing less moral strength.

3. Ontologies of *çile* 'suffering' and *sabır* 'patience'

3.1 A case of *çile*

In the early days of May 2008, a well-known columnist entitled an article that appeared in a national newspaper "*Rakel'in Çilesi*", 'The Suffering of Rakel'. The article was about the agonizing experiences of Rakel, the widow of the journalist and writer of Armenian extraction, Hrant Dink, who had been assassinated by a self-appointed fascist group approximately a year before. The article recited a series of painful events that Rakel had to live through following the murder of her husband. She had lost a loving life-time partner, the father of her children, and more recently, she had been offered official protection following relentless threats and insults she had had to face during and after every court meeting she attended. In addition, her son was forced to leave the country. The offer of official protection came from the same intelligence officer who had personally threatened the murdered journalist some time before the assassination.

3.2 A case of *sabır*

In another article that appeared on the economy pages of a national newspaper on January 24, 2007, the head of the Chamber of Commerce complains that, in the current situation, an entrepreneur has to possess "the patience of Job" to initiate a new business. He notes that one has to work through a multitude of transactions with at least 71 different official institutes, and has to secure at least 349 different approvals from various offices for his investment. To receive an official green light for the investment, the poor entrepreneur must possess much *sabır* 'patience', as he has to perform a series of activities, most of which have little or nothing to do with the business in question. This makes the process a painful experience, wasting time and money that would be better utilized elsewhere. The entrepreneur must possess *sabır* to endure the ordeal, and not give up his predestined road.

3.3 The origins of *çile* and *sabır*

Both *çile* and *sabır* are borrowed words in Turkish. They were borrowed into the language from as early as the 10th century, during the long migration of Turkish tribes as they gradually adopted Islam, their new faith. The effects of these borrowed terms have been far-reaching, both on the language and on the cultural model. "*Rakel'in çilesi*" is a very fitting title. It provides an entry for proper understanding of the complex notion of *çile*, and its role in the culture. There are a number of other expressions in the language whose translation equivalents mean 'ordeal', 'suffering', and 'torment', which might express such painful experiences. However, none of these would provide the appropriate cognitive schema *çile* does. Equally complex is the notion of *sabır*; it

conflates, among others, meanings of 'forbearance', 'endurance', 'fastness', 'fortitude', 'steadiness', and 'tolerance'. In the following pages, we translate *çile* as 'suffering' and *sabır* as 'patience', even though these renditions only partially capture the entailments of the concepts.

The official dictionary of the Turkish Language Institute gives the following definitions for *çile*:

(1)   *Çile* (noun) Persian. 1. Suffering, trial, ordeal. 2. A dervish's forty-day period of retirement and fasting.

The dictionary entry lists the ordinary, everyday use of the word as the primary meaning and the more technical term to do with religious practice as the secondary meaning. The word originally is a derivation, meaning 'forty' in the source language. In this sense, it refers to the institutionalized practice of the seclusion or retreat of Sufi ascetics from life for 'forty' days in a cell especially designed for this purpose inside a dervish lodge. The details and particular forms of ascetic practice may vary in different places and in different times; however, the fundamental aim is to gain self-discipline and, ultimately, spiritual enlightenment. Suffering in this sense is internal, purposeful, and even desirable.

The dictionary entry further lists a number of compounds with *çile*:

(2)   a.   *çile çekmek* (*çile* pull): 'to undergo a severe trial, suffer an ordeal'
    b.   *çileden çıkmak* (*çile* leave): 'to become furious, blow one's stack'
    c.   *çileye girmek* (*çile* enter): 'to embark upon a period of suffering, for one's period of suffering to begin'
    d.   *çile doldurmak* (*çile* fill)*:* 'to complete a period of suffering'
    e.   *çilesi dolmak* (*çile* full): 'for one's period of suffering to end'

In their original Sufi contexts, the compounds above stand for different phases of the ascetic practice. A candidate who proved himself a qualified individual was allowed to 'enter' or 'undergo' *çile* (*çile çekmek, çileye girmek*); those who successfully endured the forty-day practice of seclusion are the ones who fulfilled the requirement (*çile doldurmak, çilesi dolmak, çileden çıkmak*). In non-spiritual contexts, it is obvious that the ordinary person is not entering a specially designed cell to discipline the body and the soul for forty days.

The concordance data of *çile* retrieved from the METU Turkish Corpus and the WebCorp indicate that certain aspects of the mystical, religious sense of the term are transferred into everyday use. The location, duration and intensity of the suffering undergone are specified in most of the occurrences of *çile*:

(3)   *İstanbullu trafikte **6 saatte yakın çile** çekti.*
    'People living in İstanbul *suffered almost 6 hours in the traffic.*'

(4)   *Şairler, aydınlar **çok çile** çekti.*
    'Poets and intellects *suffered a lot.*'

The purpose of undergoing such pain is also stated:

(5) **Güvenliği, huzuru için** *yıllarca çok* **çile** *çekti.*
    'She *suffered* a lot *for her safety and peace of mind* for years.'

The experiencer of *çile* should 'bear', 'endure' or 'experience' suffering until it reaches an end. *Çekmek* 'to suffer', *doldurmak* 'to complete', *katlanmak* 'to bear', *tahammül etmek* 'to endure' are the verbs that co-occur with *çile*. In this regard, *çile* differs from a seemingly synonymous lexeme *sıkıntı* meaning 'distress', 'difficulty', and 'annoyance'. The verbal collocates of *sıkıntı* 'overcome', 'get out of', 'struggle', or 'eliminate', (examples (6) and (7)), which highlight that the one who experiences difficulty or distress would want to overcome it, are never used with the word *çile* in Turkish. The acts of the distressed agent experiencing *sıkıntı* can be oriented towards finding a solution to the situation causing discomfort, unlike those of the agent undergoing *çile*.

(6) *Bu* **sıkıntılar** *aşılır çünkü...*
    'These difficulties are *overcome* because ...'

(7) *Aklıma o an gelen fikir beni* **sıkıntıdan** *kurtardı.*
    'The idea that I found instantly *saved* me from trouble/difficulty.'

Although *çile* mostly collocates with lexemes, such as *acı* 'pain', *cefa* 'difficulty', *zorluk* 'hardship', which describe apparently undesirable and unpleasant situations, speakers of Turkish diverge from this semantic prosody, and they maintain a favourable evaluation of what *çile* depicts.[2] It appears that this is informed by the collective cognition or cultural memory shared by speakers of Turkish. When referring to hardships or pains in life, Turkish speakers prefer to use *çile* instead of any other lexical item that would convey a similar sense. Thus, the speaker establishes some form of resemblance between his or her pains, and the dervish's experiences during seclusion. By using *çile*, the speaker not only emphasizes the degree and length of a painful experience, but also transforms sufferings into a culturally exalted form. Thus, *çile* stands out as the most preferred lexeme in expressing almost all forms of painful experiences.

The same official dictionary of the Turkish Language Institute provides the following definition for *sabır*:

(8) *sabır -brı* (noun) Arabic. 1. The virtue of waiting patiently in silence in the face of states that bring pain, poverty, injustice and the like; a force of resistance. 2. Waiting for things that are likely to happen without displaying any act of impatience.

Sabır is one of the most frequently occurring lexemes in the Koran, meaning 'patience, endurance'. In the entry for *sabır* in the *Encyclopedia of Islam*, Wensinck (1995: 685)

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2. Editors' note: Semantic prosody is "an aspect of expressive connotation" (Partington 1998: 66). In Louw's terms (1993: 157) "a consistent aura of meaning with which a form is imbued by its collocates is referred to... as a semantic prosody".

notes that the significance of the concept cannot be conveyed by a single word in a Western European language. From the Koranic citations and later commentaries of *sabır,* Wensinck refers to a 13th century interpretation where four basic kinds of *sabır* are defined: *endurance* in laborious intellectual tasks, *endurance* in completing law-bound operations, *steadfastness* in refraining from forbidden acts, and *resignation* in calamity. The centrality of the concept and its importance for the believer remained the same in the centuries that followed.

As with all other borrowed nominals, *sabır* is verbalized in Turkish with a light verb *etmek* 'to do'. The verbal compounds in which *sabır* is the nominal component include the following:

(9)   a.   *sabr etmek* (v): 'to *be* patient'
      b.   *sabır vermek* (v): 'to *give* patience'
      c.   *sabırını yitirmek* (v): 'to *lose* patience'

The derived adjectives include *sabır*-lı 'with, possessing *sabır*' and *sabır*-sız 'lacking *sabır*, without *sabır*' and one of the most frequently occurring nominal compounds is *sabır gücü* 'the power of patience'.

The container image schema underlies the figurative uses of compounds with *çile.* With the verbs *çıkmak* 'leave', *girmek* 'enter', *doldurmak* 'complete', *çile* is conceptualized as a bounded space having an interior, a boundary, and an exterior. A person can encounter pain, distress, and hardship in various stages of life. Suffering begins when a person (in)voluntarily 'enters' (*çileye girmek*) or encounters any distressing circumstances and suffers patiently and 'completes' (*çile doldurmak*) the period of suffering in the container. The person experiencing *çile* may want to leave the container before the painful period ends. The expression *çileden çıkmak* meaning 'to become furious' describes how the experiencer acts impatiently and loses his or her temper.

The container image schema for *çile* may co-occur with the force image schema. "Where there is a container there can be forces internal to it", says Johnson (1987: 35). The Turkish compound *çile çekmek* 'to undergo a severe trial, suffer an ordeal' manifests this force schema. The prototypical meaning of *çekmek* 'to pull, to draw, to drag' in Turkish illustrates a physical effort to perform an action against a force. When *çekmek* occurs with *çile*, it means 'to bear', 'endure', 'put up with', and 'suffer'. All these senses of the compound maintain the psychological or physical pain experienced under an internal or external force. The abstract concept of *çile* is thus metaphorized as:

ÇILE (SUFFERING) IS A FORCE
ÇILE (SUFFERING) IS A CONTAINER

The force image schema is also at work with *sabır*. Through the expressions of 'the power of patience' or 'to be patient', 'to resist with patience', *sabır* is conceptualized as a counter-force against internal or external forces. Thus, the SABIR IS A COUNTERFORCE metaphor captures the force schematic entailments of *sabır*. Further details of this concept are discussed in the following pages in relation to the moral strength metaphor.

(10) Counterforce schema:
    a. *sabr etmek* (v): 'to be patient'
    b. *sabır gücü* (n + n compound): 'power of patience'

Furthermore, a person is 'with' *(sabır-lı)* or 'without patience' *(sabır-sız)*; *sabır* can be 'given' or it can be 'lost'. In all these cases, *sabır* is conceived as a possessed object, or SABIR IS A POSSESSED OBJECT.

(11) Object schema:
    a. *sabır*-lı (adj): 'one with patience'
    b. *sabır*-sız (adj): 'one without patience'
    c. *sabır* vermek (v): 'to give patience'.
    d. *sabırını* yitirmek (v): 'to lose patience'.

4. *Çile* and *sabır*: The targets

A target may be conceptualized via a number of different metaphors from various source domains. In other words, there are different source domains that map onto a single target, simply arising from the fact that our concepts are complicated by various aspects, and each of these aspects calls for a different source in their conceptualization. In the case of complex abstract systems, on the other hand, the opposite may hold: a single source domain may map onto a number of target domains. Kövecses (2000: 80) introduces the notion 'scope of metaphor' to account for how many and what kind of target domains a single source concept may apply to: "The scope of metaphor is simply the full range of cases, that is, all the possible target domains, to which a given specific source concept (such as war, building, fire) applies".

    Studies on the scope of metaphor have mostly focused on a particular complex metaphor and explored its source domain's wide range of applications to different target domains. MacArthur (2005), for instance, has shown that the source of the conceptual metaphor CONTROL OF AN UNPREDICTABLE/UNDESIRABLE FORCE IS A RIDER'S CONTROL OF A HORSE maps onto internal (emotion or thought) or external (events or other people) processes, both in English and Spanish. Deignan (2008) has reanalysed the ARGUMENT IS WAR metaphor on the basis of central words or phrases from the domain of WAR. Her concordance data for the nominal *attack* show that *attack* is used in five different domains: war, personal violence, sport, illness, and argument. This indicates the wide range applicability of WAR as a source domain. Similarly, Kövecses (2000) has examined the source domain of BUILDING, which is mapped onto several targets such as theories, relationships, career, economic systems, and life. He proposes the COMPLEX SYSTEMS ARE BUILDINGS metaphor as the central mapping emphasized in all these target domains. In a similar vein, Semino (2005) has explored the metaphorical construal of speech activity in English. She shows that a set of source domains MOTION, PHYSICAL TRANSFER, PHYSICAL CONSTRUCTION, and PHYSICAL SUPPORT,

which each constitutes a particular aspect of speech activity, can also be applied to a number of different target domains.

The corpus data reveal that *çile* and *sabır* as source domains are mapped onto a range of targets or circumstances. *Çile* may collocate with a number of different nouns as in the following examples from the METU Turkish Corpus and the WebCorp:

(12) a. *İstanbul'da **trafik çilesi*** [TRAFFIC JAM-UNDESIRABLE SITUATION]
 '*Traffic çile* in Istanbul'

 b. *Eğitimde **kayıt parası çilesi*** [EDUCATION-MONEY]
 '*Registration fee çile* in education'

 c. *Uçakta **rötar çilesi** sona eriyor* [DELAY-TRANSPORTATION-UNDESIRABLE SITUATION]
 '*Delay çile* in air travel is about to end.'

 d. *Emeklinin **maaş kuyruğu çilesi*** [LINE-PERIOD-PEOPLE]
 'A *queue çile* of senior citizens'

 e. ***Hayatın tüm çilesi** omuzlarında* [LIFE]
 'All *çile of life* on the shoulders'

 f. ***Aşk çiles**ini çeken bilir* [LOVE-EMOTION]
 'Only those who suffered know *love çile*.'

These examples show that the *çile* source domain has as its scope any long-lasting, unpredictable, (un)desirable pain or distressing situation that the experiencer would be willing to forbear to attain a goal. The nouns co-occurring with *çile* depict a number of situations (traffic, education, transportation, money, and the like) that one encounters in life. Although the specific targets are different from one another, we think that these circumstances can be subsumed under the target domain of LIFE, which can then be summarized as LIFE AS SUFFERING (*ÇILE*) in Turkish.

Sabır, on the other hand, is used to describe circumstances in LIFE in which one endures the trials of life with moral strength. An unpleasant or difficult situation may extend over time and this can be inferred in the noun compounds constructed with *sabır*.

(13) a. *Ramazan **sabır** ayı* [TIME-RELIGION]
 'Ramadan, the month of *sabır*'

 b. ***Sabır** ödülü* [REWARD-BEHAVIOUR]
 'reward of *sabır*'

 c. ***Demokratik sabır*** [POLITICS-BEHAVIOUR]
 'democratic *sabır*'

 d. ***Sabır** tavsiyesi* [ADVICE-PEOPLE]
 'advice of *sabır*'

 e. ***Sabır** imtihanı* [TEST-BEHAVIOUR]
 'a trial of *sabır*'

 f. ***Sabır** sınırı* [LOCATION-LIMIT]
 'the limit of *sabır*'

g. ***Sabrın sonu***   [TIME-END-POINT]
    'the end of *sabır*'

The 'limit' or 'end' of patience, and the 'month' of patience exemplify this aspect of the concept of *sabır*. The patience of a person can be tested by various circumstances and events through life ('test' of patience, 'democratic' patience). A person may need advice or guidance to be patient ('advice' of patience) in the face of life's pains and discomforts. If a person acts patiently under severe situations in life, one can be rewarded for being patient ('reward' of patience).

5.   LIFE: A *patiently* paced *painful* journey

Cross-culturally and cross-linguistically, LIFE is conceptualized as A PURPOSEFUL JOURNEY deriving from the EVENT STRUCTURE metaphor, i.e. LONG-TERM, PURPOSEFUL ACTIVITIES ARE JOURNEYS (Lakoff and Johnson 1999). Religious texts interpret the journey metaphor more as a moral journey. For a believer, life is to obey the commandments of God and to follow the ultimate guide who directs one to the true path. In line with Charteris-Black's findings (2004: 208), the journey of a Sufi can also be captured in two metaphors:

SPIRITUAL LIFE IS A JOURNEY

SPIRITUAL ACTIVITY IS TRAVELLING ALONG A PATH TOWARDS A GOAL

In a Sufi's journey, *çile* is a spiritual practice, which carries a Sufi to the ultimate destination: God. A Sufi embarks on this purposeful journey voluntarily. We propose the following set of correspondences for a Sufi's journey of life:

Traveller	→	Sufi
Destination	→	Unification with God
Obstacles along the way	→	Self-discipline though suffering
Distance covered	→	Progress made in self-denial

Çile here conceptualizes difficulties and pains as something positive and desirable. The more one experiences such hardships, the more one moves towards the ultimate aim of unification with God. Thus, an expression, *Allah çileni artırsın* 'May God increase your suffering' is in fact a blessing rather than a curse. Rumi explains the suffering practice of a Sufi:[3]

> (Someone asked) "What is Sufism?" the answer was, "To possess joy and ease in the heart at the time of affliction"... Do you know why the Dervishes suffer (practice) afflictions on earth? Because these corporeal sufferings give an everlasting life to the spirit. (Rumi [1983] *Mesnevi* III/ 3260–3265)

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3.   Sufism was mainly represented by the poet Jalal Al-Din Rumi (1207–1273), founder of the Mevlevi order, in thirteenth-century Anatolia.

A Sufi's pains and afflictions motivate the LIFE AS SUFFERING metaphor in Turkish. In the following conventionalized expressions, LIFE is conceived as a container that is full of *çile* (examples (14) and (15)), and living is viewed or even equated with a painful experience by Turkish speakers (examples (16) and (17)), as shown in the students' writing.

(14) ***Çileli/çile*** *dolu hayat/ömür/yıllar.*
'*Life/lifetime/years* full of pain and *suffering*.'

(15) *Hayat budur işte. Acı, dert,* ***çile*** *dolu.*
'Here is *life*. It is full of *pain*, *grief*, and *suffering*.'

(16) *Hayatta çekmediğim* ***çile*** *kalmadı.*
'There is no *pain* left that I haven't *suffered/undergone in life*.'

(17) *Hayat bir teselli,* ***acı, ızdırap***.
'*Life* is consolation, *suffering* and *agony*.'

Although the specific types of pain and suffering that an individual goes through may be of various kinds, they are all encapsulated by the super-ordinate term *çile*.[4] In this way, what is ordinary and may apply to all people becomes sublime and mystical. Consequently, the ordinary person conceives herself/himself as a Sufi who purposefully undergoes pain. However, there is a difference between a Sufi's and an ordinary person's experience of suffering. Unlike the voluntary suffering of a Sufi, the ordinary person calls pains *çile*, but at the same time expresses discomfort, as illustrated in the lines of a very popular song in Turkish:

(18) ***Bitsin*** *artık bu* ***çile***
Çekemem bile bile.
Sen ne söylersen söyle
Bu hayat geçmez böyle.
'*Let this suffering end* immediately
I cannot endure it consciously anymore
Whatever you said to me
This life cannot continue like this.'

A life full of suffering and pain requires strength to endure them. In other words, one has to face the consequences of undesirable situations and be able to withstand them. The force one needs is patience, as maintained by one blog writer (example (19)). For a college student, a test of life demands a power of patience (example (20)):

(19) ***Hayat*** *benim için* ***sabır ve direniştir***.
'For me, *life* is *patience* and resistance.'

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4. Kinds of *çile* are: *acı* 'pain', *sıkıntı* 'distress', *zorluk* 'difficulty', *güçlük* 'hardship', *ızdırap* 'grief', *üzüntü* 'sorrow', *dert* 'trouble', *işkence* 'torture', *cefa* 'rigiour', *eza* 'anguish'.

(20)   *Hayat darbe vurur. Her darbesinde yeni birşey öğretir ve bunu tekrar tekrar*
        sınar. **Hayat** *insanın* **sabrını** *ve varolma gücünü* **sınar.**
        'Life deals a blow to us. It teaches new things in each blow, and it tests what it
        has taught repeatedly. *Life tests one's patience* and the power of being.'

These metaphorical expressions show that Turkish speakers conceive LIFE as PATIENCE.
As for the metaphorical basis of LIFE AS SUFFERING and LIFE AS PATIENCE metaphors,
we also maintain that common sense knowledge of the metaphoric source domains
does not arise from "first-hand experience" but it is "the product of cultural mediation"
(MacArthur 2005: 89). In Kövecses' terms (2002: 75), the source acts as the root of the
target, and it constitutes the cultural root of the target.[5] In our case, the medieval
Anatolian Sufi tradition constitutes the cultural root for the manifestation of these LIFE
metaphors in Turkish.

    Based on the SUFFERING and PATIENCE metaphors of LIFE, we can ask how Turkish
speakers view the modern journey of LIFE. In the idealized cognitive model of a Turk-
ish speaker, a person's journey in this world is more a predestined journey rather than
a purposefully planned one. God determines whatever the person experiences, be it
pleasant or unpleasant. The individual has little power to exert over the course of the
journey: 'Whatever happens, one should endure' or 'Whatever God does, He does well'
are frequently used expressions that reflect the fatalistic attitude of Turkish speakers
towards life. So, as an answer to our question 'How do you view life?' one of our stu-
dents wrote:

(21)   **Hayat** *tesadüflere dayanır.* **İnsanın üzerinde pek kontrolü olmadığı** *bir*
        kavramdır.
        '*Life* is totally coincidental and *no one can control it.*'

The unwanted experiences inflicted upon the person all stem from the divine testing
the individual's faith. A good servant will be rewarded in the afterlife; the physical
world is transient and mortal. It has little importance for an ordinary person. This can
be seen in the answers of the students to the question, *what does life mean to you?*

(22)   *Benim için* **hayat** *kavramı* **fani olmayı** *ifade ediyor.*
        'For me, *life* means being *mortal.*'

(23)   *İnsan* **hayatı gelip geçici***; birgün varsın diğer gün yoksun.*
        'Human *life* is *transient*. You are alive one day; you are not the next.'

The journey of LIFE will end and those who can endure the trials will reach the ulti-
mate destination, that is, heaven in the afterlife. *Sabır* 'patience' is the force that is re-
quired during the journey to keep one on the right track towards the destination. A
student wrote the following, which is representative of the general conception of the
journey of life in Turkey:

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5.   Grady (1999: 91) explicates such cases in terms of the metaphor GENERIC IS SPECIFIC.

(24) **Hayat zorluklar ve engellerle dolu bir yol. Hayatın her anında sınav oluyor-sun.** *Bana göre,* **hayat** *zorluklara göğüs germektir,* **sabırlı olmak** *ve tam zamanında doğru karar vermektir.*

'*Life is a path full of hardships* and *impediments. You are tested in every minute of life.* To me, *life i*s withstanding difficulties, *being patient* and making the right decisions at the right time.'

Overall, we think that the metaphor LIFE IS A PAINFULLY AND PATIENTLY PACED JOURNEY captures the Turkish speaker's construal of LIFE. This metaphor also acts as a master metaphor. It entails the essential components, suffering and patience, in the conceptualization of LIFE. This metaphor is characterized by the following mappings:

Sufferers	→	People leading a life
Heaven in the Afterlife	→	Purpose of life
Difficulties of trials along the way	→	Difficulties in life
Distance covered towards a place in heaven	→	Progress made in life

6. MORAL STRENGTH: All you need

Lakoff and Johnson (1999: 290) argue that "our cognitive unconscious is populated with an extensive system of metaphoric mappings for conceptualizing, reasoning about, and communicating our moral ideas. Virtually all of our abstract moral concepts are structured metaphorically". In their analysis, morality is construed as human well-being and metaphors conceptualizing abstract moral ideas are grounded "in the nature of our bodies and social interactions". The source domains for morality, including a list of "elementary aspects of human well-being", are health, strength, balance, protection, nurturance, and the like.

In the moral metaphor system based on well-being, an increase in well-being is conceptualized as a 'gain' and a decrease of well-being as a 'loss' or a 'cost'. Thus, the combination of WELL-BEING IS HEALTH with other metaphors and with various 'moral accounting schemas' derives from the Moral Accounting Metaphor (Johnson 1996).

It is possible to find in Turkish the exact counterparts of many of the moral conceptual metaphors identified in English. As in English, conceptual metaphors of morality are grounded in these accounting schemas. This situation is to be expected, as Lakoff and Johnson (1999: 325) predict that moral concepts are grounded in basic experiential morality, and thus they are likely to be "stable across cultures and over large stretches of time". However, they also indicate that different cultures may emphasize and develop the basic moral metaphors in different ways. In this regard, it is worth noting that potential differences can be expected to arise from the cultural antecedents of the divide between collectivistic cultures as opposed to individualistic cultures.

A basic schema of reward and punishment, which uses the metaphor of moral accounting, applies in the complex abstract system of religion. In the context of the

reward-punishment schema, there is a person who has authority over the other and reward is conceptualized as 'reciprocation' and punishment as 'retribution' by the authority (Lakoff 1996). In the domain of religion, this is illustrated in the Old Testament in the punishment of Adam and Eve by the authority. Metaphorically, eating the fruit is conceptualized as giving in to temptation, a violation of the debt-payment principle.

On the other hand, there is the reward. A wealth of expressions captures rewards by God to those who obey the authority and live a moral life. Reward is commonly for those who are 'patient'. In the Koran, a very high value is laid upon *sabır*:

> (25) 'I have rewarded them this day for their *patient endurance*; they are, indeed, the ones who have achieved bliss' (23: 112).

The high value of the concept in the Koran is evident from the fact that even the Prophet is warned to be patient:

> (26) 'And, O Prophet, *endure thou with patience*; and verily thy *patience* is possible only with the help of Allah' (16: 128).

Charteris-Black (2004) notes some major differences between the Koran and the Bible. The Koran appears to be a more heavily didactic text than the Bible and hence less dependent on metaphor. It sets a number of guiding principles for acceptable and unacceptable behaviour, and offers instructions for both spiritual and social practices. The faithful must focus more on the life to be followed rather than the one they are living. Very frequently in the text, rewards and punishments are reiterated for those who follow the guidelines and for those who do not. However, as indicated by Charteris-Black, whether the rewards and punishments would be interpreted as metaphoric or just literal descriptions of the afterlife is debatable.

While the Koran itself is less 'metaphoric' and more 'didactic', the commentaries appearing in the centuries following its compilation brought very different interpretations of the practices cited in the text. In simple terms, the differences of interpretation are most often introduced by a particular cultural conceptualization of the guiding principles as different social groups came to adopt Islam. Originally shamanistic in their Asian homeland, the Turkish tribes' contact with Islam came through the mediation of Persian culture, which itself imposed its own interpretations on Islamic conceptualizations. The Turkish conceptualization of this new faith has resulted in a number of different mystical interpretations, such as the Mevlevi Order and the Bektashi Order, among many others. This means that the majority of the conceptual metaphors, instantiated in idioms and conventional expressions currently used in the language, are grounded in the specific cultural and historical experiences of the Turkish people. Thus, while the major text of the dominant faith is less metaphorical, the cultural interpretation of the social practices is metaphorical, as the new faith is conceptualized via what is already in the culture.

A number of very commonly occurring conventional expressions (Aksoy 1971, Pala 2000) mention the rewards waiting for those who are patient or act patiently:

(27) *Allah **sabırlı** kulunu sever.*
 'God loves his *patient* servant.'

(28) ***Sabır** acıdır, meyvesi tatlıdır.*
 '*Patience* is bitter, but its fruit is sweet.'

(29) ***Sabırla** koruk helva olur, dut yaprağı atlas.*
 'With *patience* sour grapes turn into sweetmeat, mulberry leaves into satin.'

(30) ***Sabreden** derviş, muradına ermiş.*
 'A dervish that can stay obtains.'

(31) ***Sabreyle** işine, hayır gelsin başına.*
 'Do your works *in patience, a reward will come to you.*'

(32) ***Sabrın** sonu selamettir.*
 '*Patience* leads to salvation.'

The ultimate moral authority in monotheistic religions is God. In the reward-punishment schema (*reciprocation-retribution*), the authority will decide who is to be punished and who is to be rewarded. A moral life is the one in which one obeys God's commandments and follows His will. This sounds simple but is hard to accomplish for a 'weak' creature like a human being. There is the devil, who constantly tries to move humans away from the path of God. Furthermore, there are also 'temptations of the flesh'. One needs moral strength to face these relentless assaults and, in this view, moral strength is not something that humans possess by birth but have to build up through hard work.

Reward comes to those who act with *sabır* or possess enough *sabır* to obey God's commandment and pursue the path of God patiently. The intricate relationship between *sabır* and *çile* becomes more evident in the conceptualization of moral strength. Simply put, moral strength is *sabır*, and the process of building of moral strength is possible only through experiences of *çile*.

According to Lakoff and Johnson (1999), strength of will is an essential condition for moral action. Moral strength lies at the very centre of the moral system and relates not only to strength in maintaining an upright and balanced moral posture, but also to strength required in resisting and overcoming the forces of evil. As suggested in the folk conceptualization, "No pain, no gain", moral strength is also built up through self-discipline and self-denial. This is exactly what the *çile* practice of the Sufi was designed to achieve. The seclusion, retreat, pains, and sufferings one has to endure in order to muster enough moral strength are conceptualized as achievements rather than punishment.

The correspondences of the moral strength metaphor are thus:

MORAL STRENGTH IS *SABIR*

Being Patient	$\rightarrow$	Being Upright and Good
Being Impatient	$\rightarrow$	Being Low and Bad
Forces of Trial	$\rightarrow$	A Destabilizing Force
Moral Virtue (*Sabır*)	$\rightarrow$	Strength (To Resist)

Moral strength is conceptualized as *sabır*. Here, *sabır* is the strength that a believer should possess to withstand both external and internal destabilizing forces, as advised by the Koran:

(33) "O my dear son, observe Prayer and enjoin good and forbid evil and *endure patiently* whatever may befall thee. Surely, this is of those matters which require high resolve".

(34) "And for the sake of thy Lord do thou *endure trials patiently*".

(35) "So be *patient* with admirable *patience*".

(36) "...and who *patiently endure* whatever befalls them, and who observe Prayer and spend out of what we have bestowed upon them".

Enduring patiently the forces of external and internal evil, a faithful follower who resists these forces occasionally demands support from God when he feels weak:

(37) *Tanrım bana **sabır gücü** ver.*
     'My God, bestow upon me *the power of endurance*.'

(38) *Tanrım bana **dayanma gücü** ver.*
     'My God, bestow upon me *power of resistance*.'

When he is out of *sabır*, he demands it:

(39) *Tanrım bana **sabır** ver.*
     'My God, provide me power of *endurance*.'

Resisting the forces of evil is possible with *sabır*:

(40) ***Sabırla** direndi.*
     'He resisted with *patience*.'

(41) ***Sabırla** katlandı.*
     'He bowed with *patience*.'

(42) ***Sabretti**.*
     'He *remained patient*.'

However, in the Turkish cultural model, the destabilizing force may not necessarily be evil. The forces exerted on a person may come from God. Since the simple purpose of this life is a trial and the trial may come in the form of hardships and difficulties, conceptualized as *çile*, *sabır* is needed by the believer to endure trials. No individual has been as tested to the extreme as Job was. Job knew that the source of his ordeal was the will of God and he waited patiently. As an example to be followed, Job and other divine personae occur in conventionalized expressions in Turkish:

(43) *Eyyup **sabrı***
     'The *patience* of Job'

(44) *Peygamber **sabrı***
     'The *patience* of the Prophet'

(45) *Derviş **sabrı***
'The *patience* of a dervish'

Pained by loss of his sons, Job maintains his moral posture and patiently accepts his trials. One very common expression of condolence in Turkish is:

(46) *Allah kalanlara **sabır** versin.*
'May God give *patience* to the survivors.'

7.   LESS STRENGTH, more EMOTION

Lakoff and Johnson (1999) argue that much of the moral strength metaphor has to do with internal evils. A person should strengthen his willpower to resist the demands of internal evils. One should have full control over the self, and thus one would need enough power to control the body, which is conceptualized as the seat of passion and desire. In this context, ANGER is conceptualized as one of those internal evils since it threatens one's self-control.

Applying force dynamics to morality, Kövecses (2006) identifies two forces: evil as a physical force acting on a person, and moral strength resisting the force of evil. In the source domain, there is a physical force with a tendency for action to produce an effect, and there is the human body with a force towards inaction, towards remaining as before. In the domain of morality, these two forces (internal or external evil and the self) interact: the evil forces the self into action and the self tends to resist and maintain control. The self undergoes a change in emotion although the self withstands a change in morality. Thus, less moral strength is giving in to evil.

In a comparative study on conceptual metaphors in English and Spanish, Soriano (2003: 304) refers to a special case of opponent/controller metaphor, namely ANGER IS DEVIL. A special type of POSSESSION metaphor, DIABOLIC POSSESSION is productive in Spanish. Turkish is equally rich in such fully conventionalized anger metaphors, where giving into evil forces (opponent/controller or social superior) is explicitly expressed in expressions like the following:

(47) ***Cinlenmek/cini** tutmak*
'To behave *like demons*'

(48) ***Cin ifrit** olmak*
'To become *like a demon*'
(*ifrit*: a malicious demon in Middle Eastern mythology)

(49) ***Cinleri** ayağa kalkmak.*
'His *demons* all stood up'

(50) ***Cinleri** başına toplanmak/üşüşmek*
'*Demons* gathering on one's top'

In Turkish conceptual metaphors, when one is possessed by the demons, the emphasis is more on the *intensity* of anger, with no implication of other evil forces. Possessed by demons, one is very angry and under the control of Satan, even losing faith:

(51)   **Dinden imandan** *çıkmak*
       'With no faith'

(52)   *Sen **şeytana** uyma*!
       'Don't obey Satan!'

A number of the principal metaphors of anger in Turkish conceptualize the emotion via loss of self-control and loss of possession. In this context, the possessed item, which is lost, is *sabır* and consequently one is out of *çile*:

(53)   a.   **Çileden** *çıktım*.
            'I was furious.'

       b.   *Beni **çileden çıkardı***.
            'He made me furious.'

(54)   a.   **Sabrım** *taştı*.
            'I was out of *patience*.'

       b.   **Sabrımı** *taşırdı*.
            'He made me very angry.'

Çile and *sabır* here both express loss of control and, more specifically, conceptualize an emotional state. It is possible for both expressions to conceptualize another emotion, although in the majority of cases the emotion is anger.

Within the confines of the Dervish lodge, leaving the cell before finishing the institutionally dictated duration (i.e. 40 days), and the act of ending the process as such, is called *çile kırmak*, literally, 'breaking the *çile*'. This is generally a disgrace for those who end the process and they are required to start it all over again. Outside the domain of the Sufi, the disgraceful act of leaving the cell (i.e. not patiently enduring the hardships in an exercise of self-discipline) is carried over to ordinary life. Here, lack of moral strength results in giving in to the forces of (internal or external) evil. The causative form above (53 b), *çileden çıkar*, implies an external evil, while *çileden çıktım* (53 a) relates more to an internal evil.

In a very common metaphorical expression in Turkish, where the anger is a liquid, the container is a pithos, a huge earthen pot used to store fluids, wine, vinegar, etc. (Aksan 2006). *Sabır* is associated with anger in at least two other forms of container: *sabır küpü* 'a jar of patience' and *sabır taşı* 'a stone of patience', or in one variety, *sabır çanağı* 'a bowl of patience'. The content in all cases is fluid, in compliance with general as well as culture specific conceptualizations:

(55)   *Hepimiz **sabır küpü** olduk*.
       'We all became *patience jars*.'

(56) **Sabır taşı** *çatladı*.
       'The *patience stone* cracked open [i.e., fluid started to leak out].'

(57) **Sabır çanağı** *taşmış*.
       'Her *bowl of patience* has overflowed.'

In these metaphorical expressions, the person is understood to be under pressure from offending events and is enduring patiently. 'Full to the brim', in the Turkish case, is where the liquid eventually overflows. It is understood that there is no single offending event but many, and that these have been going on for some considerable time. The cultural code advises the person to *endure patiently* up to the very last possible moment. The final event or confrontation adds the very last drop. Given that the volume of a drop is a tiny amount compared to the rest of the liquid in the container collected over time, we understand that the person has been suffering internally with each drop of fluid added to the container.

Following Lakoff and Johnson (1999), in the Turkish cultural model, the physical object self is understood as the controller of Container:

THE PHYSICAL OBJECT SELF IS CONTROL OF A CONTAINER

A Person	→ The Subject
A Container (Pithos, Stone, Bowl)	→ The Self
Control of Container (Pithos, Stone, Bowl)	→ Control of Self by Subject
Noncontrol of Container (Pithos, Stone, Bowl)	→ Noncontrol of Self by Subject

The loss of a once possessed object in an anger context is again construed via *sabır*:

(58) *Sabrımı* **yitirdim**.
       'I have lost my *patience*.'

(59) *Sonunda sabrım* **tükendi**.
       'In the end, my *patience* exhausted.'

SELF CONTROL IS *SABIR* POSSESSION

A Person	→	The Subject
A Physical Object	→	The Self
Sabır (patience) Possession	→	Control of Self by Subject
Loss of *Sabır* (patience)	→	Noncontrol of Self by Subject

Experiencing a romantic relationship is also viewed as SUFFERING in Turkish. Turkish speakers see LOVE as a compelling force, whose intensity is measured by the amount of pain it inflicts on the lover. In an article on love metaphors in Turkish and English, Aksan and Kantar (2008) demonstrate that the Turkish subject prefers not to resist the physically and psychologically distressing force of love and accepts it as a natural part of experiencing a romantic relationship. In the same study, a corpus of Turkish love metaphors consisting of 920 metaphoric expressions was compiled. Among these metaphorical expressions, the source domain of PAIN/SUFFERING dominated the database

with 148 samples. Expressions like *çile çekmek* 'to suffer greatly', *dert/ızdırap çekmek* 'to worry, to feel sorrow', *perişan olmak* 'to become miserable', or *kan ağlamak* 'to shed bitter tears' are typical in the Turkish conceptualization of love:

(60) *Aşk yaşayanların çilesi*.
    'Love is the *suffering/pain* of people living on this earth.'

(61) *Aşk acının sana zevk vermesidir*.
    'Love is *taking pleasure in pain*.'

(62) *Aşk öyle bir acıdır ki dert sahibi arzu eder*.
    'Love is such a *severe pain that one who suffers desires more of it*.'

The model of divine love in the Anatolian Sufi tradition acts as a model for romantic love. Parallel to a Sufi's experiences of pain and suffering to reach divine love, the Turkish lover is willing to undergo emotional pain and long-lasting suffering to reach the beloved. In other words, love in Turkish culture is conceived as something unattainable and painful, yet pleasant. Most metaphors of divine love used in Sufi poetry also appear in contemporary data to refer to romantic love. For instance, a recent popular love song titled *Çile* portrays LOVE and LIFE through the SUFFERING metaphor:

(63) *Bilemem başı sonu nerede*
    Akarım nehir gibi yine de
    Yaşamak inadına ve ille de
    Cana vurunca
    Çile
    Tutamam yeri toz tanesiyim
    Bir garip dünya biçaresiyim
    Bir kulun deli divanesiyim
    Aşka gelince
    Çile
    Ne rahat bir soluk aldım
    Ne huzur buldum
    Yine de sevdim bu acı dünyayı
    Gitmedim, durdum
    Çile
    'I know not where it starts and where it ends
    I still keep flowing like a river
    Being alive despite and in spite of everything
    When it hits you to the core of life
    Çile (Suffering)
    I cannot settle on the ground, I am a speck of dust
    I am homeless and left destitute by this world
    I am a lunatic, crazed for a man
    When I am in love

> *Çile* (Suffering)
> I never took a sigh of relief
> Nor did I find peace here
> But I still love this bitter world
> I never left this place, I stayed here
> *Çile'* (Suffering) (Aksu 2005)

We should note that suffering for love is included in the "nonprototypical love model" (Kövecses 1988: 74–75) in English. Unrequited love or partially returned love causes suffering, an unpleasant experience that is expressed through the LOVE IS A DISEASE metaphor in English: for example, "I suffer terribly from unrequited love" or "She was sick with love" (Kövecses 1988). On the other hand, suffering is an essential component of the prototypical love model identified in a love story of Arabic origin, Laila and Majnun in Turkish. The two lovers in this story cannot unite because their families do not approve of their relationship. As a result, Majnun suffers deeply and becomes insane. He wanders aimlessly in a desert and reaches divine love through earthly love.
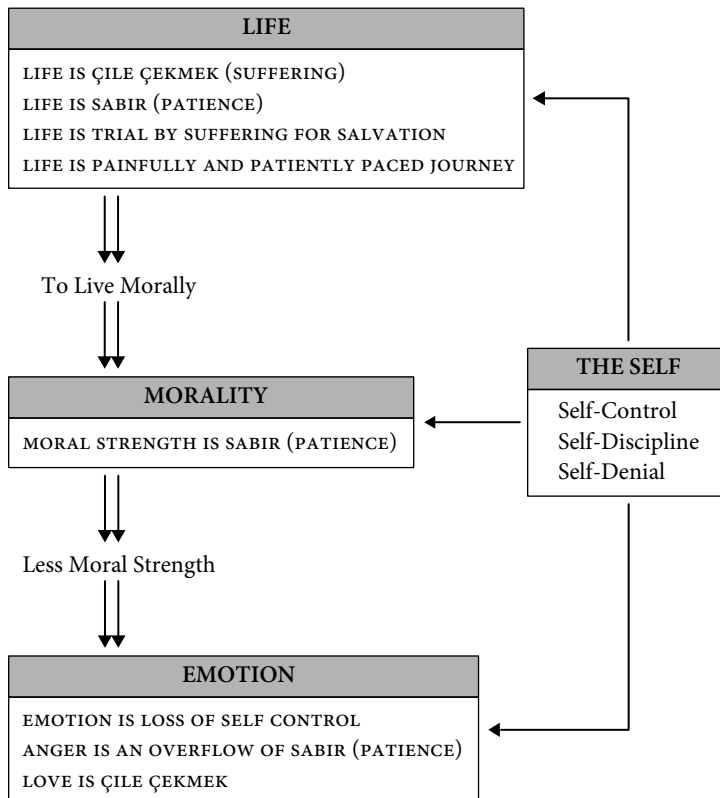
Figure 1. The complex abstract system structured by *çile* and *sabır*

As has been shown, the culturally salient, complex abstract concepts of *çile* and *sabır* structure equally complex target domains of LIFE, MORALITY, and EMOTION. They interact with each other in complicated ways and this interaction results in an intricate web of metaphorical entailments. The resulting metaphors can be summarized as in Figure 1.

8.   Conclusion

In complex abstract systems, a single source domain may map onto various target domains. Abstract concepts from the spiritual domain have existed in the cultural subconscious of people for many centuries and have a lasting impact on conceptual metaphors. The philosophical, spiritual, and practical aspects of the Anatolian Sufi tradition, as we have argued in this chapter, helped shape metaphorical schemas of thinking about LIFE, MORALITY, and EMOTION in Turkish.

Both *çile* 'suffering' and *sabır* 'patience' originate in religious contexts and are borrowed into Turkish with religious overtones. They have eventually replaced their native counterparts and, as they became more deeply entrenched in the culture, they came to conflate a number of other closely related concepts. As indicated in this study, these concepts are still very active, and are in use in constructing metaphorical expressions. The spread of these entrenched metaphors can be found in the corpus data and are linguistically manifested in young Turkish students' portrayals of life.

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Trolls

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This chapter explores the use of *troll* in modern Swedish in order to show how culturally entrenched concepts, and the attitudes that are associated with them, are integrated in the language of a speech community as part of its heritage. The noun has a complex and variable sense potential, and both literal and metaphorical uses of the noun are attitudinally coloured, although these attitudes may be ambiguous and even contradictory. Using linguistic evidence gathered from dictionaries and Internet sources, this chapter describes and discusses the rich and partly antithetical set of attitudes expressed by the conventional and novel metaphorical expressions that draw on this Scandinavian mythological concept, and briefly compares Swedish uses of *troll* with those found in English.

Keywords: attitudes, culturally-entrenched concept, heritage, Swedish, variable sense potential

1. Introduction

Culturally entrenched concepts, and the attitudes that are associated with them, are integrated in the language of a speech community as part of its heritage. The mytho-logical complex labelled *troll* in Swedish is an example of this. It is shared throughout Scandinavia, as a largely equivalent *troll* noun is also part of the vocabularies of Norwegian and Danish, two other North Germanic languages, which are closely re-lated to Swedish.[1] In this chapter I focus, however, on the uses of *troll* in Swedish, and how its both idiomatic and creative linguistic potential is coloured by old traditional beliefs in such supernatural beings. But it is also clear that many more recent applica-tions of the noun show that the contemporary relegation of the *troll* myth to the fairy tale sphere has affected the way it can be used to think and talk about such fictitious

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1. The pronunciation of Danish tends to cause some interpretative problems for Swedish peo-ple, who generally understand spoken Norwegian quite well. But in the written medium both Danish and Norwegian are for the most part accessible to proficient users of Swedish.

characters, as well as a wide range of other phenomena that are perceived to be similar to trolls in some respects: humans, other creatures and things, and also more intangible matters and experiences.

The persistent occurrence of the noun *troll* in Swedish indicates that it is a culturally entrenched notion. Sweden is for the most part a sparsely populated country, heavily forested, and earlier most people lived in the country in often small villages, and there were many fairly isolated farms. Nature tended to dominate daily life, and the constant experience of natural phenomena helped to inspire people's imagination in interaction with existing folklore, full of tales about trolls and other supernatural beings in the woods and mountains, lakes and rivers, in an untamed landscape where human dwellings and especially larger communities were few and far between. The *troll* myth is rich in associative potential, and it is connected with the experience of Swedish nature, including the shifting climate and light conditions across the seasons, with daylight that lingers lovingly late in summer, but is contrastively bleak in winter, when twilight starts descending in the early afternoon on sceneries where growth has stopped, and waits withdrawn for more sunlight and warmer, spring weather. Significantly, traditional trolls prefer darkness, and prototypically live in the mountains and dark forests. They can come out at dusk, but shun daylight. Today we can learn about this and other troll characteristics on numerous Swedish web sites. A session on the Internet using the search engine Google shows how fully alive the troll myth is; see the next section and further examples and frequency figures given in later sections. So *troll* and all it can stand for is no doubt a culturally salient notion (see Wierzbicka 1997, Williams 1983).

However, it is important to note that it is difficult to transfer many of the imaginative descriptive aspects and the rich and partly antithetical set of attitudes of this Scandinavian mythological concept to even a comparatively closely related language like English – or, more precisely, to another language as it is used and understood by its native speakers. In other words, *troll* is an example of how intertwined the language and the culture of a speech community tends to be.

2.   The method used for finding *troll* examples

This chapter focuses on the qualitative semantic potential and variability of the noun *troll* in Swedish. In addition, it briefly looks at how *troll* is used in English, and how these uses compare with the range of distinguishable Swedish *troll* meanings.

The language examples have been taken from dictionaries and books and, especially, from Swedish web pages on the Internet.[2] A separate frequency search was also

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2.   Unfortunately, the Swedish Academy's dictionary – *Svenska Akademiens ordbok* or *SAOB* (Eaker and Eriksson http://g3.spraakdata.gu.se/saob/) – does not have an entry for *troll*, as it so far only contains headwords between *A* and *trivsel*. However, established compounds with -*troll* – e.g. *bergatroll*, 'mountain troll' – where the first element begins with a letter or letter sequence that occurs earlier in the alphabet are given in this dictionary.

made for the forms *troll* and *trolls* in web pages written in English. No attempt was made to distinguish different types of texts in these Google searches. They were only done in order to see how frequent the forms of especially the Swedish noun *troll* are, as well as some compounds and idiomatic expressions containing this vocabulary item. All the frequency figures given were retrieved from the Internet on Saturday 28 March 2009.

The Swedish noun *troll* has eight different inflectional categories: *troll* (identical singular and plural), *trollet*, *trollen*, *trolls* (identical singular and plural), *trollets*, *trollens*. The approximate number of occurrences of each of these in web pages in Swedish is given below.

– The first two morpho-syntactic categories are syncretic, as they are realized in the same way or by the same outer form: *troll*. This form can express either the indefinite singular or the indefinite zero plural of the lexeme. Determiners or the forms of adjectival premodifiers can show which of these two inflectional categories is used in a specific noun phrase: e.g. *ett stort styggt troll* 'a big nasty troll' versus *två stora stygga troll* 'two big nasty trolls'. There were about 3,340,000 Google hits for *troll* in Swedish web pages.

– In Swedish, the definite categories of nouns are formed by suffixation, and since the grammatical gender of *troll* is neuter, the definite singular is *trollet*, while the definite plural is *trollen*. However, when either of these forms occurs as the head of a noun phrase with one or more premodifiers, there is usually also a separate definite article in the determiner slot: e.g. *det lilla trollet* 'the little troll', *de små trollen* 'the small trolls'. According to Google, *trollet* occurred about 181,000 times on Swedish web sites, while the rounded figure for *trollen* was 99,200.

– Swedish genitives are formed by adding the suffix *-s*, and *trollets* is the singular definite genitive: e.g. *trollets grotta* 'the troll's cave', while *trollens* is the plural definite genitive: e.g. *trollens skatt* 'the trolls' treasure'. There were 9,620 Google hits for *trollets* and 8,930 for *trollens*.

– Similarly, the syncretic Swedish form *trolls* is either the singular indefinite genitive or the plural indefinite genitive: e.g. *ett trolls hår* 'a troll's hair', *vissa trolls torftiga liv* 'the plain lives of certain trolls'. There were 993,000 Google hits for *trolls* in web pages written in Swedish. However, some of these instantiations of the form *trolls* were not Swedish genitives, but instead uses of the English plural *trolls* within Swedish texts. The reason for this is, of course, that English is much used in Sweden, and that English words and expressions are frequently integrated into stretches of Swedish language use, either as incidental nonce borrowings or as more established loans. The following are a couple of examples of the English plural *trolls* within Swedish web pages.

(1) *Jungle* **Trolls** *är en grym och mörk ras*
     'Jungle Trolls are a cruel and dark race'
     (*World of Warcraft*. "Troll-Trolls".)

(2)   *Rolf Lidberg vykort nr 127 Trollfamiljen True Trolls*
      'Rolf Lidberg postcard no 127 the Troll Family True Trolls'

Some of the hits for the form *troll* may then be uses of this English noun rather than instantiations of the Swedish noun *troll*. All the same, such English uses in Swedish web pages are probably intended as direct and full translations of the Swedish *troll* lexeme. In other words, they can ordinarily be taken as attempts to convey a Swedish *troll* meaning. Even if English also has a *troll* noun, such Swedish uses of the English forms *troll* and *trolls* should rather be related to the Swedish mythological *troll* complex than with the corresponding English word. (For further discussion of *troll* in English and how it compares with the Swedish *troll* complex, see especially Section 8.)

Finally, a Google search for *troll* and *trolls* in English web pages resulted in approximately 15,900,000 and 5,330,000 hits respectively. Some of these are instantiations of the verb *troll*, meaning either more concretely and specifically "to catch fish by pulling a line with BAIT on it through the water behind a boat" or, when semantically extended and generalized, "to search for or try to get sth" (Hornby et al. 2005: 1641). Moreover, we must bear in mind that English is the most widely used *lingua franca* today, and that some of the web pages about *trolls* in this language are written by Scandinavians or at least deal with Scandinavian *troll* stories and mythology.

3.   A first outline of Swedish *troll* meanings

As has already been pointed out, the Swedish nominal lexeme *troll* has a complex and variable sense potential, manifested for instance in the constructions given below with English glosses. If these and other idiomatic types of *troll* expression are understood literally, they are today usually part of or refer to some folk tale, fairy tale, or similar mythologically based characterization, since hardly anybody now believes that trolls really exist. However, the noun *troll* and the language structures that it occurs in are often instead given a metaphorical meaning. Both literally intended *troll* uses and metaphorical applications of this noun tend to be attitudinally coloured, as it were. But while concrete characteristics concerning the looks and behaviour of trolls are necessary parts of stories about such beings, as well as of briefer comments on their qualities and manners in other types of language context, such physical features are for the most part backgrounded and merely exploited in a generalized way in *troll* metaphors. How trolls are imagined to be then just serves as a basis for the construction of more abstract or generalized meaning features and semantic structures. And attitudinal aspects – anchored in language users' subjective ideas about and reactions to trolls and their (fictitious) characteristics – tend to be important in metaphorical *troll* uses.

The *troll* concept can be figuratively used to express emotions about other people or some human activity or experience. These feelings are typically negative as long as a metaphorical use draws on the traditional *troll* concept. The first imperative clause in

(3) could for instance be a warning to stay away from individuals with 'troll tendencies' and their presumably evil intentions or harmful doings. The idiomatic status of this expression in the form given here was confirmed by a Google search, which yielded 6,710 hits in Swedish web pages.

(3) *Mata inte trollen*
     'Don't feed the trolls'

As the noun phrases in (4)–(6) say, trolls can be big, ugly and evil.

(4) *Ett stort troll* (300 hits in Swedish web pages)
     'A big troll'

(5) *Ett fult troll* (88 hits in Swedish web pages)
     'an ugly troll'

(6) *Ett elakt troll* (808 hits in Swedish web pages)
     'an evil troll'

Moreover, it is well known in Scandinavia that trolls were said to catch humans and drag them into their dark and deep mountain caves, and keep them prisoners there. Pretty girls, and sometimes princesses, were especially likely to meet with this unfortunate fate, according to troll legends.

(7) *bergtagen av trollen* (95 hits in Swedish web pages)
     'brought into the mountain by the trolls'

So it is no wonder that many were afraid of trolls. They even ate people.

(8) *rädd för troll/trollen* (97 and 56 hits respectively in Swedish web pages)
     'afraid of trolls/the trolls'

(9) "*Nu kommer jag och äter upp dig,*" *mullrade trollet* (Allén and Swedenborg 1986: 1300)
     '"Now I'll come and eat you," rumbled the troll'

All the same, there were people, typically men of course, that were prepared to stand up to such evil forces.

(10) *räds varken fan eller trollen* (44 hits in Swedish web pages)
      rädes varken fan eller trollen (20 hits in Swedish web pages)
      'am/is/are afraid of neither the devil nor (the) trolls'

In these examples, trolls are portrayed in a clearly negative way, as fearsome and dangerous, in accordance with an age-old Scandinavian tradition. But at the same time it is clear that they are human-like in many respects. They have language like humans, and they can communicate with people. It seems largely to be their interest in and possible interaction and interference with people that make them threatening. For instance, sometimes they would exchange a troll kid for a human baby. These are the

Swedish versions of "changeling" stories. Also older children and adults, especially pretty girls, could be *trolltagna* 'taken/captured by trolls' – or more specifically *bergtagna* 'brought into the mountain by trolls', as has already been exemplified. Retarded children, some of whom have savant abilities, as well as other disabled children could also in a more mysterious way be thought to be *trolltagna* (Anderson 2005: 6; Wall 2006; see Troll. *Hedendom.se*).

(11)   *trolltagen* (singular form; 273 hits in Swedish web pages)
        trolltagna (plural form; 90 hits in Swedish web pages)
        'troll taken'

(12)   *bergtagen* (singular form; 10,600 hits in Swedish web pages)
        bergtagna (plural form; 6,450 hits in Swedish web pages)

Significantly, these compounds of *troll* or *berg*, 'mountain', and the past participle of the Swedish verb *ta*, 'take', are also used metaphorically, to describe a strong fascination, or obsession, with something. It could be wild natural scenes, as when a susceptible soul experiences a both awesome and captivating existential reaction when confronted by the big forests, mountainous regions, moors or marshes in the sparsely populated interior provinces in northern Sweden. But a person could also be *trolltagen* or *bergtagen* by other experiences or things, such as a work of art, a piece of music, or a lavish lifestyle. In such cases the attitudinal loading of the word is more ambiguous, as it need not be taken to be just negative.

This brings us to the use of the noun *troll* in present-day Swedish, which seems even more intricate and multifaceted compared to the also quite variable and rich traditional *troll* meaning, especially from an emotional perspective. As is further explained and exemplified in what follows, the conception of the *troll* category, including who or what is taken to be a member of it, can in fact vary a great deal. This is true of *troll* characterizations both in one-off novel compositional strings and of many interpretations of well-established *troll* idioms. A considerable range of physical and behavioural qualities can be attributed to trolls and troll-like things, and they can be taken to evoke many different types of attitude. In other words, many different or even apparently conflicting emotions can be expressed through the use of this vocabulary item, or specific expressions in which it occurs. All of this contributes to the continuing usefulness of this notion in verbal communication in Swedish.

But if we instead consider exchanges with people from other cultures and speech communities, such as speakers of English, it is clear that the *troll* myth and verbal expressions associated with it tend not to function in the same way. The reason for this is of course that much of its expressive potential is too dependent on the traditional national *troll* myth and its cultural and cognitive ramifications among Swedish – as well as of Norwegian and Danish – speakers to be easily communicable to users of other languages, in other parts of the world with different sorts of folklore and mythologies. The associative richness of the noun *troll* is a result of it being grounded in a specific

cultural set of ideas and experiential factors. It shows how the sense potential of a vo-cabulary item can be thoroughly immersed in a particular cultural heritage.

Generally speaking, then, the range of possible *troll* uses in Swedish exemplifies how a well-established folk myth can be kept in broad outline within a speech com-munity, while at the same time it is commonly adjusted to new knowledge, ideas, at-titudes, and experiences. As in many other comparable cases, a modern, scientifically oriented worldview has forced noticeable changes in Swedish people's conception of the kinds of creatures that are represented by the noun *troll*. Nowadays they are just considered fairy tale beings, but in the old days, in a society with a different, pre-scientific, and magically oriented way of seeing the world, they were believed to really exist, even if they had unnatural, mystical, and scary characteristics and powers that (ordinary) humans lacked.

4. Cultural traditions and linguistic relativity

The language of a speech community and its cultural heritage are thus intertwined, and this contributes to semantic differences between specific languages of the kind that are discussed and analysed with the help of the notion of semantic relativity, also termed the Sapir-Whorf hypothesis (Sapir 1921: 15, Whorf 1956: 55, 154, 158–159). The sense potential of a word like *troll* tends to be multifaceted and variable, as it ranges over a culturally salient and quite elaborate conceptual complex. In particular, the rich spectrum of attitudes that can be associated with *troll* is worth noting. It has no doubt contributed to the many varying ways of thinking about such mythological beings that we find not just in folktales and stories for children, but also in condensed forms in entrenched idiomatic expressions. Many of these are metaphorical, and there are also incidental constructions with this Swedish noun with figurative meanings. For the most part they comment on human characteristics and experiences, even if ani-mals and inanimate things can also be described as being troll-like.

The Swedish noun *troll* and common Swedish expressions containing it can often not be translated into English quite satisfactorily – in spite of there being a *troll* noun also in the latter language – because non-Scandinavian speakers of English tend not to be so familiar with this many-sided cultural concept. As has been suggested, the as-sociative potential of the Swedish noun *troll* seems dependent on a rich folklore com-plex that is simply not accessible outside a Scandinavian cultural context, except in a more general and superficial and quite possibly skewed way. Such a meaning could only be acquired by another language and its speakers via the incorporation of a whole cultural belief complex. Although the word and some of its senses are used by speakers of other languages, the process has tended to involve assimilatory processes that partly change the borrowed concepts to fit the receiving culture.

In Swedish, trolls are often connected with *tomtar*, as in the common and idiom-atic coordination *tomtar och troll*. There were in fact as many as approximately 40,900

Google hits for this co-occurrence of the two nouns in Swedish web pages. These nouns represent two types of supernatural creatures that people had to learn to relate to in the right way. A *tomte* was a very old and small, goblin-like man. He commonly lived on a farm and helped out there, and he demanded to be treated properly, for instance by being served acceptable bits of food – especially at Christmas – or he might decide to do mischief or worse instead of looking after things (see Rydberg 1960; Tomtar. *Hedendom.se*). Others of this race lived out in the woods, sharing the kinds of living conditions that were associated with trolls. Their whereabouts could be difficult to establish with any certainty. They belonged to nature and visited, helped, and interacted with humans on the sly, as it were, so it was better to respect them and try to stay on good terms with them.

But for little more than a hundred years or so the *tomte* myth has become assimilated with the general western and Christian-based story of Santa Claus. In Sweden, *Santa*, or *Father Christmas*, is called *tomten*, or *jultomten*, where the first element *jul* corresponds to *Christmas* in English (e.g. 'Yuletide'). So this figure, or rather quite a few Santas – *tomtar* (plural) – can function within a somewhat different set of imaginary assumptions and characterizations in Sweden than in a typical Anglo-Saxon context. In contemporary Sweden, there is a vacillation between the Anglo-Saxon type of Santa image and the traditional *tomte* concept. While the former is a big jovial man with a white beard dressed in red, the latter are small and secretive, often even invisible, goblin-like individuals, preferably dressed in grey old country-type woollen clothes and leather boots. However, they share Santa characteristics as they, for the most part, have the same type of red cap. These images have got mixed in a way that, perhaps surprisingly, seems ordinarily to involve little conceptual tension. The historical and descriptive differences between these in fact separate legends may only appear striking if one deliberately thinks about and tries to analyse them (see Schön 1989: 144, 149–150, 156–159).

5.   Traditional trolls in Swedish culture and idiomatic expressions

Some culturally specific vocabulary items, for instance the Swedish noun *troll*, thus obviously represent myths and imaginative folklore ideas rather than verifiable natural phenomena or existing cultural institutions. All the same, they can be instrumental in structuring, handling, and expressing human experiences even today because of the entrenched and generally recognized cultural concepts that they represent. The idea complex that is centred on the Swedish – or more broadly speaking Scandinavian – notion of *troll* appears to have this status and function also in contemporary Swedish society and communicative exchanges.

So the Swedish noun *troll* represents a mythological category of human-like beings. The word is found also in Norwegian and Danish, and trolls have had a prominent role in folklore in all these Nordic communities. As has been pointed out, the conception

of them is intertwined with experiences of natural phenomena, especially the often intimidating and fantasy provoking experience of woods, large forests, and mountainous terrain where people are few and far between. The compounds *bergatroll* 'mountain troll', *skogstroll* 'wood/forest troll', and *trollskog* 'troll wood/forest' tell us where these creatures were supposed to dwell.[3] Their appearance as it has been depicted in many illustrations to folktales or fairy tales – e.g. John Bauer's troll pictures in *Lilla Carla* – mirrors phenomena out in the woods or in the mountains. The appearance and dress of trolls in pictures or as decorative figures commonly contain natural, woodland materials and colours. They may look as if they are partly covered with moss or grassy growths, and their limbs or facial features may have the shape and tones of tree trunks or boulders. They may be felt to merge with their habitats, truly conceived of as parts of nature rather than as controllable cultural constructs or man-made artefacts.

In addition, the stem *troll-* is found in a number of other word formations that concern magic and supernatural practices, forces, and beings. The verb *trolla* corresponds to 'conjure or practise witchcraft' in English, and *trolldom* can be translated as 'sorcery, witchcraft, wizardry'. Similarly, a *trollformel* is a 'magic formula, magic spell', and the verbs *förtrolla* and *trollbinda*, with the past participles *förtrollad* and *trollbunden*, convey the same kinds of dynamic senses as 'enchant, spellbind or bewitch', activities that result in someone or something being 'enchanted, spellbound or bewitched' (Petti 2000: 307, 1072–1073). The morpheme *troll*, which is found also in the noun *troll*, the subject matter of this chapter, does not seem to have quite the same meaning in these Swedish words, but their senses are close enough for us to recognize a common association to the general domain of magic or supernatural phenomena. Trolls were thought to have supernormal capacities, and they could cast spells and perform magic tricks of various kinds.

As has been pointed out, trolls were earlier believed to exist. This and their mystical and magical but also animalistic characteristics explain their power over human imagination, exemplified in traditional tales – now considered fairy tales – as well as in entrenched language expressions, which would once have been understood as having a literal basis. Today these source domain images are instead seen as merely mythological, and this tends to take some of the edge off such expressions, often making them humorous rather than sinister – and sometimes not even obviously figurative.

The following expression is common in Swedish:

(13) *När man talar om trollen* (*så står de i farstun*)
'When you speak of the trolls (then they stand in the entrance hall)'
(6,960 hits for the clipped version in Swedish web pages; 53 for the whole idiom)

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3. There were 4,580 Google hits for *bergatroll*, 41,000 for *skogstroll*, 264 for *sjötroll* 'lake troll(s)', and 14,300 for *trollskog* in Internet sites written in Swedish.

It is usually mildly humorous like the corresponding English phrase: *Speak of the devil* (*and he appears/will appear*). These idiomatic formulations in Swedish and English respectively are also similar in that they are often clipped, as in example 13. In both it is then the second part of the saying that is omitted, and left to be merely implicitly understood.

All the same, this Swedish expression, like the corresponding English one, no doubt once connected to language taboos based on a fear of the magical association between a name and its bearer(s). Explicitly mentioning trolls, or the devil, should be avoided, as it may summon them or the various types of frightening or destructive forces that they were understood to have. (Crystal 2001: 332, Ekman et al. 2009: 113, Trudgill 2000: 18, Wales 1990: 452)

Obviously, the multifaceted and imaginatively flexible traditional concept of trolls served as a projection site for fears of human vices and imperfection and supernatural forces. But these apprehensions have been coupled with a persistent interest that did not exclude attraction or even liking. The same kind of connection between potentially harmful magical influences and positive emotive reactions and attraction is found in the English verb and noun *charm* and in the verb *bewitch*. Trolls could do that to people; control them through their supernormal power, and this could induce an enjoyable feeling as well, a feeling of being charmed also in a positive way. I have coined the term *value reversal* for the possibility to use the same lexical elements to express contrasting attitudes (Alm-Arvius 2007a: 53–54). This potential ambiguity in the emotive loading of many words is obviously based on people judging the kinds of qualities that they stand for in different ways, depending in each case on what more specific sort of situation or phenomena they are used to characterize.

In other words, the conception of trolls exhibits a common attitudinal ambiguity, or overlap between conflicting emotions, as our reactions to many things or experiences may involve both negative and positive feelings. Indeed such 'mixed feelings' may even be felt to fuse in a natural way, and this forms the basis for the type of trope called oxymoron, e.g. s*kräckblandad fascination* 'fascination mixed with terror' and *skräckblandad dragning* 'attraction mixed with fright', both idiomatic Swedish collocations that may for instance be intended to explain people's attitudes to trolls or the *troll* myth.[4] Similarly, the compound adjective *fulsnygg* 'ugly-handsome' and the adjectival blend *snällak*, which is made up of the adjectives *snäll* 'kind' and *elak* 'nasty/unkind/evil', could aptly describe reactions to troll looks and troll behaviour (Alm-Arvius 2008: 9).

Trolls have thus been conceived of as having characteristics that we can have mixed feelings about. The looks and behaviour of traditional trolls would be unpleasant or scary – but they may also be fascinating or even somehow charming. The

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4.   There were 570 Google hits for *skräckblandad fascination* and only 3 for *skräckblandad dragning*, but both my own intuition and that of a number of other native Swedish speakers consulted suggested that the latter collocation is also idiomatic.

depiction of trolls has thus included psychological, moral, and aesthetic aspects, such as our relations to greed, evil, stupidity, ugliness, slyness, uncontrollable strength, social rejection, and loneliness as well as a many-sided awe of the mystical or unknown.

The last two stanzas of a well-known poem by Gustav Fröding (1960), *Ett gammalt bergtroll*, 'An old mountain troll', are quoted below with English glosses, which unfortunately cannot render fully the poetic qualities of the language used in the Swedish original.[5]

Det kristenbarnet får vara,	'That Christian child must be left alone,
för vi troll, vi är troll, vi,	for we trolls, we are trolls, we,
och äta opp'na, den rara,	and eat her, the cute thing,
kan en väl knappt låta bli.	one can presumably hardly avoid.
Men nog så vill en väl gråta,	But surely one wants to cry,
när en är ensam och ond och dum,	when one is lonely and evil and stupid,
fast lite lär det väl båta,	though little it will avail,
jag får väl drumla hem nu, hum, hum.	I will just have to stumble home now, hum, hum'.

The portrayal of the old mountain troll in this poem shows an empathetic understanding of its existential predicament, trapped as it is in its ugliness, clumsy stupidity, and evil inclinations. These deplorable and nasty characteristics turn on the troll itself, as they are also responsible for its loneliness and unfulfilled longings for human togetherness and beauty. We are invited to grieve with the old troll, and sympathize with the tragedy in its sad acceptance of rejection, because it is not good, handsome, and lovable. Unfortunately, this is a kind of experience that is also common among humans.

This poem was written in the late nineteenth century, when a more modern and scientifically oriented worldview was spreading in Swedish society. It reflects a traditional conception of trolls, even if it has obvious fairy tale and symbolic qualities, as the old mountain troll can be seen as, or at least be compared to, a human being, an unfortunate, lonely old man.

However, as has been pointed out, we must keep in mind that trolls were once thought to exist alongside humans, even if their lives were largely hidden to people, as they would only appear by chance or indirectly. Generally speaking, traditional trolls were real but mysterious, and usually lived out in the woods or in the mountains. Their

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5. Fröding's poetry displays a remarkable feeling for the aesthetic capacities of the language. It shows how phonological and syntagmatic elements and combinations can contribute to the meaning of a text by interacting with and, as it were, add a concretizing sensuous flavour to the contents expressed through such forms. The handling of rhythm and various types of rhymes – end rhyme, assonance, alliteration, and even consonance – is superb in his work. Similarly, the iconic potentials in structures on the local syntagmatic level and on the more global textual level as well as when it comes to teasing out onomatopoeic and sound symbolic qualities from speech sounds are repeatedly exploited in an artistically well composed but also seemingly quite natural way (see Jakobson 1981: 750, 1996: 15–16).

looks could obviously vary a great deal, but they often have tails, and for instance according to John Bauer's well-known illustrations they were for the most part ugly and often fearsome creatures of nature (see e.g. the pictures in *Lilla Carla* [Hansson 1976]). They could be stupid or cunning in various ways, reflecting the complexity and variation of human psychological traits and behaviour. And as has been outlined above, they would have supernatural powers. They could be very rich – no doubt in many cases from ill-gotten gains – although they were often dressed in rags and were dirty and untidy, with wild shocks of hair. One should stay away from them, because there was no telling what they could do (Schön 1989: 55, 104, 116; Allén and Swedenborg 1986: 1300).

The following idiomatic Swedish *troll* similes are all common, and they are to do with the old, predominantly negative *troll* concept.

(14) *Rik som ett troll* 'as rich as a troll' (9,140 hits in Swedish web pages)
(15) *Ful som ett troll* 'as ugly as a troll' (260 hits in Swedish web pages)
(16) *Se ut som ett troll* 'look like a troll' (1,049 hits in Swedish web pages)

The *troll* expression in 17 has instead metaphorical qualities. Interestingly, this *troll* use can either be taken to be a plural form or a more obviously abstract mass or uncountable use of the noun.

(17) *Det har gått troll i...* (2,360 hits in Swedish web pages)
    'There seems to be an evil spell on ...'

There is a great deal of variation in the wording of the metaphorical idea expressed in example (18), but its general meaning and moral tend to remain constant: 'things that worry or scare you become manageable when they are talked about or shown openly'.

(18) *Trollen spricker i solen/ljuset* (102/83 hits in Swedish web pages)
    '(The) trolls burst in the sun/sunshine/light'

The following examples were all retrieved from the Internet by means of the search engine Google on 28 March 2009. They exemplify the varying ways of formulating the conventional metaphorical idea of the troll 'bursting'. Even if many of the words are different in these examples, they all draw on the same entrenched Swedish *troll* metaphor (see Alm-Arvius 2006, 2007b)

(19) *När solen får lysa på **trollen spricker** de*
    'When the sun can shine on (the) trolls, they burst'

(20) *När solen går upp **spricker trollen***
    'When the sun rises (the) trolls burst'

(21) *... **trollen spricker när** de träffas av solens strålar*
    '... (the) trolls burst when they are hit by the sun's rays'

(22) *... **trollen spricker** när man tar ut dem i ljuset*
    '... (the) trolls burst when you bring them out in the light'

(23) *Några av **trollen spricker när** ljuset blir för starkt*
     'Some of the trolls burst when the light becomes too strong ...'

(24) *För det är ju i solskenet som **trollen spricker***
     'For it is in (the) sunshine that (the) trolls burst ...'

(25) *Hur mycket sol behövs innan **trollen spricker**?*
     'How much sun is needed before (the) trolls burst?'

(26) *Han **sprack** som **trollen** i solen!*
     'He burst like (the) trolls in the sun!'

(27) *Det är tur att **trollen spricker** och dör när dom kommer ut i ljuset!*
     'It is a good thing that (the) trolls burst and die when they come out in the light'

(28) *Ta ut pastor Greens åsikter i ljuset och låt dem **spricka** som **trollen***
     'Bring Pastor Green's views into the light and let them burst like (the) trolls'

(29) *När **trollen** kommer fram i ljuset så **spricker** dom och oskadliggörs*
     'When (the) trolls come forth in the light then they burst and are rendered harmless'

(30) *Hur många **troll spricker** i vår?*
     'How many trolls (will) burst this spring?'

(31) *... en metod som skulle tvinga fram **trollen** ur **mörkret.***
     '... a method that would force the trolls out of the darkness'

6. The Swedish troll image today and its linguistic occurrence

Trolls used to be 'real' but mysterious, fearsome, ugly, clumsy, stupid or sly, greedy, not trustworthy, and evil – but now, when people no longer believe they really exist, they are often rather cute and funny, lovable though perhaps a little impish, or comical and ridiculous. The phrase in example (32) can be used in an endearing way about a little child, to describe its mother's love for it, and the following one can naturally express the same kinds of emotive qualities.

(32) *Mammas lilla älskade troll* (Allén and Swedenborg 1986: 1300)
     'Mother's little darling troll'
(33) *älskade trollunge/älskade lilla trollunge* (422/92 hits in Swedish web pages)
     'darling troll kid/darling little troll kid'

The noun is similarly found in the well-established and common compound *charmtroll* 'little charming troll', and in *mystroll* 'cosy troll'. I have also come across the presumably more recent, reduplicative-like *pollentroll*(*en*), 'the pollen trolls', with word-internal

end rhyme.[6] The latter is used to refer to pollen and pollen-induced allergic reactions in unfortunate sufferers in springtime in a way that could be intended to have humorous qualities, though to some it may instead appear flippant and uncaring.

Collocational strings like those given in (34) are also common and idiomatic. They convey positive feelings towards somebody who is felt to have pleasant, but hardly angelical, 'troll' qualities. If the intended referent is a human being, prototypically a little child, this characterization, interestingly, need not be straightforwardly figurative. Rather the sense of *troll* seems just to have been widened and diluted to include also actually existing little humans. I return to the relation between metaphoricity and the degree of descriptive content versus attitudinal loading in the next section.

(34)   *ett sött/gulligt troll* (282/180 hits in Swedish web pages)
        'a cute troll'

Animals and even inanimate things that are somehow cute or fun to be around rather than beautiful and faultless can similarly be described as trolls. They can apparently be included in a widened and 'watered-down' *troll* category, as they are also felt to be similar to trolls in some way, or simply fall short of perfection in some respects – like trolls. Again it seems relevant to ask to what extent such uses have metaphorical qualities. They constitute an open, imaginative, and creatively flexible class, and it is of course not possible to list all potential members of it. *Trollet* 'the troll' can for instance be used as a name for pets like a cat with a furry coat, a little dog, or a pony – and, for example, a droll toy could also be referred to in this way. Also social institutions like preschools and day-care centres are named *Trollet*. Indeed this could be the name of any establishment or phenomenon that may be associated with playful or informal, largely positive features.

In relation to the prototypical traditional *troll* concept in the Swedish language and culture, such uses constitute a kind of value reversal, as a formerly predominantly negative attitude to trolls has now been changed into a primarily positive one. This backgrounding of the scary, repelling, and mysterious *troll* features is associated with a rejection of the old superstitious belief in trolls. Swedish people no longer believe in the existence of such creatures. What remains is a range of attenuated associations with comic, impish, or even endearing features, found for instance in mischievous but still likable children or small animals. This positive 'new' type of *troll* image also dominates in more recent fictive *troll* characters and *troll* stories, for instance in Tove Jansson's *Mumintroll*, which are called *Moomintrolls* in English.

So while the old "real" *troll* features are still found in established Swedish multi-word idiomatic formulations, the appealing or comic associations seem common in recent uses of the lexeme *troll*, and they tend to be used in a less obviously metaphorical way about people, animals, and many other things. In such friendly and playful

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6.   There were 53,700 Google hits for *charmtroll*, 430 for *mystroll*, but only 7 for *pollentroll(en)*.

troll characterizations the associations to the old scary and magical *troll* beliefs have been considerably diluted.

7. The metaphoricity scale: From descriptive dependence to mainly attitudinal force

It can be argued that only the old, repelling, and "real" *troll* conception can be used in quite obvious Swedish metaphors, while the more recent, cute, or amusing *troll* image tends to constitute a relatively independent concept. To describe an old and not very pleasant man as a *troll* would no doubt be to use a metaphor, as he would then be seen as a traditional, scary, or unattractive troll living in the woods or mountains, feared and shunned by humans. In comparison, talking of a little child or kitten as a *troll* seems in the main just to express endearment, or, more specifically, one's attraction to its somehow droll appearance or less-than-perfect characteristics. All the same, there is a polysemous relation between the old, predominantly negative type of *troll* meaning and the now common, positive kind of *troll* use outlined in the preceding section, with its endearing or kindly humorous emotive attitude. The latter kind of *troll* understanding similarly suggests that its referents are not perfect, that they somehow do not quite meet a perhaps exacting or snobbish standard, either as regards their looks or as regards other prominent qualities – and they are certainly not angelical. The association to nature and recognized flaws of various kinds is still there, but this is now regarded as something attractive or pleasantly funny.

In short, the interplay between a traditional, "real" *troll* source domain and a metaphorical use is no longer so noticeable in the now common playful, endearing, or comical *troll* meanings. Instead they seem to draw on a more modern concept that combines clearly fictitious *troll* characters that no longer frighten us and cute, impish, funny, or ridiculous human beings or other creatures and things that are spoken of as *trolls*.

This analysis suggests the following main reason for the attenuation of metaphoricity in an expression like

(35)   *ett gulletroll*
       'a sweet/darling troll'.

Here the connection to the original belief in real trolls out in the woods or up in the mountains seems comparatively backgrounded, or even largely obscured. As a result of this conceptual change, outlined above, the traditional *troll* image does not so clearly or directly function as a source domain motivating such uses. In an undeniably metaphorical extension, features and structure from a source are used to construe a new, target meaning. As long as the metaphor is "alive", the relation to the source is obvious and active. It can give language users access to a rich set of potential associations, and this makes it possible to interpret the metaphor in partly different ways, depending on what characteristics of the source are taken to be in focus.

In short, a prototypical, easily recognizable metaphorical dependence on a source seems to require that the meaning is still at least partly descriptive, or denotatively anchored. It is well known that attitudinal features are commonly important in metaphors, but their figurative force or entailments seem typically to arise from their connection to and interplay with some representative image. In other words, it should be possible to outline what inherent qualities can be taken to be shared by the source and the target. If the meaning expressed is mainly or merely an emotive reaction on the part of a language user, the reflection of source qualities in the target meaning may be interpretatively obscured. In such a case the evaluation or attitude expressed can be in focus, and if it completely comes to dominate (as when lexemes such as *bloody*, *fuck*, and *hell* are frequently used as swear words) the source-target connection, or the metaphorical status of an element, is obscured.

There seems thus to be a scale of metaphoricity, where instances at the clearly metaphorical pole exhibit qualities mapped from the source, while non-literal uses of words or strings with mainly emotive meaning can be placed more towards the other, opposing pole. In this way we can acknowledge that metaphors commonly have attitudinal aspects, but we are also able to note that there is a difference between polysemous extensions that produce straightforward metaphors and seemingly related polysemous shifts that result from making an element mainly or merely attitudinal.

8.   Trolls in English

The concept of *trolls* in English is borrowed from Scandinavia and has been used since the middle of the nineteenth century (Oxford English Dictionary [Simpson and Weiner1989]).[7] However, this notion seems both more frequent and more complex in Swedish language communication, where there is a wide and varying range of applications of the types described above. More specifically, there are a number of recurrent idiomatic *troll* expressions in Swedish, and incidental *troll* uses in novel compositional strings are also common in this language. In contrast, there seems to be no correspondence in English to the whole range of many-sided and prototypically distinct types of Swedish *troll* meanings that have been exemplified and analysed in preceding sections of this chapter. The conception of *trolls* in English usage seems simply not as developed, complex, or culturally salient as in the Swedish language and culture – even if for instance the Moomin troll stories and the fairy tale about the Three Billy Goats Gruff have spread to the English speaking world. The latter is an English version of a Norwegian folktale that has also fascinated many generations of Swedish children, who know it as the story of *de tre bockarna Bruse* and the scary troll under the bridge that wants to eat them. (see Moomin, *Wikipedia*; The Three Billy Goats Gruff, *Wikipedia*)

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7.   Earlier uses of the noun have survived from the Norse dialect in Shetland and Orkney.

Moreover, there are now *Internet trolls*, and this metaphorical *troll* sense may well be a coining that originated from someone or some group of web communicators that belonged or belongs to the large – and international – community of users of English. Internet trolls are participants in exchanges on the web, but they are not serious and honest, simply arguing for something to challenge and upset others. In *Wikipedia* they are described in the following way:

> An Internet troll, or simply troll in Internet slang, is someone who posts contro-versial, inflammatory, irrelevant or off-topic messages in an online community, such as an online discussion forum or chat room, with the primary intent of pro-voking other users into an emotional response or to generally disrupt normal on-topic discussion. A troll can disrupt the discussion on a newsgroup, disseminate bad advice, and damage the feeling of trust in the newsgroup community...

The characterization of *Internet trolls* thus builds on the traditional negative Scandina-vian troll image.

9.   Conclusion

In idiomatic Swedish expressions we meet with the old negative *troll* idea, often ex-ploited metaphorically. Traditional *troll* meanings of this kind – some of which occur in novel compositions – are used to speak of people or things that are bad, dangerous, fear-some, ugly, dirty, rich from ill-gotten gains, mysterious, either sly or stupid – or both – even if such instances are also occasionally used with a value reversed meaning. This is also the kind of *troll* image found in the mainly English conception of *Internet trolls.*

In comparison, positively oriented meaning qualities dominate in many contem-porary Swedish uses of the lexeme *troll*, e.g. *en söt liten trollunge*, 'a cute little troll kid', *älskade lilla troll*, 'darling little troll', and *gulletroll*, 'sweet/darling troll'. In such examples the referents are obviously considered attractive, comic, cute, funny, or mischievous.

Accordingly, the sentence

(36)   *Våra grannar är troll*
       'Our neighbours are trolls.'

can be intended to convey different types of meaning. It may be used to describe real people. However, there would be a difference between (i) an interpretation based on the old traditional *troll* concept, formed in a society where trolls were really believed to exist, and (ii) a more modern *troll* view that focuses on the funny-looking and comical traits of such patently mythological beings, and that is even inclined to see them as likeable or cute. The old or original *troll* meaning, (i), would clearly serve as a source domain for a negative metaphorical characterization. By comparison, the modern *troll* conception, (ii), would not be as obviously figurative, but would rather just say that these neighbours are funny or somewhat ridiculous, but still quite pleasant. In

addition, the sentence could be about (iii) *trolls* in a fairy tale or a similar story set in an imaginary world. These fictitious characters could be created on the basis of the old scary *troll* concept, but at least in a recent story for children they would be much more likely to be nice and allow for positive identification on the part of the readers.

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A computational exploration of creative similes*

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The syntactic form of explicit *as*-similes provides a ready-made infrastructure for linguistic creativity that writers and speakers can exploit with remarkable freedom. This chapter adopts a computational approach to similes, asking: what kinds of knowledge must a computational agent possess so as to recognize the ironic intent of a humorous comparison and to what degree is this intent telegraphed to the audience by the use of specific markers or support structures? Using automated means to collect two very large corpora of similes, one that favours the conventional and one that favours the creative use of similes, the chapter describes the characteristics of similes used with ironic intent and the role played by 'about' as a scaffolding structure for creative similes.

Keywords: 'about', *as*-similes, humorous comparison, ironic intent, support structure

1. Introduction

Irony is a curious form of double-speak in which a speaker implies the opposite of what is said (Giora 1995), or expresses a sentiment in direct opposition to what is actually believed (Grice 1978). Intriguingly, an ironic speaker does this in the hope that the audience will actually see past this artifice to comprehend the speaker's actual meaning. On the surface, this seems a most irrational, round-about, and risky way to communicate meanings (Sperber and Wilson 1992). But on closer analysis, irony reveals itself to be anything but round-about: it is, in fact, a very compact way of saying or doing multiple useful things at once. Irony can be used to divide an audience into those who 'get it' and those who don't; it can be used to soften a criticism with humour, or more often, to salt a wound by cloaking it in an apparent compliment that is quickly dashed; and most concisely of all, it can echo a viewpoint that is advanced by another

while simultaneously undermining that viewpoint (see again Sperber and Wilson 1992). This compression of function and viewpoint is most obviously apparent in ironic similes, as in the comparison 'you are about as tough as a marshmallow cardigan' (an example from the web-corpus described in Section 3): this simile integrates the expectation that the audience ('you') is believed to be 'tough' with a comparison that utterly undermines this expectation.

There is something appealingly democratic and unpretentious about similes. Not only are they pervasive in language, they are at home in any register of speech and any genre of text, from tabloid newspapers to romantic poetry (Fishelov 1992). Conveniently, most languages provide a wealth of pre-fabricated similes that are as well-known to native speakers as the adjectival features they serve to exemplify (e.g. 'as strong as an ox', 'as sober as a judge', etc.; see Moon 2008, Norrick 1986, Taylor 1954). Such formulaic similes allow us to quickly identify the key stereotypes of a language and culture, and to recognize those that are shared by different language cultures, such as English and Chinese (Veale et al. 2008). But just as importantly, languages like English make it easy for speakers to mint their own similes on the fly, by imposing low barriers to creation.

Unlike most metaphors, the typical simile is explicitly marked, allowing its intended audience to immediately and unambiguously construe it as a comparison (Hanks 2004, Taylor 1954). The syntactic form of explicit *as*-similes – 'A Topic is as Ground as a Vehicle' – provides a ready-made infrastructure that authors can populate with their own bespoke vehicles (Fishelov 1992, Moon 2008), while the ability to explicitly state the grounds of a comparison allows an author to use vehicles that are neither obvious nor entirely to the point. Unlike metaphors, which often employ coherent systems of mappings to support the pretence that the topic really is a member of the vehicle category (see Glucksberg 2001), similes can be as wildly colourful and incongruous as an author wants, as long as the ground is effectively communicated. Hanks (2004) thus argues that similes provide a freer and more creative means of expression than metaphor, since similes can serve as dynamic 'triggers for the imagination' without having to appeal either to underlying schemata or to experiential gestalts (Lakoff and Johnson 1980). Creative similes are often used as glosses to illustrate or tie together elements of an argument, much as canned jokes are often invoked in conversation to illustrate a key point (Oring 2003). As such, creative similes do not have to be as rigorously constructed as metaphors, and Roncero et al. (2006) have shown that similes found on the web are much more likely to be accompanied by explanations than comparable metaphors that convey the same message.

Consider this example from Jerry Seinfeld, in his New York Times remembrance of the late comic George Carlin (see Seinfeld 2008): "[George] was like a train hobo with a chicken bone. When he was done there was nothing left for anybody". The image of a 'train hobo with a chicken bone' is visually striking, but needs an explicit explanation to help draw out its meaning potential. Note that this additional explanation only conveys a small part of the simile's meaning. The image itself is rich in descriptive

resonance, and one sees Carlin as just as leery, dishevelled, acid-tongued, and mocking of social conventions as the hobo on the train. But without the support structure of the adjunct 'nothing left for anybody', we would fail to see the relevance of the chicken-bone: Carlin's comedy is driven by a visceral hunger that leads him to thoroughly exhaust the humour potential of his targets. In other words, the range of possible similarities is just too large, so the simile needs a support structure to direct us toward the desired meaning.

Because the explanation provides just a small part of the overall meaning, the potency of Seinfeld's simile does not seem diminished by its addition. This suggests that the explanations observed by Roncero et al. (2006) are used as a form of support structure, or "scaffolding" (see Veale and Keane 1992), for creative similes, allowing speakers to choose comparisons primarily on the basis of their visual and affective resonance without fear of miscommunication. Nonetheless, explanations can greatly diminish the potency of jokes (Oring 2003), so when a simile is humorously used as a joke, we hypothesize that support structures, if any, will be far more subtle. Ironic comparisons, for instance, would be utterly undermined if accompanied by an explicit explanation, since as Grice notes, "to announce [irony] as pretence would be to spoil the effect" (1978: 125). Nonetheless, irony always runs a risk of being misdiagnosed (Sperber and Wilson 1992), and so requires that great care is exercised in its construction. Grice further notes that when "speaking ironically ... a tone suitable to such a feeling or attitude seems to be mandatory" (1978: 125). So when ironic comparisons are creatively minted on the fly, in conversationally-styled written texts, we hypothesize that some form of lexicalized support structure will often be used in place of an ironical tone, to subtly direct the audience toward the desired meaning. For instance, the *indeed*-construction 'a [characterization], indeed!' commonly acts as a scaffolding for ironic observations about situations that fail to behave as advertised, such as the remark 'an officer and a gentleman, indeed' discussed in Sperber and Wilson (1992). Likewise, the construction 'a fine [X]!' is commonly used to express a negative evaluation of X, even when X carries a positive sentiment, as in 'a fine romance!', 'a fine holiday!', and even 'a fine mess'. These examples can also be followed by a use of the 'indeed' marker to compound the effect.

Speakers rarely have as much time as writers to rework and polish their outputs, so it is intuitive to believe that they often use some kind of support structure to ensure that their most creative (and risky) efforts achieve successful communication. Moon (2008) has noted that the marker 'about' has a special role in signalling irony, and goes as far as to argue that the *about*-form of similes, 'about as ADJ as NOUN', always conveys an ironic meaning. But Moon's analysis is based on relatively formulaic similes, of the kind one expects to find in common usage, and so this claim is based on a very small sample set. If one looks at the much larger space of creative similes that speakers mint on the fly, as in this current work, then it becomes clear that 'about' does not always signal irony, but more generally signals an attempt by a speaker to be humorously and creatively imprecise. By signalling creative intent, speakers ask for – and

generally receive – additional support for their desired interpretations. In this current work we seek robust empirical support for this claim, and support more generally for the intuition that structures like the 'about as' form act as scaffolding or support structures for creative utterances that are at risk of being misunderstood.

This investigation is computational in nature, and views the problems of identifying and analysing the meaning of creative comparisons from the perspective of a naïve computer. As argued in Veale (2006), such a computational perspective – which Jackendoff (1987) has dubbed the "hypothesis of computational sufficiency" – forces us to address vexing issues of under-specification and over-generation in our theoretical accounts of cognitive/linguistic phenomena. In this chapter we ask: what kinds of knowledge must a computational agent possess so as to recognize the ironic intent of a humorous comparison, and to what degree is this intent telegraphed to the audience by the use of specific markers or support structures? To this end, automated means are used to collect two very large corpora of similes, one that favours the conventional and one that favours the creative use of similes. Section 2 describes how simple similes with one-word vehicles, such as 'as cunning as a fox', can be harvested from the web, while Section 3 explicitly seeks out more complex similes prefixed with the putative support marker, 'about'. Section 4 presents a statistical analysis of these corpora, to tease apart their similarities and differences and thus reveal the extent to which creative comparisons exploit the stock imagery of more formulaic similes. Section 5 turns to a consideration of irony and the affective signature of similes marked by 'about'. Finally, the chapter concludes in Section 6 with a discussion of the results.

2.   Corpus I: Simple comparisons

2.1   Compiling lists of simple similes

To compile a collection of conventional similes, one can look to authoritative sources such as printed dictionaries, or exploit the syntactic frame of the *as*-simile to identify matching instances in large text corpora. Norrick (1986), for instance, uses the former approach, and bases his analysis on 366 similes listed in the 1970 edition of *The Oxford Dictionary of Proverbs*. Moon (2008) uses a hybrid approach, and compiles a collection of 377 similes from multiple sources, one of which is the *Bank of English* corpus. But the pervasiveness and ease of creation of similes means that one is likely to find a much wider range of different similes in the collected texts of the World-Wide-Web (Roncero et al. 2006). The syntactic marking of similes means that most of these similes can be harvested automatically, using a simple process of pattern-matching. Thus, when we pose the query 'as * as *' to the Google search-engine, the wildcard * elements are bound to the corresponding elements of a comparison.

Google returns a large number of snippets from online documents that contain matching phrases, such as 'as hot as an oven' or 'as strong as an ox'. In these snippets,

we are likely to see the same combination of ground and vehicle occur again and again in different contexts. This combination of ground and vehicle is the semantic core of a simile, the part that transcends context to be reused in the description of many different topics. The relationship of this core combination to the topic will, in many cases, be entirely contingent and subjective; experience shows that similes are most often used to communicate information about a topic that is not fully understood or fully appreciated by an audience, and so for purposes of corpus construction, the topic has very little bearing on the semantics of the simile. For instance, the simile 'my boss is as cunning as a fox' tells us nothing at all about bosses *per se*, but does tell us that foxes are either stereotypically cunning (if the simile is non-ironically *straight*) or stereotypically naïve (if the simile is ironic). We are primarily interested therefore in the collection of simile *types* – the context-transcending reusable combination of a specific ground with a specific vehicle – rather than of simile *instances* – the contextually-tied application of a ground and vehicle to a specific topic.

To ensure that we acquire the widest range of simile types with the widest range of adjectival grounds, we need to seed our queries with specific adjectives. For example, to ensure that we find similes for *strength*, we need to use the queries 'as strong as *' and 'as weak as *'. To automate the harvesting process, the lexical resource WordNet (Fellbaum 1998) was used as a source of adjectives for these queries. In particular, WordNet is used as an inventory of antonymous adjective pairs, such as 'strong' and 'weak', since these often define the gradable properties for which similes are used to indicate extreme values. In all, over 2000 queries of the 'as * as *' form were generated, in which the ground position (the first wildcard *) is successively bound to a different adjective. For tractability, we cannot consider every document returned by Google for these queries. Thus, only the first 200 snippets returned for each were considered, allowing us to harvest a corpus of simile types by taking a wide-ranging series of different core-samples from across the full breadth of the web. While the core-sample for each adjective is just 200 snippets deep, this is sufficient for a frequency analysis to reveal the most culturally entrenched English similes. For instance, in the query 'as strong as *', the * matched 'horse' 27 times, 'bull' 19 times, 'gorilla' 12 times, and 'Viking' just once.

2.2 Annotating the data

When we consider only those simile instances with a single-term vehicle, as listed in a conventional lexical resource like WordNet, the above processes harvest 74,704 instances of the 'as * as *' pattern, 42,618 of which are unique. In all, these instances relate 3,769 different adjectival grounds to 9,286 different noun vehicles. However, while each of these instances is a legitimate instance of a comparison, not all qualify as similes. As defined by Ortony (1979), the difference between comparisons and similes is best characterized in terms of salience: a simile uses a vehicle for which a given ground property is especially salient to highlight this property in a topic. Simple comparisons, on the other hand, merely point out correlations and commonalities between two

things, regardless of whether those commonalities are particularly salient in the vehicle. If a doctor states that a tumour is 'as big as a tennis-ball', this is certainly cause for alarm, but his comparison is not a simile, since bigness is not *a priori* salient of tennis-balls. Generally speaking, an instance of the construction "as X as Y" can be taken to be a simile if X is salient of Y prior to the comparison, and a simple non-figurative comparison if X only becomes noteworthy of Y in the context of the comparison.

Since there is no automatic way of separating similes from simple comparisons, human judges were used to annotate all those instances where the ground is obviously a salient property of the vehicle (the bona-fide or *straight* cases) or where a property that is diametrically opposed to the ground is salient of the vehicle (the ironic cases). The extensive grey area between these positions – where the ground is neither strongly associated with, nor strongly opposed to, the vehicle – is not always clear cut, and instances like 'as cuddly as a bear' might fall into either category in one context or another. The human judges thus performed a conservative separation, discarding those instances that might lean both ways. Those that were not discarded were annotated as either straight or ironic. In all, 30,991 instances were identified as straight (non-ironic) similes, yielding a set of 12,259 unique types, that is, unique pairings of a ground and a vehicle. A smaller body of 4,685 instances were annotated as ironic similes, such as 'as hairy as a bowling-ball', yielding a set of 2,798 unique types.

2.3   Simple elaborations

Taylor (1954) notes that speakers sometimes elaborate existing similes to create new and more emphatic variations. For instance, the conventional simile 'as cunning as a fox' is sometimes elaborated into 'as cunning as an *educated* fox' or 'as cunning as an *old* fox'. In effect, the existing simile acts as a recognizable support structure that a speaker can exploit to achieve low-level creativity. To quantify the extent to which this happens, and thus determine the relative productivity of a simile-elaboration strategy, we generated a query of the form 'as <GROUND> as a * <VEHICLE>' for every simple simile type in our corpus of 12,259 straight types harvested above. This found over 5,700 elaborations of conventional similes on the web that mostly add perceptual information to aid visualization; thus, we found 'as white as a *frightened* ghost'; 'as dangerous as a *ravening* wolf'; 'as green as a *pickled* toad' or 'an *Irish* meadow'; 'as dry as a *stale* biscuit' or 'a *stiff* martini'. However, not all the basic simile types yielded attested elaborations, and these 5,700 extended types derive from just 700 adjectival grounds, that is, less that 20% of the set of 3,769 adjectival grounds in our corpus of simple straight similes. Elaboration is a productive strategy, but clearly not a widely used one.

2.4   Subversive elaborations

While these elaborated forms add just a single word to an existing simile, this additional word can sometimes alter the meaning of a simile in quite a dramatic fashion.

We found that 2% of these elaborations (or 109 simile types) subvert an original simi-le to achieve an ironic effect, as in 'as dangerous as a *toothless* wolf', 'as accurate as a *blind* archer', and 'as lethal as a *toy* gun'. The majority of subversions – 93% – under-mine a simile with a positive evaluation to produce a newer variant with a distinctly negative attitude. To communicate this critical viewpoint, subversions ask us to imag-ine broken, dysfunctional, or pathetic instances of concepts whose stereotypical guise is far more impressive. But as these figures suggest, subversion of existing similes is a little used strategy for generating an ironic effect. Fortunately, since the 'about' form of similes appears quite commonly on the web, this promises to yield a much richer vein of creative comparisons.

3.   Corpus II: Complex comparisons

3.1   Compiling lists of complex similes

Unlike metaphors, similes are hedged assertions, since a topic is merely stated to be approximately similar to, and not absolutely identical to, a given vehicle. Indeed, some similes are doubly-hedged, as if to indicate to their audience that the similarity on display is even more approximate. We see double-hedging in the following simile from Raymond Chandler (1988: 3), who uses the marker 'about' to emphasize the wildly approximate nature of his comparison: "[Moose Molloy] looked about as inconspicu-ous as a tarantula on a slice of angel food". The 'about' marker seems to telegraph an author's intention to use an inventive vehicle that exhibits an inexact ballpark similar-ity to the topic. Because the most culturally-entrenched similes are the most frequent-ly reused, the simple query pattern 'as * as *' is implicitly biased toward the retrieval of these most common types. This bias is reinforced by our efficiency-driven cut-off of 200 snippets per query, since many one-off originals are likely to fall outside this threshold. However, we now rerun our two-phase harvesting process with the doubly-hedged query 'about as * as *', so we are more likely to retrieve one-off similes of the kind that exhibit creativity.

Fishelov (1992) argues that excessive vehicle length is an attention-grabbing char-acteristic of creative similes, so we now extract all syntactically well-formed vehicles, whether they comprise one word or many, from the returned snippets. The extracted instances thus run the gamut from the short and punchy to the long and overwrought: 'about as pervasive as air' is typical of the short variety, while 'about as difficult as find-ing work as a school teacher after a child-abuse conviction' typifies the longer variety. In all, this second sweep of the harvester yields 45,021 instances of the 'about' con-struction. Most of these instances occur just once overall, and this second harvesting sweep yields almost as many unique types (38,294) as instances, suggesting that 85% of these instances are bespoke one-offs. When hand-annotated for the salience profile that we expect from similes, we found that 20,299 of these types (53%) are more than

mere comparisons, and use vehicles for which the stated ground is either very salient or ironically opposed.

3.2   Annotating the data

Interestingly, just 14% of these 20,299 simile types involve a vehicle with just one content-word, and a mere 3% of 'about' simile types (676 types) are found in the original harvesting process of simple similes. In other words, the overlap in simile types found using both harvesting processes – single-hedged ('as * as *') and double-hedged ('about as * as *') – is negligible, on the order of 3 to 4%. Clearly, the addition of an 'about' marker causes the second web sweep to harvest an almost completely different set of similes. We thus see a clear quantitative and qualitative separation between similes that are marked with 'about' from more conventional similes. The 'about' similes are typically longer, with a mean size of three words per vehicle, excluding initial determiners. They are also more heavily inclined toward the ironic. Hand-annotating for straight or ironic descriptions, we found that only 4,797 unique simile-types (or just 24%) employ a vehicle for which the ground is salient and apt, while 15,502 types (76%) are ironic, as in 'about as modern as a top-hatted chimneysweep'.

The 'about' form thus seems to be syntactic scaffolding that allows an author to telegraph an attempt to coin an unconventional, creative, and potentially "spurious" (in the sense of Oring 2003) simile. We can only speculate why the word 'about' is semantically suitable to this role, but it does seem likely that the semantics of 'about' allows it to act an implicit negation marker, in the sense of Giora (1995). This function of 'about' is more apparent in the comparable use of 'not exactly' to mark ironic understatement, as in "he is not exactly the best person for the job". When used as an answer to a question (such as "Did you make a good impression on her parents?"), 'not exactly' can cue an anecdote about just how badly expectations were dashed. A similar effect is achieved with the construction 'not so much', as in "My son loves his new drum kit. My neighbors, not so much". Markers like these signal to an audience that while exactness might have been expected, it has not been achieved, and not by a significant margin. The non-spatial meanings of 'about' – *imprecise*, *approximate* and *inexact* – thus impart a diluted sense of negation, warning an audience that all is not as it seems within the apparent logic of a simile. It may be a matter of linguistic convention that other words with similar semantics – such as 'approximately' and 'around' – are not suggestive of ironic understatement in the same way as 'about' and 'not exactly'.

4.   Comparing corpora

While most simple similes are formulaic evergreens, we found that 12% of 'about' similes are topical and largely perishable, making use of well known names from the

current cultural climate, such as 'Karl Rove' and 'Paris Hilton'. Though there is just a 3% overlap between the longer 'about' similes and the shorter, more conventional figures of speech, this number significantly underestimates the role of conventional imagery in the construction of creative similes. On closer analysis, we found that 62% of the 'about' similes use at least one stock image drawn from the inventory of conventional vehicles (such as *library* in 'as lost as Paris Hilton in a *library*'). The longer similes do not use these stereotypes in isolation, or even to exemplify the same grounds, but combine them in novel ways to create memorable images. For instance, our first corpus of simple similes contains both 'as quiet as a cat' and 'as noisy as a blender', while our second corpus of 'about' similes contains a simile that combines both of these to achieve an emergent, ironic effect: 'about as soothing as a cat in a blender'.

As in this example, a substantial number of 'about' similes – 30% – use a vehicle that is a composite structure of two or more concepts linked by a preposition. The combination above employs two stock images with contrary properties – the stealthy cat and the loud blender – to evoke a visceral feeling of unease and disgust that stands in ironic opposition to the stereotype of calm relaxation that the simile initially promises. Notice how the simile cleverly plays each stock image against type: the cat, which might be considered soothing in normal circumstances, is placed in a cruel situation that prompts us to feel its suffering; and the blender, which is stereotypically loud and jarring, is ironically put forward as an exemplar of the very opposite. So while the longer 'about' similes achieve more imaginative and creative effects than their conventionalized brethren, they are not completely distinct. They frequently draw upon the same conventional imagery, but in combinations that are designed to subvert stereotypical expectations and create a heightened sense of perception and affect.

5. Empirical analysis: Irony and affect

5.1 Quantifying attitude

A critical attitude is typical of irony, and creative 'about' similes should be no different in this respect than simple similes with short, single-word vehicles. However, while some adjectives are uniformly critical in any context, such as 'dull', 'unattractive', and 'stupid', most adjectives (such as 'fragile', 'tough', and 'controversial') occupy a usage-sensitive middle ground between clearly-positive and clearly-negative. Lacking specific knowledge of a speaker's views on a topic, or indeed of the topic itself, the quantification of a simile's positive or negative affect is too subjective to be meaningfully performed by a small group of human annotators. To achieve as much consistency as possible in the rating of attitudes, we turn to Whissell's (1989) *Dictionary of Affect*, an inventory of over 8,000 English words with pleasantness scores that are statistically derived from human ratings. These scores range from 1.0 (most unpleasant) to 3.0

(most pleasant), with a mean score of 1.84 and a standard deviation of 0.44. For our purposes, we assume that the ground of a simile is negative if it possesses a pleasantness score less than one standard deviation below the mean (<= 1.36), and positive if it possesses a pleasantness score greater than one standard deviation above the mean (>= 2.28).

Using these numerical criteria, we can quantify the balance – or imbalance – of attitudes in different kinds of simile. In the most conventional straight similes, we see that a positive attitude is conveyed twice as often as a negative attitude (67% versus 33%). In contrast, simple ironic similes convey a negative attitude six times more often than a positive attitude (86% versus 14%). Turning to the more creative 'about' similes, we see that straight 'about' similes communicate a negative attitude a little more often than a positive attitude (56% versus 44%), but that ironic 'about' similes carry a negative affect in almost 9 out of 10 cases (89% versus 11%). Simple similes are thus more likely to impart a positive view of a topic, while longer 'about' similes are more likely overall (whether straight or ironic) to impart a negative view of a topic.

5.2 Irony and affect

This difference is exacerbated by the strong preference for irony with the 'about' form. Recall from Section 4 that 76% of 'about' simile types are ironic, while just 18% of the shorter, more conventional similes are ironic. Overall then, 83% of 'about' similes impart a negative view of a topic, since 12% of 'about' similes are non-ironic with a negative ground, and 71% ironically use a positive ground to impart a negative property. Tables 1 and 2 give an overview of the breakdown between irony and affect in each case.

Table 1. Total breakdown of similes with one-word vehicles. All cells sum to a total of 100%

	Straight	Ironic
Positive Ground	55%	16%
Negative Ground	26%	3%

Table 2. Total breakdown of similes with similes with the 'about' support-structure. All cells sum to a total of 100%

	Straight	Ironic
Positive Ground	9%	71%
Negative Ground	12%	8%

The reliance of similes on familiar and evocative stereotypes in which particular properties are not just salient, but highly concentrated, means that similes have an exaggerated effect when attributing those properties to a topic. A positive description via simile is thus more likely to be seen as flattering than a non-figurative attribution of the same grounds, and a negative description is likely to be seen as more cutting. For example, it is less wounding to be described as 'very ugly' than 'as ugly as a warthog'. This is in part because stereotypes represent extreme points of reference, and partly because stereotypes often have other unstated but resonant properties that are implicitly evoked (e.g., our corpus also attributes 'dirty' to warthogs). When a stereotype-based vehicle is used to attribute just a single property to a topic, these other resonant properties will also be primed. The description 'as ugly as a warthog' is thus a compact way of implying 'as ugly *and dirty and* ... as a warthog'. There is a sardonic humour then in negative descriptions that are communicated via simile, but the precise degree of humour, and its effect, will depend both on the ingenuity of the simile and on the quality of the delivery.

As shown in Table 2, we can see that 83% of 'about' similes have this potential for sardonic humour, either by directly describing a topic in negative terms (12%) or by indirectly implying a critical perspective via irony (71%). In contrast, Table 1 shows that simple similes can be used for sardonic purposes in just 42% of cases (16% are ironically positive and 26% are non-ironically negative). These numbers suggest not just that irony is widely used in simile, but they also begin to explain why it is used. Table 1 shows that negativity is under-represented in simple similes, and that straight conventional similes communicate a positive description more than twice as often as a negative description (55% versus 26%). Irony provides a necessary corrective to this imbalance, allowing negative descriptions to be crafted from positive grounds. In simple similes, the balance is almost restored, with positive outweighing negative by 58% to 42%. Table 2 shows that 'about' similes more than correct the remaining imbalance by choosing to employ their increased length and ingenuity in the service of negativity and ridicule.

6.   Discussion

6.1   Ironic interactions

Irony is a most vexing form of communication because – superficially, at least – it uses imagination and ingenuity to artfully disguise the expression of a negative sentiment. Consider this extract from an online discussion of the rules of baseball (Schwarz 2003):

> [B]aseball's rules structure has remained remarkably steady for more than 100 years. While basketball fiddles with 3-point lines and football puts its pass-interference, overtime and ref-upstairs rules in a Cuisinart each offseason, baseball rules remain *as suggestible as a glacier*.

While one can try to analyse the italicized simile (author's marking) in isolation, it is clear that the take-home message is consolidated over the entire paragraph. Note how the ground of the simile, 'suggestible', contrasts sharply with the property 'steady' that is highlighted in the first sentence, and note how the second sentence uses 'While' to establish a contrast between baseball and the more changeable games of basketball and football. Moreover, the extreme changeability of football is conveyed metaphorically, via the exaggerated claim that the football rulebook is shredded in a food processor (a *Cuisinart*) at the end of each season. Though the irony can be localized to the last clause, the irony is primed and supported by the paragraph as a whole, through a variety of interacting support structures.

Computational analysis reveals that this superficially novel simile is a simple variation on a well-worn comparison. For while Google identifies just one documentary source for the novel combination "as suggestible as a glacier" (i.e. Schwarz 2003), 'glacier' is a commonly used vehicle that occurs in a range of established similes. For instance, our test-set from Section 5 contains 20 non-ironic similes with 'glacier' as a vehicle, highlighting the properties *cold, cool, strong, fresh, impressive, unstoppable, pure, gradual, slow, slick, relentless, unwieldy, irresistible, frozen, frosty, implacable, impenetrable, unforgiving, forceful,* and *implacable*. Glaciers are also used ironically in our test-set, to highlight the lack of the following properties: *mobile, erotic, excitable, speedy,* and, of course, *suggestible*. Using the web query 'as steady and * as' to find co-descriptors that are lexically primed by 'steady', we find that these properties of 'glacier' are primed: *strong, slow, cool, cold, implacable,* and *unstoppable*. It follows that when an agent (whether a human or a computer) has already acquired a rich feature description of a vehicle from similes that were previously encountered and classified as non-ironic, it can choose to ignore the explicit ground in a new simile if it is not lexically primed by its context, and rely instead on those features of the vehicle that are primed. In this case, the features *slow* (to change) and *implacable* (in the face of change) are most appropriate to the topic of baseball rules. In other words, the figurative familiarity of the term 'glacier' is itself a support structure for creative variation, so the irony of 'as suggestible as a glacier' does not need the additional support of an 'about' marker.

6.2   Support structures for irony

Since over 20% of 'about' similes are non-ironic, it is incorrect to assume that 'about' always signals the presence of irony. Our corpus analysis, the largest of its kind for similes, shows that the 'about' form is more nuanced than a simple marker, but that it acts as a scaffolding structure for creative similes, priming an audience to view

comparisons with positive grounds as ironically critical and comparisons with negative grounds as plainly critical. We employ the term *scaffolding* in the sense of Veale and Keane (1992), to mean a structure that allows immediate but superficial interpretation of a figurative utterance, and on which a deeper and more insightful interpretation can gradually be elaborated. In other words, the 'about' form allows an audience to quickly construct a basic and mostly accurate interpretation of a speaker's intent without having to fully understand the meaning of the vehicle. All that is required is that the audience can determine the intended evaluative affect – positive or negative – of the simile's ground: if correctly ascertained as positive, then the simile has close to a 90% chance of being ironic and critical; if ascertained as negative, the simile has just a 40% chance of being ironic and is 60% likely to mean what it overtly says.

In a very real sense then, the 'about' form appears to be a support structure for humorous linguistic creativity. Consider that creative similes of an obviously poetic bent (e.g. the kind analysed by Fishelov 1992) are typically crafted off-line, where they can be reworked and polished until they fully cohere with their narrative surroundings. They frequently give rise to complex mappings and associations, which encourage close-reading and deep analysis from their audience. In contrast, similes of a humorous bent are often generated spontaneously in fast-moving interactive situations, and genres of text that are rich in humorous comparisons (such as dialogue-heavy novels, comic narratives, and the online texts from which we harvested our corpora of similes in Section 4) are typically designed to mimic the free, fast-paced flow of everyday conversation. In such time-constrained conditions, it is useful to be able to be to telegraph the basic meaning of a comparison, to minimize both the risk of information loss (if the comic conceit fails, or falls flat) and the risk of complete misinterpretation (if ironic intent is not recognized, or wrongly assumed where it is not intended). Roncero et al. (2006) note that similes found on the Internet are far more likely than the equivalent metaphors to be accompanied by an explicit explanation, suggesting that simile authors feel a need to cue readers as to the proper interpretation of their creative efforts. Explanations rob jokes of their potency, so we can expect humorous similes to eschew explicit explanations. The 'about' marker is a more subtle cue than an explanation, but it is a cue nonetheless, one that signals a playfulness on the part of the author and one that licenses the audience to seek out a playful and even ironic interpretation when one is available.

7. Conclusions

We conclude by noting that the presence of 'about' does not make a simile humorous, nor does its absence undo any potential a simile may have for humour. Though we can identify structural and semantic features of similes that contribute to their humorousness, we cannot identify structural or semantic features that are sufficient to make a simile humorous. Ultimately, humour is not semantically or structurally determined,

but arises from the pragmatic effects of an utterance's use in a given context. Nonetheless, structural properties – like the presence of 'about' – can encourage an audience to collude with the author in constructing a humorous interpretation. The 'about' form is unlikely to be the only construction that supports and primes a humorous interpretation in this way, though it does seem to be one of the simplest and most direct, at least for similes. Further investigation is needed to see whether other linguistic markers of equal utility can be identified, for predicting creative intent and for automatically harvesting potentially creative texts from the web.

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Afterword and prospects for future research

Metaphors, snowflakes, and termite nests

How nature creates such beautiful things

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Metaphoric language is very much the product of human action, and many scholars now claim that metaphor in language arises from metaphors in thought. But the reasons for why we think metaphorically and speak (gesture) in these ways may be rooted in principles of self-organization that describe the existence, and forms, of many other animate and inanimate things, ranging from snowflakes to termite nests. This chapter describes the benefits of looking at metaphor from a self-organizational point of view, known as dynamical systems theory, and suggests how this perspective can solve several long-standing debates in metaphor scholarship on the variability of metaphors in context and the mental processes by which they are understood.

Keywords: dynamical systems theory, metaphor across cultures, metaphor variability, self-organization

1. Introduction

Metaphorical language sometimes exhibits enormous, beautiful complexity that is often difficult to describe and explain. Consider just a few isolated examples of metaphorical phrases, "hurricanes of pigeons", "furious swarming coins", and "loves that bloom and die". Readers may speculate on the possible meanings each of these metaphors express, and even offer their views on the aptness or poetic quality of each phrase. Metaphor scholars spend much time analysing individual verbal metaphors, such as the above, and offer proposals as to how people come to interpret and appreciate such expressions. Yet metaphor scholars also readily acknowledge that context alters what metaphors mean and the possible relationships different metaphors have with one another.

Consider as one example the poem "Dawn", written by the great Spanish poet Federico García Lorca during a time in the late 1920s when he was living in New York City (García Lorca 2002: 256).

Dawn

Dawn in New York has
four columns of mire
and a hurricane of black pigeons
splashing in the putrid waters.

Dawn in New York groans
on enormous fire escapes
searching between the angles
for spikenards of drafted anguish.

Dawn arrives and no one receives it in his mouth
because tomorrow and hope are impossible there:
sometimes the furious swarming coins
penetrate like drills and devour abandoned children.

Those who go out early know in their bones
there will be no paradise or loves that bloom and die:
they know they will be mired in numbers and laws,
in mindless games, in fruitless labours.

The light is buried under chains and noises
in an impudent challenge of rootless science.
And crowds stagger sleeplessly through the boroughs
as if they had just escaped a shipwreck of blood.

This is a difficult, yet rewarding poem to read and study, with part of its beauty arising from the different layers of metaphorical meaning it conveys. At one level, specific metaphors (e.g. "loves that bloom and die") express individual conventional metaphorical ideas (e.g. LOVE IS A PLANT). On another level, there are connections between similar metaphorical images (e.g. "hurricane of black pigeons" and "furious swarming coins"), which convey larger metaphorical possibilities (e.g. the chaotic nature of living in New York City). Beyond this, there are even broader metaphorical themes arising from the juxtaposition between the citizens of New York and the harsh, industrial, urban environment.

My rough articulation of just a few of the possible metaphorical themes that emerge from a reading, and re-reading, of "Dawn" are illustrative of the kinds of analyses that literary and linguistic scholars often provide when interpreting poetic, metaphoric language. The questions I consider in this chapter are: (a) what explains the varied, intersecting levels of complexity found in metaphoric language, and (b) how do people come to produce and understand different levels of metaphor? Underlying my discussion is the idea that metaphoric language and thought exhibit a certain order that arises in the same manner as does order seen in many biological and physical domains.

Metaphor scholars see patterns of metaphorical language as distinctly human products of speakers and writers with unconscious and conscious intentions. These scholars' analyses of metaphor in poetry, for example, aim to uncover the cognitive, linguistic, and cultural forces that shape both metaphoric thought and language. Although most metaphor research clearly recognizes the complexity of factors that influence the creation and understanding of metaphorical language, there are few comprehensive accounts that adequately explain how these, and other, factors work together to constrain metaphor performance. At the same time, there are few attempts to explore the ways that metaphoric language and thought, again as distinctly human products, may, nonetheless, reflect deeper organic and physical principles found in the natural world.

2. An initial speculative analogy

Let me offer a crude analogy to immediately demonstrate possible relations between metaphorical language use and other systematic patterns seen in nature.

Consider one graphical analogy, presented in Figure 1, for how one may possibly think about the ways metaphor gives structure to García Lorca's poem. This figure actually depicts a computer simulation of how zebra coat patterns develop over time (from Camazine 2003). At first, there are numerous, random black and white spots, representing black and white cells (the far left box) that, after only the first tick of a clock, begin to organize into a small, more structured set of patterns (the second pattern from the left), with the third picture (third from the left) depicting the larger organized patterns of zebra colour emerging after only 10 ticks of the clock, looking rather similar to an actual zebra skin (far right picture).

My speculative analogy between the García Lorca poem and the development of zebra skin patterns is that our reading of the poem may at first give rise to many, local metaphorical understandings that over time, through further readings and deliberations, may give rise to larger, more globally organized patterns of metaphorical structure and meaning. The key part of this analogy is that there is nothing in the zebra itself that

Figure 1. Retrieved from http://web.mac.com/.../Camazine/Self-organization.html

forces the set of emerging wave patterns to arise. Rather, the larger patterns that emerge over time "self-organize". Self-organization is a temporal and spatial process of attraction and repulsion, in which the internal organization of a system increases in complexity without being guided or managed by an outside source. Metaphorical patterns in language, as in the García Lorca poem, similar to the different temporal moments in the zebra simulation, are not products of a specialized mechanism, but self-assemble and are emergent from the dynamical interaction of simpler components that may initially have little to do with metaphor per se.

Metaphor scholars often assume that particular metaphorical patterns in language come about because of human intentionality, which bears little relationship to our scientific understanding of the natural world (e.g. the biology of zebra skin patterns). My main claim, however, is that metaphor shares significant commonalities with many other beautiful forms and events in nature because they are all structured through self-organization processes.

3.   Snow flakes and termite nests

To explore this idea further, consider now some other examples of self-organization processes in nature. Look first at the snowflake depicted in Figure 2. Snowflakes are notable for their individual uniqueness and beautiful, intricate lattice structure. We know a great deal about water molecules, and the shapes of ice crystals and snowflakes, as well as under what conditions of temperature, pressure, and humidity these shapes appear. Snowflake formation begins when water condenses on microscopic dust grains. A large flake's unique structure is caused by chemical reactions and ever-changing temperatures. But what makes the exact shape and design of snowflakes? Computer simulations show that the lattice structure of a snowflake can evolve via the exchange of thermal energy from one water molecule to another. This simple system triggers a process in which water nonlinearly transforms droplets into snowflakes, with each one differing because of specific environmental conditions. Snowflakes come into being from the self-assembly of nonlinear interactions of components, none of which prescribe in advance new states of organization that give rise to unique, and most beautiful, forms.

Snowflakes, like metaphors, also exhibit the quality of creating different forms when aggregated. Consider the accumulation of billions of snowflakes into snowdrifts, as seen in Figure 3. The beauty of some snowdrifts is different from just the mere addition of the individual snowflakes that make up these vast mounds. Instead, the global forms of snowdrifts have their own self-organized properties that, again, differ from the self-organized forms of individual snowflakes.

Figure 2. Retrieved from http://www.norcalblogs.com/watts/2007/01/

Figure 3. Retrieved from http://www.flickr.com/.../discuss/72157594552023186/

Consider now termite nests, another beautiful, to some, form found in the natural world. Figure 4 presents one example of a termite nest in Australia. These nests are as varied as snowflakes and snowdrifts, and are marvels of architectural complexity. Termites build their complex nests not because each one has some overall architectural concept for the nest's design and the steps needed to build it. There is no master architect that directs the actions of all the worker termites. Rather, each termite engages in simple behaviours such as, "If I come along a lump of earth, pick it up, and place it where the pheromone signal is strongest". Of course, as the nest is being built, its emerging form can affect the behaviours of individual termites as they adapt to the specific resulting environment (top-down causality). Overall, the eventual superstructure that is built is the result of dynamical interactions in the specific environment of thousands of individual termites and not as a projection to the macroscopic level (i.e. the nest) of information encoded at the microscopic level (e.g. the minds of individual termites).

The form and beauty of snowflakes and termite nests arise from processes of self-organization. Self-organizing systems typically exhibit emergent properties. Many aspects of metaphor, such as where they come from, the forms they take individually and collectively, and how people come to produce and understand metaphor, may also

Figure 4. Retrieved from http://termitequeen.com/

be explained in terms of self-organizational processes. Metaphoric thought and language may specifically emerge from the interaction of very local self-organizing processes (e.g. local cognitive, social, linguistic, and bodily behaviours), such as the formation of image schemas and primary metaphors (each of which represents stabilities in experience). People's production and understanding of metaphoric language may best be characterized as self-organizing processes that reflect the operation of an entire system (i.e. a brain and body interacting with an environment), and not explained in terms of dedicated systems for thinking and speaking metaphorically. This view of metaphor has several important methodological implications for how scholars study metaphor and for current debates about the forces that create metaphors in language, thought, and culture. More generally, a self-organizational view of metaphor suggests the need to study and understand metaphor in terms of dynamical processes of mind and body operating along multiple time-scales. Under this view, no single linguistic, conceptual, or cultural factor shapes metaphor performance, and each of these aspects should be studied collectively in terms of their interacting effects on the structure and use of metaphoric language and thought.

4. An overview of self-organization

Science generally aims to decompose natural systems into simpler subsystems. For example, we know a great deal about the human body by analysing the different functions of the heart, nervous system, limbic system, the brain, and so on, with each of these being broken down into their own subparts and subsystems, such as the cortex, the thalamus, and cerebellum of the brain. Individual scientists typically focus on specific subsystems in the general belief that understanding the parts of the body will eventually lead to a complete description, and ultimately explanation, of how the human body works as a whole.

But in recent years, many scientists have embraced ideas from complexity theory and now recognize that nature is composed of many interacting subsystems that exhibit a strong tendency to self-assemble or self-organize (Bak 1996, Kauffman 1995, Prigogine 1997). The essence of self-organization is that a system's structure (at least in part) appears without explicit pressure or constraints from outside the system. Thus, the constraints on form (e.g. a snowflake or a termite nest) are internal to the system and result from the interactions between the components, while being independent of the physical nature of those components. Any system that takes a form which is not imposed from outside (by walls, machines, or forces) can be said to self-organize. The term "self-organization" is usually employed, however, in a more restricted sense by excluding physical laws (reductionist explanations), and suggesting that the properties that emerge are not explicable from a purely reductionist viewpoint (e.g. natural selection). The field of dynamical systems theory, as it is called, seeks to discover the general rules under which self-organized structures appear, the forms that they can

take, and methods of predicting the changes to the structure that will result from changes to the underlying system.

Consider a very small list of physical and biological patterns that are now understood in terms of principles of self-organization:

– The foraging patterns of bees and ants
– The dynamic shapes of flocks of birds
– The symmetrical patterns on butterfly wings
– The regular spots on a leopard's skin
– The formation of whirlpools in rivers
– The formation of bacterial cultures
– Auto-catalytic chemical reactions
– Dynamics of traffic jams on freeways
– The performance of stock markets
– The birth of galaxies
– Neuronal activity in the human brain

External forces do not impose the structure and beauty of these various patterns, because each pattern emerges from very local interactions among each system's components through self-organizational processes. These processes operate in highly context-sensitive ways within particular environmental niches to create the very specific physical patterns and behaviours within each system. For instance, each of the above patterns/systems in nature exhibits several key features of self-organization, including most notably:

– Absence of external control (autonomy)
– Multiple equilibria (many possible stabilities in behaviour or attractors)
– Hierarchies (multiple nested self-organized levels)
– Dynamic operation (temporal nature of processes)
– Global order (emergence from local interactions)
– Top-down causality (higher order shapes local interactions)

For example, the dynamics of traffic patterns on freeways are autonomously given (i.e. not imposed by some external agent or force), exhibit nonlinear stabilities and instabilities over time (e.g., moments where traffic flows easily and predictably, but then suddenly appears to bottle up into traffic jams), are influenced by other stable patterns within the system (e.g. basins of attractors such as roundabouts and weather patterns), can be described at several hierarchical levels each operating on its own time-scale (e.g. from fast-occurring local interactions between several cars to slower developing large-scale patterns of traffic flow over an entire city), with certain global patterns emerging from local interactions between components (e.g., how larger scale freeway paralysis may emerge from very few smaller interactions between just a few individual cars), and the emergent structure of a traffic jam arising from the interactions

of many cars may influence in a top-down manner the movement of a few cars in certain places (e.g. being able to stop and go as they do in traffic).

Within the cognitive sciences and humanities, scholars have applied principles of self-organization to explain how simple and complex human behaviours are, once more, higher-order products of self-organizational processes (Kelso 1995, Spivey 2007, Van Orden et al. 2003, Ward 2002). Dynamical systems theory has had its most profound effect on the study of perception/action relations, or couplings, and in the development of situated, embodied robots, capable of minimal cognitive behaviour (Gibbs 2006). Thus, purposive behaviour arises from the usually nonlinear interaction of a system's components rather than from specialized cognitive or purely neurological mechanisms. Self-organization can occur within individuals' minds, as when coherent knowledge structures emerge from dynamic activation and inhibition of lower-level cognitions, and also among a group of individuals, as in the emergence of social hierarchies, and across populations of individuals, as when clusters of shared beliefs and other cultural norms emerge from communication and influence among those individuals (Gibbs and Cameron 2008).

This dynamical systems theory approach maintains that behaviours unfold over time according to specific types of dynamics. Dynamical approaches to human action attempt to describe how the body's continuous interactions with the world, including other people, provide for coordinated patterns of adaptive behaviour. Simple and complex behaviours are higher-order products of each individual's self-organizational processes. The behaviour of a system over time is represented as a continuous tracing of a line in a three-dimensional space, with other variables embodied in the different axes.

Much of the emphasis in this work focuses on the structure of spaces of possible behavioural trajectories and the internal and external forces (i.e. couplings between brain, body, and world) that shape how these trajectories unfold.

As a system changes states over time, it traces a trajectory in its phase space landscape – a path of the successive states it occupies. When a system's behaviour is observed over an extended period, it sometimes happens that certain regions of the phase space are frequently occupied, others occasionally so, and others never. An area of phase space the system occupies or approaches more frequently than others is called an attractor. An attractor exerts a kind of pull on the system, bringing the system's behaviour close to it. To give some physical examples, attractors can be a point (e.g. the centre of a bowl containing a rolling ball), a regular path (e.g. a planetary orbit), a complex series of states (e.g. the metabolism of a cell) or some infinite sequence where attraction comes and goes in many random patterns (called a strange attractor).

Every system has multiple attractors shaping behaviour at any one time. For instance, the flow of traffic along a freeway may be constrained by multiple stabilities, of varying force, including certain behaviours of individual drivers (e.g. to maintain close distances to the cars in front of them), as well as physical structures that limit the rate of traffic flow (e.g. weather patterns, roundabouts, traffic lights, signs indicating speed limits).

Figure 5. Retrieved from http://www.scielo.cl/fbpe/img/bres/v36n1/fig07.gif
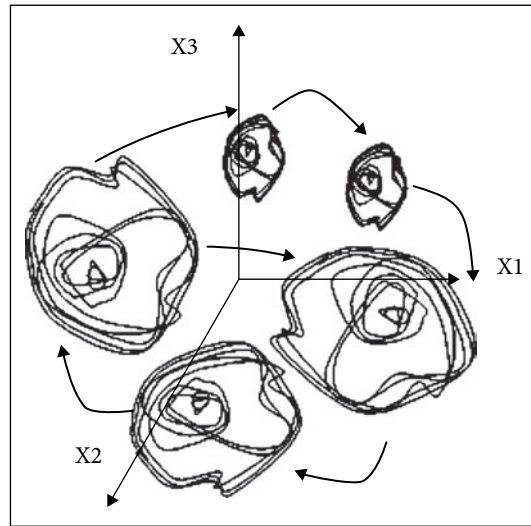
Each attractor can be seen as a basin or valley in the phase space landscape, its region of attraction. Trajectories that enter the basin or valley move toward that attractor. Figure 5 presents a possible ensemble of attractors within an abstract state space. This ensemble of attractors represents, once more, transient areas of stability, of varying degrees, which emerge through self-organizing dynamical interactions of the system's components.

Most psychological models assume that attractors are created by repeated experiences of a particular state so that the state becomes "engraved" in the person's relevant psychological system. A shift from one attractor to another is called a "phase transition" or "phase change". Figure 6 presents a classic example of an ambiguous figure, the "old woman/young woman", which produces bi-stable behaviour as the image shifts back and forth when you look at it. This shifting in the figure's appearance (e.g. between an old and young woman) is consistent with a dynamical account of a nonlinear trajectory settling into one attractor basin and then into the other, repeatedly (Spivey 2007). In systems with more than one attractor, the system's trajectory typically approaches each one periodically, but is never fully captured by any of them, because of the pull of other attractors. Thus, we feel as if we only can see either the old or young woman when looking at the ambiguous figure, but our visual system is in an intermediate phase state between the two main attractors. Plotting the behaviour of such a system over time shows a tendency to approach the various attractors, but often unpredictably. Shifts from one attractor to another may even seem random. A central part of a dynamical account of human behaviour is that the majority of the trajectory's time is spent in intermediate regions of state space which gravitate toward multiple semi-stable attractor basins.

Figure 6. Retrieved from http://www.nlpu.com/Articles/art23-3.gif

Of course, the idea of systems travelling through high-dimensional state space along trajectories is just a convenient (and metaphorical) way of describing what is going on in the brains and bodies of people as they interact with each other and the environment, including the production and understanding of metaphor. But this set of ideas raises interesting possibilities for explaining the emergence of metaphoric thought, and how complex patterns of metaphorical language arise, and disappear, in discourse. Let me now explore the connection between self-organization and metaphor in more detail, and describe several ways that this perspective on metaphor alters the way scholars may think about, and study, metaphor in thought, language, and action.

5. Self-organization and metaphor

There are several principles of self-organization that apply directly to the use and understanding of metaphor in language and thought. My focus will be on the role of multiple attractors, hierarchy of time-scales, dynamics of processing, and global emergence and top-down causality in self-organizational processes of metaphor use.

5.1 Multiple attractors

A first feature of self-organizing systems relevant to metaphor is that of multiple equilibria or attractors. The fundamental stabilities or attractors in human behaviours are those that arise from recurring patterns of bodily experience across a variety of environmental contexts. Image schemas are, in this way, attractors within human self-organizing systems, which emerge from recurring patterns of bodily experience across modalities. Attractors such as BALANCE, SOURCE-PATH-GOAL, RESISTANCE, and

VERTICALITY reflect emerging points of stability in a system as it engages in real-world interaction. For instance, BALANCE is a continually arising stability at many levels of human behaviour, and experienced both within and across sensory modalities and full-bodied kinaesthetic activity. New surprising adaptive problems encountered in the environment (e.g., being kinaesthetically thrown off from a stable standing position) pushes a system into momentary chaos (e.g., the system goes out of BALANCE) until the system, through its self-assembling processes, reorganizes and reaches a new stability (e.g., reaches a new state of equilibrium or BALANCE).

Primary metaphors are also self-organized basins of attraction that reflect stable, positive correlations in bodily experience, such as the following:

- MORE IS UP
- SEEING IS KNOWING
- SIMILARITY IS CLOSENESS
- PERSISTING IS REMAINING ERECT
- INTERRELATED IS INTERWOVEN
- DIFFICULTIES ARE BURDENS
- CAUSES ARE PHYSICAL FORCES
- UNDERSTANDING IS GRASPING

Primary metaphors are emerging points of equilibrium that arise from and are continually tied to ongoing brain, body and world interactions. One may think, then, of image schemas and primary metaphors as attractor basins, along the lines depicted in Figure 6, that differ in their degree of stability. Seen in this light, image schemas and primary metaphors are always in states of flux, depending on the dynamics of the entire system at any one moment in time, and indeed are in constant interaction with one another. This possibility is quite consistent with some of the original writings on image schemas within cognitive semantics (Gibbs and Colston 1995, Lakoff 1987, Johnson 1987), where interactions between image schemas were described in terms of "image schema transformations". Johnson (1987) argued that the CENTRE-PERIPHERY image schema, for instance, is closely intertwined with a number of other schemas, such that once a "centre" of some idea is determined (e.g., "I got to the heart of his plan"), one can view it from a distance that is either far or near. In this way, the FAR-NEAR schema appears to be strongly superimposed upon CENTRE-PERIPHERY, or in the terms of dynamical systems theory, the two image schemas are closely "coupled". Other image schemas also interact with CENTRE-PERIPHERY, such as SCALE, given that the distance between centre and periphery can be quantitatively measured, as well as CONTAINER (e.g., where the "plan" is conceived of as an object with boundaries and a centre). How image schemas and primary metaphors interact, including attract and repel one another, is a topic in need of further study from a dynamical point of view (see Tseng 2007, and Kimmel 2005 for more on how discourse and socio-cultural factors shape image schema interactions).

But it is a mistake to view image schemas and primary metaphors as being represented within static, geometrical mind-space, where each entity sits in some measured distance from one another (e.g. within some conceptual or semantic network). Change is an essential, perpetual part of self-organizing systems, such that image schemas, to continue with this example, constantly emerge and become "destabilized" exactly in the ways that all attractors do. A given image schema may momentarily activate a new attractor that alters the "landscape" of the entire system, as simplistically depicted in Figure 7.

One of the important implications of this argument is that within a self-organizational perspective, attractors are not localized representations, but emerging patterns of entire systems in action (i.e. the interplay of brain, body, and world). Image schemas and primary metaphors are not internal, mental representations that are abstracted away from experience (Gibbs 2005). Instead, image schemas and primary metaphors retain their sensorimotor connections/motivations given people's ongoing embodied experiences in the world. Image schemas and primary metaphors are not "stored" in a dormant state as a predefined, discrete neural configuration (or ensemble of neural configurations), waiting to be selected from a set of other dormant, discrete neural configurations to get actively thought about.

For instance, consider the metaphorical expression, "I can't see the point of that paper". Although the metaphorical basis of "see" in this expression may be motivated by the primary metaphor of KNOWING IS SEEING, we do not experience this primary metaphor by "selecting" that specific metaphor, as opposed to some other, from a stored list of all primary metaphors. Alternatively, image schemas and primary metaphors are "soft-assembled" spontaneously given the present state of the system, the context, and the task, such that the speaker creates an immediate construal of the bodily-based idea that not understanding something is like not seeing it. Each construal of an image schema, primary metaphor, or conceptual metaphor will, therefore, have a different profile depending on the overall state of the organism involved in some activity, and past basins of attraction created within the system (i.e. past simulations of particular behavioural modes such as BALANCE, and past experiences of KNOWING IS SEEING, as well as NOT SEEING IS NOT KNOWING) (Gibbs 2005).

Figure 7. Retrieved from http://www.nlpu.com/Articles/art23-1.gif
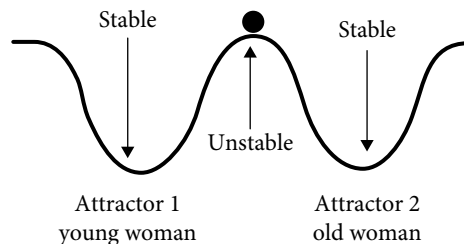
From a self-organizational perspective, then, postulated preconceptual and conceptual entities, such as image schemas and primary metaphors, are "merely potential" and do not sit passively encoded in people's long-term conceptual systems waiting to be activated. Under this view, our minds do not "contain ideas", because the mind is best described as "context-driven actualizations of potential" (Gabora 2005). Although metaphoric language is often presumed to spring forth from corresponding discrete entities in the mind/brain (e.g. image schemas, primary metaphors, and conceptual metaphors), image schemas and primary metaphors, for instance, are merely how the mind reveals itself within particular contexts. Conceptual metaphors, to take this argument to a different level, also exist only in an implicit sense of being "merely potential" until they are soft assembled in context. Each image schema and each conceptual metaphor is like a new snowflake in that its concrete manifestation in language or action (e.g. gesture) depends on the vast, unfolding dynamics that characterize a system as it operates at any given moment of time.

This claim about the non-representational nature of image schemas, and conceptual metaphors by no means denies the existence of these constructs, but places them in a new light that has important methodological and theoretical implications for metaphor theory in linguistics and psychology. For example, a typical cognitive linguistic analysis of metaphoric language may suggest that a variety of image schemas, primary metaphors, and complex, or conceptual, metaphors motivate the existence and structure of conventional and novel metaphor in discourse (in addition to non-verbal and gestural metaphor). But this analysis essentially engages in a kind of "reverse engineering" where certain complexities in language are noted (e.g. systematic patterns of conventional expressions) and a specific, causal basis in mind is immediately postulated for how the linguistic complexity comes about (e.g. conceptual metaphors).

Psychologists too engage in the same kind of "reverse engineering" approach when they seek direct causal explanations for cognitive and/or linguistic behaviours, typically obtained in laboratory experiments, and then postulating the existence of entities in the unconscious mind that must bring about this complex behaviour (e.g., suggesting how underlying conceptual metaphors prime speeded processing of certain metaphoric language). This kind of analysis, sometimes referred to as "morphological reduction", essentially reduces behaviour to combinations of internal, mentally represented, devices (Van Orden et al. 2003).

Of course, this classic methodological approach, both in cognitive linguistics and psychology, has provided enormous insights into the structure and behaviour of metaphor in language, thought, and culture. Yet the "reverse engineering" methodology fails to consider that some complexities in behaviour, such as the systematic patterns of conventional metaphor in language, may arise spontaneously from self-organizing processes that have little to do *per se* with either metaphor or thought. In some cases, this failure may result in "over engineering" where a more complex theory is posited to explain some behaviour that really can be accounted for in simpler terms, ones that are shared with many other natural systems. For instance, metaphor researchers may,

possibly, have created far more complex mechanics to describe metaphoric patterns of language, or even the motivations for what a single verbal metaphor might mean (e.g. conceptual blending theory) and mistakenly assume that the mechanical description offered is necessarily part of the human mind from which that verbal metaphor emanates. This may be particularly a problem in accounting for metaphoric language patterns in conversations where complex metaphoric models are posited to explain the diverse metaphor use of multiple speakers where each speaker is presumed to hold some or all of a given metaphorical model in their head during the talk. But metaphoric networks, seen in conversation for example, may be emergent attractor basins that arise from far simpler interactions of local level attractors such as words, phrases, image schemas, and so on.

At the very least, a self-organizing view suggests that conceptual metaphors, for instance, may not be represented "in mind" and may, once more, be soft-assembled given the dynamics at work in any speaking, thinking, or acting situation, both within and across individuals. Thinking about complexity in nature along these lines offers a more flexible, comprehensive, context-sensitive account that helps explain certain regularities, and instabilities in metaphoric language use. At present, the metaphor literature is filled with competing hypotheses and seemingly contradictory findings (e.g., how verbal metaphor can be explained in terms of forces working, alternatively but not necessarily jointly, at the lexical, grammatical, conceptual, pragmatic, and socio-cultural levels).

Finally, a self-organizational view of image schemas and primary metaphors as part of the multiple attractors that shape metaphor performance also suggests that these are motivated by socio-cultural and not just purely bodily forces and stabilities in experience. After all, there are various stabilities in socio-cultural beliefs and actions that deeply constrain our bodily experience at different levels. To give one compelling example, the Anlo-Ewe speaking people of West Africa greatly emphasize the proprioceptive quality of balance (Geurts 2002). They are openly encouraged to actively balance their own bodies as infants, they balance small bowls and pots on their heads while walking to and from school, and adults perceive balance as a defining attribute of mature individuals. These attitudes about balance and balancing behaviours are not merely about physical abilities but reflect a direct association between bodily sensations and who you are or who you may become. In this manner, reference to cultural categories implicate and create sensory phenomena, illustrating the inextricable link between bodily and cultural stabilities. Culture can more generally be seen as attractors operating at many different self-organized levels of the system/experience that constrain human actions in specific contexts.

5.2   Hierarchies of time-scales

Metaphor scholarship is often dominated by competing theories that aim to privilege certain aspects of mind, language, or culture in their accounts of metaphoric language use. Within cognitive linguistics, for example, scholars debate the extent to which

conceptual metaphors, traditionally seen as encapsulated knowledge chunks within minds, provide the basic underlying reason for the existence and continued use of particular patterns of verbal metaphor. Alternative perspectives within the field emphasize more purely linguistic (e.g. lexical or grammatical), pragmatic (e.g. having the need to speak of something that cannot be done using literal language), or socio-cultural factors (e.g. politeness or traditional folk notions about experience, such as the theory of humours in metaphors of anger) to account for the systematicity and diversity of metaphor in discourse.

Within traditional psycholinguistic research, scholars debate which cognitive, linguistic, affective, and social-pragmatic factors best account for verbal metaphor production and comprehension. For example, psychological studies have shown that metaphor use and understanding may depend on factors such as the presence or absence of conceptual metaphors, previously understood metaphorical utterances, body movements and gestures, the age, gender, and occupation of speakers, the affective relationship between speakers and listeners, the emotional state of speakers, genre, and specific linguistic and cultural backgrounds, to name just a few of the variables studied (Gibbs and Colston 2012). But few attempts have been made to examine the joint influence of these different personal, linguistic, cognitive, affective, and social variables on metaphor performance (Gibbs and Cameron 2008).

The significant idea to recognize here is that metaphor performance, like all other aspects of human behaviour and natural action, takes place at many time scales, from milliseconds to months to years to millennia. For instance, some dynamic processes occur over short time spans (e.g. neural firings, momentary thoughts). Other processes unfold over the course of individuals' lives, and so guide development and change in personality, and interpersonal interactions throughout the lifespan. Dynamic processes also operate on populations over a much longer, evolutionary timeframe. Each of the factors studied in psychology and linguistics have their effect on the production and understanding of linguistic metaphor in different ways, operating more specifically along different time scales. These include relatively slow timescales, such as cultural changes in the ways that people within a community conceive of certain ideas and events in differing metaphorical ways (e.g. LIFE IS A JOURNEY). They also include intermediate time scales such a speaker's goal-like intentions to persuade a listener to adopt a certain belief, to experience a particular emotion, to act in a certain manner, and so on, as well as multiple fast-acting time scales that characterize the oral production of words and sentences, and even faster time scales that characterize various neural firings in the brains, some of which may be dedicated to cross-domain linkages (Gallese and Lakoff 2005).

The various time scales are not independent, but are hierarchically organized, and nested within one another such that various forces affecting metaphor production, for example, are coupled in complex, nonlinear ways. Thus, some of the previously noted factors that shape metaphor production and understanding involve slow moving processes such as cultural ideas about how to metaphorically conceive of, and talk

about, certain topics (e.g. "arguments are wars"). But the slower moving cultural and historical processes are not independent of what occurs in real-time metaphor use, precisely because they are coupled with those operating at faster time scales such as a person's understanding of what it is conventional to say in a specific situation, often requiring the use of particular metaphorical words or phrases, and even faster operating processes, such as an individual's consciously held thoughts about the topic at hand, what he or she had just metaphorically stated, and what metaphorical utterance, metaphorical gestures, he or she had just heard or seen. These nonlinear interactions among a system's components occur both bottom-up and top-down to provide for a circular causality. For this reason, the occurrence of metaphorical words or phrases in some discourses may not only reflect the influence of certain conceptual metaphors, as basins of attraction, because the language itself also may shape the strength and stability of conceptual metaphors in a continuously reciprocal fashion.

This idea that human behaviour emerges from constraints jointly operating at varying time-scales has great importance for theories of conceptual metaphor. Enduring patterns of metaphorical thought, or conceptual metaphor, also emerge along many time-scales with no one of them necessarily being more salient or important to understanding the operation of conceptual metaphor. Consider some of the ways that conceptual metaphor has been studied and thought to have an influence:

1. Cultural models of abstract concepts.
2. The evolution of language.
3. Contemporary language (e.g. as manifested in conventional expressions, novel extensions, polysemy, certain textual organization) and gesture.
4. Contemporary speakers' knowledge in long-term memory (i.e. structuring many abstract concepts) that motivates their tacit understandings of why various words, phrases, and texts convey the figurative meanings they do.
5. Contemporary speakers' knowledge in long-term memory that is immediately recruited (i.e. accessed or activated) during online metaphorical language production and comprehension, as well as different reasoning tasks.
6. Neural processing underlying certain abstract thought and language performance.

There is significant research from linguistics, cultural anthropology, psycholinguistics, and neuroscience that provides different kinds of empirical support for each of the above possibilities.

But the claim that one can find conceptual metaphors in everything ranging from cultural models to brain processes is highly controversial (Haser 2005, McGlone 2007, Pinker 2007). Scholars in virtually every academic discipline raise sceptical questions about the possibility of conceptual metaphor both within each of the above levels of analysis and across the different levels. For instance, some researchers have argued that conceptual metaphors have a linguistic reality as generalizations emerging from systematic language patterns, but are wary of ascribing these generalizations as indicators

of underlying human concepts (Quinn 1991). Other metaphor scholars acknowledge the possibility that conceptual metaphors may be part of what people know about certain abstract concepts, but that such knowledge is not automatically recruited during ordinary language use (McGlone 2007). Thus, even if conceptual metaphors have some linguistic and psychological reality in a general model of human language and thought, determining whether particular individuals use conceptual metaphors in different situations is another issue altogether. Finally, scholars may accept the possibility that conceptual metaphors reflect cultural resources that are sometimes actively employed in language and thought. But this does not imply that every instance of conventional speech or writing (e.g. "My marriage has hit a dead-end street") is motivated in that moment of use by a widely-believed conceptual metaphor (e.g. RELATIONSHIPS ARE JOURNEYS), or that it is at all suitable evidence for the existence of conceptual metaphors at the level of cognitive and brain organization and functioning (Cameron 2003).

The debates over conceptual metaphors typically end up focusing on the "where is it" question with different scholars arguing that "it is here" or "not there" depending on their own disciplinary interests and empirical analyses. But a self-organizing perspective suggests that conceptual metaphors are sustained on multiple time scales, and emerge within this endlessly evolving hierarchy of dynamic structures. The contents of conceptual metaphors (i.e. their target and source domains and correspondences) emerge and are perpetuated in time via circularly causal dynamics. Because they are perpetuated in time, cross-domain mappings on one time scale remain available to constrain conceptual metaphors on shorter time scales. This coupling between "macro level" and "micro level" scales allows more slowly changing, emergent, control structures to constrain more rapidly changing interactions among individuals.

5.3   Dynamical processing

Similar to all aspects of self-organized human processing, metaphor understanding always unfolds in real time and is best described as continuous trajectories through state-space. Metaphor processing is always moving, as the system is never static. Metaphoric meaning is not a final, static product (e.g. a blended space), but an ongoing process that emerges and dissipates in continuous time. Processing occurs between stable points of attraction, which partly accounts for the richness and indeterminacy of metaphoric meanings as people continue to speak and think of metaphorical ideas, and expressions. The forces shaping figurative language understanding do not reduce to simple competition between two attractors that correspond to the literal and figurative meanings of a word or expression. Instead, given that most words have multiple, often interconnected meanings, there will be a host of attractors in competition, along with a wide variety of cognitive, linguistic, and contextual forces, such that processing of a linguistic utterance will likely take considerable time between attractors and in some case never fully settling into one attractor or the other. This possibility also makes the specific linking of verbal metaphors to particular underlying conceptual,

or primary, metaphors challenging because of the unacknowledged influence of many other constraints that shape a system's behaviour, at any given moment in time.

A dynamical systems approach to metaphor processing can explain a myriad of experimental findings in psycholinguistics. For example, a traditional view assumes that metaphors require more processing effort to interpret because of their linguistic or pragmatic deviance, compared with comprehension of so-called literal speech. Some scholars assume that people automatically process the literal, or salient, or underspecified meanings of metaphors before full-scale metaphoric meanings are derived in context. Other approaches assert that context alone can determine how people come to metaphoric, as opposed to literal, understandings of verbal metaphors. More recently, some accounts suggest that various factors can combine in probabilistic ways to constrain metaphor processing and that the speed with which one understands a metaphor depends on the particular factors more prominent at any moment in time (i.e. "constraint satisfaction" models, see Katz 2006).

But the key to the self-organizing perspective on metaphor processing is that there is no overarching mechanism that decides the process of constructing a parse, or formulating an interpretation of a speaker's meaning. Instead, the system as a whole will settle, or relax, into certain areas of stability that will constitute the momentary understanding of the message at that instant in time. The main advantage of the self-organizing approach is its simplicity, because the many kinds of empirical effects observed in metaphor comprehension are often thought to reflect entirely different parsing mechanisms, while the dynamical approach can capture the various interactions of independently motivated dynamical and linguistic constraints. How fast one processes a verbal metaphor in discourse will, therefore, depend on the interaction of components, along multiple time scales, at a given moment in time. This makes it impossible in principle to state that metaphor will always take more or less time than any other kind of language or that any particular metaphor will always be processed one way. Although this abandons the empirical certainty that some theories of metaphor appear to demand (e.g., those suggesting that a metaphor's "salient" meaning is automatically generated), the reduction in certainty comes along with a much greater sense of empirical completeness in being able to account for the range of extant results in the literature. Furthermore, again, the dynamical perspective is far better able to explain the indeterminacy associated with metaphor understanding precisely because a central part of a dynamical, self-organized system is that the majority of a trajectory's time is spent in intermediate regions of state space that gravitate toward multiple semi-stable attractor basins.

5.4 Global emergence, top down causality, and instability

Metaphoric language has long been recognized to express "emergent" meaning. For instance, we understand "My surgeon is a butcher", not by finding those semantic features common to both surgeons and butchers. Instead, as many psychological studies demonstrate, the novel features emerging from metaphor comprehension are not

salient in one's separate understandings of the topic and vehicle (Gineste et al. 2000, Utsumi 2005). Psychologists and linguists have proposed various cognitive mechanisms to explain feature emergence during metaphor understanding (Gibbs and Colston 2012). Yet the fact that most metaphor scholars readily recognize that metaphorical meaning is an emergent property makes metaphor very compatible with self-organizational accounts of thought and language.

Within dynamical systems theory, emergent behaviour, or an emergent property, arises from the interaction of different components, operating in some environment, over disparate size scales. Emergence involves circular causality in which there is often top-down feedback within the system. The metaphoric meaning of "My surgeon is a butcher" is, therefore, not simply a matter of bottom-up processes where semantic features associated with "surgeon" and "butcher" are matched and aligned, but depends on many other factors, working at a variety of time-scales, again ranging from slower moving cultural and historical forces to fast-moving lexical access and neuronal mapping time-scales, to mention just a few of the relevant time-scales. Just as it is impossible to predict the shape and behaviour of a flock of birds in flight by simply looking at the behaviours of individual birds, so too is it impossible to predict the emergent behaviour of ensembles of metaphors, especially given their inherent context-dependent functioning. Emergent behaviours, such as metaphoric meanings, are fundamentally irreducible and cannot be easily predicted or deduced from examination of the lower-level entities or components. My earlier speculative analogy of the zebra skin simulation to capture something of the emerging metaphorical meanings possibly found in Lorca's poem "Dawn" is an example of how one may not predict complex metaphorical patterns simply from looking at individual metaphorical meanings of words and phrases in that poem, even if these meanings are collected and summarized.

Cameron (2007) provides several examples of how self-organizing processes may shape metaphor use, particularly in the way that emergent metaphors may constrain lower-level use of words with metaphorical meaning. Consider the following extract from her analysis of a reconciliation dialogue between a former member of the Irish Republican army (Pat) and the daughter of a man that Pat was responsible for killing in a IRA bombing (Cameron 2007: 210):

1–2612	Pat	.. I was at a pretty low ebb.
2613		... and I was actually at that stage --
2614		er,
2615		...(1.0) prepared to walk away from the struggle.
2616		simply because I was --
2617		er,
2618		...(1.0) what X --
2619		totally fatigued and mentally drained.

People use "walk away from" to speak metaphorically about some choice or action that could have been taken but wasn't. The things that might have been "walked away from"

usually had some hold on the person, which made the leaving difficult or traumatic. The choice "not to walk away" was usually the more difficult option. At the same time, adverbs, such as "simply" or "never", accompany this phrase, which helps intensify the choice to "walk away from". In the above example, "actually" is used before the phrase and "simply" is used after it, while both serve to intensify the nature of the decision. "Walk away from" is, therefore, more than just a fixed phrasal expression, because these various linguistic and affective factors interact in such a way to give rise to a "metaphoreme", which is an emergent attractor in the social cognitive dynamics of speech community language use.

Metaphoremes display reciprocal causality: multiple individual uses of language generate the metaphoreme while the metaphoreme also influences individual uses of language. In specific instances of use, the metaphoreme exerts a "downwards force" on speakers, who can adapt it for their circumstances but who are to some extent limited by its stabilized state. Any single adaptation for use can, however, start the system moving again and push the metaphoreme into a new pattern. So when Pat comes to talk about a difficult choice he has to make, the metaphoreme <(not) walk away from> emerges as the right expression. The dynamics of self-organization shows how emergent properties of meaning in any discourse context can constrain speakers' very specific metaphorical word choice.

One implication of this top-down causality is that the intention to speak metaphorically, as opposed to using some other form of language, results from a person's self-organizing tendency even before the intention to do so reaches awareness. Consider the following analogy that describes how human action is "uniquely situated in circumstances that define its intentional contents" (Van Orden et al. 2003: 332). Imagine that you are in the shower holding onto a bar of soap. Suddenly, the soap slips from your hand, and you immediately try to catch it, juggling it as you to bring it in your grasp. Finally, you catch the soap and hold it firmly within your hands.

This soap juggling situation, and the intention to catch the soap once it slipped from your hand, can be described at many time scales, including relatively slow time scales of cultural changes in hygiene habits, intermediate time scales of goal-like intentions to shower, wash your body, and to control the bar of soap as you do so, as well as faster time scales of limb and body movements as you aim to catch the soap once it slipped from your hands. In general, there is a hierarchy of constraints operating in a hierarchy of time scales that make up the soap-juggling situation.

But your intention to recapture the soap after it slipped from your hands cannot have existed before the juggling of the soap began. Thus, the aim to grasp the soap entails grasping the soap, yet the exact movements you make to regain the soap need not have emerged before they were enacted. In this manner, the changing circumstances in the soap-juggling situation create the intention to recover the soap, and these circumstances, defined as a set of constraints operating along a hierarchy of time scales, dictate the specific body movements you make to get hold of the soap again.

My claim is that any act of speaking or writing metaphorically, including very so-called "deliberate" instances of metaphor creation (e.g. García Lorca's creation of the metaphors in "Dawn"), also arise from self-organized processes that soft-assemble particular metaphorical words, expressions, gestures, and so on, within moments of individual experience in context (Gibbs and Cameron 2008). Thus, Pat's choice in the conversational extract above, where he says "walk away from" rather than doing or saying something else, can be "decided" by the interaction between speaker's dynamics and the environment as the process "moves downstream" (to use the dynamical metaphor of moving through "landscapes"). None of this requires that the speaker form an explicit intention requiring explicit deliberation to speak metaphorically. Speakers can just decide to communicate their recent thought processes and the environmental constraints take care of the fine-grained details of how this intention is manifested in real-world behaviour. This account of what it means to speak metaphorically differs from traditional discussions where verbal metaphors are thought to arise either "automatically" (without awareness) or "deliberately" (solely guided by a speaker's consciously-held thoughts or intentions).

Finally, another crucial feature of a self-organized dynamical system is its balance of stability and instability. The variability in metaphor performance (e.g. metaphors appearing in thematic clusters and then disappearing, with other metaphors appearing almost randomly), like many other aspects of human behaviour, may also be readily understood in dynamical terms (see Cameron and Deignan 2006, Low et al. 2008 for data and discussion of metaphor variation in discourse). This mixture of stability and instability in metaphor is not due to entirely different mechanisms (i.e. one explaining the stability among metaphor and another to explain why they do not appear or appear randomly).

For example, many critics of conceptual metaphor theory assume that the theory predicts that certain verbal metaphors must appear (i.e. those consistent with a particular underlying conceptual metaphor), and that no other metaphors can be inter-mixed within some stretch of discourse (Shen and Balaban 1999). But stability and instability are just different sides of the same dynamical coin, and result from the non-linear nature of the interactions of a system's components along different time scales. This explains why certain metaphoric ideas may be momentarily expressed in discourse, even if there are other more salient constraints (i.e. attractor basins) operating at any one time.

Moreover, if one adopts the idea that conceptual metaphors may exist as multiple attractors, each varying in strength, at any one moment in a system's history (e.g. at a time when a speaker is about to say something to another person), then it is possible to recognize how different conceptual metaphors may be salient and differentially expressed in language within the same small stretch of discourse. Conceptual metaphor theory need not, in principle, insist that one and only one conceptual metaphor operate at any moment in processing. At the same time, as argued above, any conceptual metaphor, as a basin of attraction, may only exhibit partial force in determining the

path of a trajectory through a system's state space. This provides for a much more flexible, contextually sensitive system that allows for multiple, partial metaphorical forces to meet the adaptive needs of the system (i.e. the person interacting with the environment as in a conversation).

6. Conclusion

Much of the beauty and structure of metaphor, similar to that for snowflakes, termite nests, and many other natural phenomena, arises from dynamical processes of self-organization. This argument is closely in line with other emerging theories of complexity from the natural sciences that are having a profound effect on the social sciences and arts. My claim that metaphors emerge from self-organization processes partially explains, albeit at a general level, important facts about the structure, presence/absence, and processing dynamics associated with verbal metaphor use.

The most significant methodological lesson following this argument is that metaphor scholars need to acknowledge that multiple interacting dynamic factors shape metaphor performance. Most importantly, rather than privileging certain levels of metaphor (i.e. lexical, grammatical, conceptual, pragmatic, socio-cultural), in doing metaphor analyses, scholars need to recognize how all these constraints may be simultaneously operating at any given moment in time, and the nature of how these constraints interact in time to guide metaphoric thinking and language use. The best way to do this is to resist the traditional temptation to carefully pick verbal metaphors out of context for further analysis or experimentation. We must, alternatively, seek out the complex, most likely nonlinear ways, that metaphors come into being and express the meanings they do in real-life contexts. Paying close attention to the temporal dimensions of the variables, or constraints, that we are interested in studying, is perhaps the most important strategy to adopt as metaphor scholars and enthusiasts come to see how metaphor is deeply a part of the natural world.

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