# Words and their metaphors: A corpus-based approach

*Anatol Stefanowitsch*

**Abstract**

In this paper, I propose and demonstrate a corpus-based approach to the investigation of metaphorical target domains based on retrieving representative lexical items from the target domain and identifying the metaphorical expressions associated with them. I show that this approach is superior in terms of data coverage compared to the traditional method of eclectically collecting citations or gathering data from introspection. In addition to its superior coverage, a corpus-based approach allows us to quantify the frequency of individual metaphors, and I show how central metaphors can be identified on the basis of such quantitative data. Finally, I argue that a focus on metaphors associated with individual lexical items opens up the possibility of investigating the interaction between metaphor and lexical semantics.

## 1. Introduction

Over the past twenty-five years, the study of metaphor has been at the core of the research program now known as *cognitive linguistics*, a development that began with the publication of Lakoff and Johnson's 1980 monograph *Metaphors We Live By*. Like other theories before it, Lakoff and Johnson's 'conceptual theory of metaphor' draws a distinction between *metaphorical concepts* (or *conceptual metaphors*) and *metaphorical expressions*. Conceptual metaphors are general mental mappings from a (typically concrete) source domain to a (typically abstract) target domain, while metaphorical expressions are individual linguistic items instantiating these mappings.[1] For example, the metaphorical expressions in (1) are analyzed as instantiating the general metaphorical concept ANGER IS FIRE:

(1) a. Those are *inflammatory* remarks.
    b. He was *breathing fire*.
    c. He was *consumed* by his anger. (Lakoff 1987: 388)

1. Cf. Black's (1962, 1992[1979]) distinction between *metaphor(ical) statements* and *metaphor themes*, where the latter are understood as 'projections' of 'secondary subjects' onto 'primary subjects'; cf. also Weinrich's (1976: 299ff.) notions of *image donor* (*Bildspender*) and *image recipient* (*Bildempfänger*)).

Crucially, the conceptual theory of metaphor differs from many previous approaches in that it is primarily a theory of metaphorical cognition rather than metaphorical language. Metaphorical mappings such as ANGER IS FIRE are seen as instances of a psychological process of "understanding and experiencing one kind of thing in terms of another" (Lakoff and Johnson 1980: 5), and thus as a fundamentally non-linguistic phenomenon: "What constitutes [a] metaphor is not any particular word or expression. It is the ontological mapping across conceptual domains" (Lakoff 1993: 208).

Consequently, cognitive metaphor research has focused on uncovering general mappings rather than exhaustively describing the specific linguistic expressions instantiating these mappings. Studies are mostly based on introspection or eclectic collections of individual citations. This may not be a major problem if our aim is merely to establish the *existence* of a particular mapping, but it causes at least two problems if our aim is the systematic characterization of a specific mapping, source or target domain: first, it is impossible to decide at what point we have exhaustively charted the relevant metaphors; second, it is impossible to quantify the results in order to determine the importance of a given metaphor in a given language. In other words, it is difficult to establish a firm empirical basis for studying conceptual metaphor from a linguistic perspective.

At first glance, corpus linguistics does not seem to be an ideal candidate to remedy these methodological shortcomings. The principal way in which corpora are accessed is via word forms (more precisely, orthographic strings), and since metaphorical mappings are not generally associated with particular word forms (or particular linguistic items in general), they cannot easily be retrieved automatically. Take the expressions in (1) above: there is no search string that would retrieve all of them.

However, several strategies have been proposed to deal with this problem (see Stefanowitsch, this volume, for an overview). This paper presents one such strategy in detail and compares it systematically to the traditional way of collecting data introspectively or by amassing individual citations eclectically. The basic idea behind this method is fairly straightforward: we choose a lexical item referring to the target domain under investigation and extract (a sample of) its occurrences in the corpus. In this sample, we then identify all metaphorical expressions that the search word is a part of and group them into coherent groups representing general mappings. This general approach has been used by some researchers in previous work but it has, to my knowledge, never been investigated whether the metaphorical mappings identified in this way actually represent the complete inventory of metaphorical mappings occurring in the

target domain in question. My first aim in this paper is therefore to demonstrate that this method is equal or superior to the introspective method with regard to the identification of metaphors (Section 3). I use metaphorical expressions associated with the target domain of basic emotions as a test case, specifically, the words *anger*, *fear*, *joy*, *sadness*, and *disgust*. My second aim is to point out several avenues of research opened up by the possibility of quantifying the frequency of occurrence of metaphorical mappings. I show how the frequency of occurrence of a given metaphorical mapping with a given lexical item can be used to identify mappings that are significantly associated with particular target words/concepts (Section 4), and I investigate differences in the metaphorical behavior of antonyms and near-synonyms, showing that the reliance on representative lexical items is a methodological advantage that allows us to uncover subtle differences between lexical items from the same target domain (Section 5).

## 2. Metaphorical pattern analysis

The method presented here is not as simple as the short characterization above suggests: as mentioned, conceptual metaphors are not tied to specific lexical items, and in particular, they do not all contain lexical items from the target domain. In fact, we can distinguish two broad types of metaphorical expressions on formal grounds: those that contain target-domain items and those that do not. Consider the following textbook examples; while those in (2a–c) all contain lexical items from both the source domain (*indefensible*, *target*, *shoot down*) and the target domain (*claim*, *criticism*, *argument*), the examples in (3a–c) contain source-domain items only:

(2) ARGUMENT IS WAR (Lakoff and Johnson 1980: 4)
*SD* WAR
*TD* ARGUMENT (i.e. DISCUSSION)
a. Your *claims* are indefensible.
b. His *criticisms* were right on target.
c. He shot down all of my *arguments.*

(3) LOVE IS WAR (Lakoff and Johnson 1980: 49)
*SD* WAR
*TD* LOVE
a. He is known for his many rapid conquests.
b. He fled from her advances.
c. He is slowly gaining ground with her.

The fact that some metaphorical expressions contain both source and target domain lexemes has sometimes been used as a means of identifying metaphors, but as far as I can tell, little or no attention has been drawn to the fact that such expressions constitute a specific subclass of metaphorical expressions, a subclass that I will refer to as a *metaphorical pattern* and that I will define as follows:

> A metaphorical pattern is a multi-word expression from a given source domain (SD) into which one or more specific lexical item from a given target domain (TD) have been inserted.

Expressions like those in (2a–c) above, then, are metaphorical patterns, while those in (3a–c) are not. Crucially, metaphorical patterns provide a basis for target-domain oriented studies on the basis of corpus data: we can retrieve a large number of instances of a target domain item (such as *claim*, *criticism*, *argument*, etc.) from a corpus and exhaustively identify the metaphorical patterns that it occurs with. Obviously, this kind of procedure, which I will refer to as *metaphorical pattern analysis* (MPA) will capture only a subset of metaphorical expressions – those manifesting themselves as metaphorical patterns for specific lexical items – but I will show that this potential drawback is outweighed by the advantages that this method offers.

First, and perhaps most importantly, MPA allows us to quantify the importance of any given metaphorical pattern for particular (sets of) lexical items. If we choose the lexical items wisely, this should also enable us to make generalizations concerning the importance of the conceptual metaphors underlying these patterns.[2] The fact that statements derived from MPA pertain to particular target domain lexemes rather than to the target domain in general may be regarded as a drawback in terms of generality by some, but note that it also provides an advantage. For metaphorical expressions that do *not* constitute metaphorical patterns, it is often difficult to determine which precise target-domain we are in fact dealing with – for

2. Its commitment to quantification and exhaustive data extraction place MPA in the methodological framework of *quantitative corpus linguistics* (as discussed, for example, in Stefanowitsch and Gries 2005).

example, do the metaphorical expressions in (3) really involve the target domain LOVE, or do they involve target domains such as DESIRE, LUST, ADORATION, etc.? Presumably, this depends to some degree on the context in which they are used, but some uncertainty always remains. Metaphorical patterns do not present us with such uncertainty, as the target domain is spelled out explicitly by the target domain lexis.

Second, related to the point just made, metaphorical patterns do not merely instantiate general mappings between two semantic domains. In addition, they establish specific paradigmatic relations between target domain lexical items and the source domain items that would be expected in their place in a non-metaphorical use. For example, the metaphorical pattern in (2c) above establishes such a relation between the word *argument* and the word(s) that would occur in the same pattern (*shoot down NP*) if used in a source-domain contexts (words like *(fighter) plane* or *missile*):

(4) He shot down all of my *arguments.*

| | |
|---|---|
| *TD* DISCUSSION: | *argument* |
| *SD* WAR: | He shot down my planes/missiles/… |
| General mapping: | DISCUSSION IS WAR |
| Specific relation: | *argument* ≈ *plane/missile* |

Thus, we get not only the general mapping DISCUSSION IS WAR from this pattern, but also the more specific ARGUMENTS ARE MISSILES. Metaphorical expressions that do not constitute metaphorical patterns do not establish such specific relations. As an example, take following expression:

(5) He is known for his many rapid *conquests.* (= 3a)

| | |
|---|---|
| *TD* LOVE: | Ø (does not provide lexical items) |
| *SD* WAR: | He is known for his many conquests |
| General mapping: | LOVE IS WAR |
| Specific relation: | Ø |

Here, the word *conquest* is the only word that evokes the source domain WAR, while the target domain LOVE is not evoked by any lexical item at all. Thus, no specific relation is established between the source domain item *conquest* and potential target domain expressions such as *lover*. This does not mean that there is no connection between these two expressions, but this connection is not explicit in the expression in (5). In contrast, explicit relations between source and target domain items established by paradigmatic relations in metaphorical patterns allow us to investigate the corre-

spondences between source and target domain at a level of detail not usually found in studies of metaphor.

Third, metaphorical patterns may have different degrees of conventionality – there are cases, where a target domain item is much more likely to occur than source domain items, and in very conventionalized cases, it may be almost impossible to insert a source domain item into the pattern. An example of the first kind is the expression *wealth of NP* – source domain items like *money* or *possessions* may occur in it, as shown in (6), but they do so much less frequently than target domain items like *information*, *experience*, *ideas*, *knowledge*, etc.:

(6) He has a wealth of *ideas.*
*TD* IDEAS: *ideas*
*SD* MONEY: Now that the weather's cold, she says she's lost those customers along with a wealth of money. (Source 1)

An example of the second kind is *elucidate NP*, which occurs with source domain items extremely rarely (if at all), and which sounds unacceptable to most speakers when it does:[3]

(7) Could you elucidate your *remarks.*
*TD* IDEAS: *remark*
*SD* LIGHT: ?? Sunlight elucidated the room.

The relative frequency of source and target domain items in a given metaphorical pattern may be used to determine the degree to which the pattern in question is transparently motivated by a metaphorical mapping, and the relative frequency of source and target domain items in a coherent *set of* metaphorical patterns may be used to assess the degree to which the metaphorical mapping underlying them can be regarded as productive, i.e. as a candidate for a truly *conceptual* metaphor. For the purposes of this paper, I will accept as metaphorical patterns all metaphorical expressions that can in principle occur with source domain items in the relevant slots.

3. An extensive web search yields examples like *Meg* […] *flipped the light switch*, *the lights began to elucidate the room slowly* (Source 2), but it is unclear whether these are cases of natural language use or rather failed attempts at literary style. The OED suggests that *elucidate* originally had literal uses, but does not any longer; its meaning is given as "to render lucid; now only *fig.*" (*OED*, s.v. elucidate). However, the first citation (from 1568) is already metaphorical, and no literal citations are given at all.

Fourth, there may be more than two domains (and thus, more than one metaphor) involved in a metaphorical pattern:

(8) His eyes were filled with *anger*.
*TD1* EMOTIONS: *anger*
*TD2* ORGANS: *eyes*
*SD* CONTAINERS/LIQUIDS: The container was filled with liquid.
General mappings: EMOTIONS ARE LIQUIDS
ORGANS ARE CONTAINERS
Specific relations: *anger* ≈ *liquid*, *eye* ≈ *container*

Presumably, metaphorical mappings are not freely combinable, and the investigation of metaphorical patterns that simultaneously instantiate two mappings could uncover the principles determining their combinability.

Finally, metaphorical pattern analysis provides us with a standard of comparison for cross-linguistic research, which is otherwise difficult to establish: since MPA focuses on individual lexical items (or sets of such items) from a given target domain, cross-linguistic studies can use translation equivalents of these items as their *tertium comparationis* (cf. the study of the English words *happiness* and *joy* and their German translation equivalents *Glück* and *Freude* presented in Stefanowitsch 2004).

Of course, not all issues raised here can be discussed in the present paper. I will therefore focus on three issues that seem most fundamental in justifying MPA as a viable method for the investigation of metaphor: first, how good is the match between the metaphorical mappings identified for a given domain via MPA as compared to those identified via the introspective method; second, what is gained from quantifying the results of MPA; and third, to what degree is the lexeme-specificity of the mappings identified via MPA a disadvantage or an advantage?

The first issue primarily concerns the descriptive adequacy of the method, and my main aim will be to show that MPA can indeed identify mappings more systematically and more exhaustively than non-corpus-based approaches. The second issue is mainly a methodological one, but its repercussions for a theory of metaphor should not be underestimated. If metaphorical expressions can in fact be seen as manifestations of general cognitive models or principles of conceptualization, then a statistical assessment of the importance of a given mapping yields crucial information about the relative importance of the corresponding cognitive model (for example, its entrenchment in the sense of Langacker 1987). The third issue, like the first one, is partly concerned with descriptive adequacy, as the

lexeme-specificity of MPA can be regarded as a disadvantage only if it leads to an impoverished data set; if the data set is not impoverished by the focus on individual lexical items, then MPA is, in the worst case, descriptively equivalent to the introspective method. In addition, though, there is a theoretically interesting aspect to this issue: if metaphorical mappings interact with individual lexical items such that there are differences, for example, between near synonyms or antonyms, then the existence and nature of these differences must be accounted for.

## 3. Metaphorical pattern analysis and the introspective method compared

In order to compare the results of a study based on metaphorical pattern analysis with those yielded by the traditional introspective method, we need to choose a target domain that (i) has vocabulary associated with it that is uncontroversially representative of the domain in question, and that (ii) has been investigated sufficiently intensively using the introspective method. The domain that I have chosen for the following case studies is that of (BASIC) EMOTIONS, which meets both criteria: there are target domain items like *anger*, *happiness*, etc. that are undeniably representative of their respective (sub)domains, and there are a vast number of studies exclusively dedicated to investigating metaphors of emotion (cf. e.g. the contributions in Niemeier and Dirven 1997 and Athanasiadou and Tabaskowska 1998).

I chose a paper by Zoltán Kövecses entitled *Are there any emotion-specific metaphors* (Kövecses 1998) as representative of the kinds of results that are routinely achieved by the introspective method of data collection. In the first part of his paper, Kövecses summarizes the descriptive results of his own research and that of his colleagues on emotion metaphors. He explicitly suggests that this summary paints a complete picture of the metaphors found with each of the emotion concepts he looks at (Kövecses 1998: 128), and since he is one of the most prolific researchers on emotion metaphors (cf. e.g. Kövecses 1986, 1989, 2002), there is good reason to assume that his work is representative of the method in general. Choosing this paper has an additional advantage: the theoretical question Kövecses deals with in the second part of it – the question whether there are metaphorical mappings that are specific to individual emotion concepts – is a perfect context for assessing the usefulness of quantification.

Köveces deals with nine emotion concepts that are frequently found in the psychological literature on 'basic emotions': ANGER, FEAR, HAPPI-

NESS, SADNESS, LOVE, LUST/SEXUAL DESIRE, PRIDE, SHAME, and SURPRISE. For this paper, I chose the five emotions that are mentioned most frequently in the psychological literature, and that can thus be seen as generally agreed upon to be basic, universal emotions (cf. Ortony and T. Turner 1990 for an overview): ANGER, DISGUST, FEAR, HAPPINESS, and SADNESS (four out of these five overlap with Kövecses' set). Obviously, each of these emotions has a set of semantically similar lexical items associated with it (e.g. *anger*, *fury*, *rage*, *wrath*, etc. for ANGER). Since metaphorical pattern analysis is by definition lexeme-specific, a representative lexical item had to be chosen for each emotion. I took raw frequency as an indicator of representativity, and chose the most frequent emotion term for each of the five emotions. These were the words also used above as labels for the concepts: *anger*, *disgust*, *fear*, *joy*, and *sadness*. For HAPPINESS, I chose the word *happiness* in addition, in order to be able to compare near synonyms referring to the 'same' emotion. I then retrieved a random sample of 1000 hits for each lexical item from the *British National Corpus* (*disgust* and *sadness* occurred less than 1000 times; in these cases, I retrieved all occurrences).

### 3.1. ANGER

The metaphorical target domain ANGER has been investigated in detail in the cognitive linguistics literature (cf. the detailed accounts in Kövecses 1986 and Lakoff 1987: 380ff., cf. also Gibbs 1994 and Ungerer and Schmid 1996: 131ff.). Kövecses (1998) summarizes this research by positing the following twelve metaphorical mappings for the concept ANGER:

(9) ANGER/BEING ANGRY IS

| | | |
|---|---|---|
| a. | HOT FLUID IN A CONTAINER | *She is boiling with anger* |
| b. | FIRE | *Oh boy, was I burned up!* |
| c. | INSANITY | *The man was insane with rage* |
| d | AN OPPONENT IN A STRUGGLE | *I was struggling with my anger* |
| e. | A CAPTIVE ANIMAL | *He unleashed his anger* |
| f. | A BURDEN | *He carries his anger around with him* |
| g. | AGGRESSIVE ANIMAL BEHAVIOR | *Don't snarl at me!* |
| h. | TRESPASSING (cause of anger) | *Here I draw the line* |
| i. | PHYSICAL ANNOYANCE | *He's a pain in the neck* |
| j. | A NATURAL FORCE | *It was a stormy meeting* |
| k. | BEING A FUNCTIONING MACHINE | *That really got him going* |

| | | |
|---|---|---|
| l. | A SUPERIOR | *His actions were completely governed by anger* (Kövecses 1998: 129) |

There are several general issues here that must be dealt with before we can turn to a detailed comparison of these results with those yielded by metaphorical pattern analysis.

First of all, note that some of Kövecses' examples include target domain expressions (and are thus metaphorical patterns in the sense discussed above), namely (9a, c, d, e, f, l), while others do not, namely (9b, g, h, i, j, k). The latter demonstrate quite clearly the difficulty of determining which precise target-domain we are in fact dealing with. While the connection of example (9b) to the domain ANGER is relatively uncontroversial, things are less straightforward in the other cases. The claim that they refer to ANGER is not immediately obvious – example (9h) seems better analyzed as referring to (UN)ACCEPTABLE BEHAVIOR, (9g) to AGGRESSIVENESS, (9i) to a feeling of INCONVENIENCE, and example (9j, k) to ANIMATED BEHAVIOR. While unacceptable behavior, aggressiveness, inconvenience, and animated behavior *may* of course be related to feelings of anger, they do not *have* to be. This does not mean, of course, that the metaphors posited to account for these examples do not exist – the choice of examples may simply be unfortunate. It also does not mean that such examples cannot in principle be analyzed in a satisfactory way – the fact that it is possible to contest the claim that they refer to ANGER shows that it is possible to argue about their meaning and presumably to come to some agreement. However, the problems in interpreting these examples are not trivial, and they should be addressed in a principled way.

Second, note that in those examples that do include target-domain expressions, the expressions *anger* and *rage* are both treated as referring to ANGER, i.e., they are not lexeme-specific in the sense of metaphorical pattern analysis. Of course, this is not a problem for the introspective approach unless it can be shown that such near synonyms do not participate in the same metaphorical mappings. Since this issue will be the topic of Section 5, I will ignore it for now and simply accept that all of Kövecses' examples refer to ANGER.

Third, it is often unclear how a particular example should be analyzed, i.e. at what level of generality a conceptual metaphor should be posited (this is true for any kind of metaphor analysis, not just the introspective method). For example, it is unclear why example (9i), *He's a pain in the neck*, is categorized as an example for ANGER IS A PHYSICAL ANNOYANCE

rather than simply ANGER IS PAIN. Such decisions often result from an attempt to categorize examples that are felt to be similar under a single mapping. In this case, Lakoff (1987: 395), who originally posited this mapping, gives additional examples like *Get off my back* and *You're getting under my skin*. In the context of these examples, the analysis of (9i) makes more sense. Still, in my analysis I will try to be somewhat stricter in judging which examples should be grouped together, except where I follow Kövecses' categories for expository reasons.

Let us now turn to the question whether metaphorical pattern analysis is potentially able to identify metaphorical mappings exhaustively. In a first step, this requires us to show that metaphorical pattern analysis can identify all the metaphors that Kövecses has identified using the introspective method. There were 1443 metaphorical patterns in the sample investigated. Table 1a shows all of these that manifest one of the mappings in (9) above together with their frequency of occurrence in the sample (i.e., their frequency per thousand examples of the word *anger*). The patterns are presented in a form that is somewhat abstracted from the actual citations: verbs are shown in the infinitive, slots for participants are shown as X or Y, and similar patterns are collapsed into compact form using slashes for alternatives and parentheses for optional elements.

Note that only two of the mappings did not manifest themselves as metaphorical patterns: BEING ANGRY IS BEING A FUNCTIONING MACHINE and CAUSING ANGER IS TRESPASSING. This would be a problem for MPA if these were central cases of ANGER metaphors. However, this is not the case: these are two of the mappings that seem questionable anyway. In other words, MPA compares very well to the introspective method when it comes to identifying metaphorical mappings. Conversely, however, all examples in Table 1a taken together account for a mere 14.3 percent of all metaphorical patterns identified via MPA, which suggests that the introspective method misses the majority of metaphorical expressions for the domain of ANGER. This seemingly poor performance is to a large part due to the fact that Kövecses excludes from consideration very general metaphors, that "apply to all emotion concepts" (Kövecses 1998: 133); he seems to have in mind primarily those metaphors that Lakoff (1993) refers to as EVENT STRUCTURE metaphors, i.e. general metaphorical systems for verbalizing "notions like states, changes, processes, actions, causes, purposes, and means" (Lakoff 1993: 220). There are two major metaphorical event structure systems: the location system, where change is conceptualized as "the motion of the thing-changing to a new location from an old one" (Lakoff 1993: 225), and the object system, where change is con-

*Table 1a.* Metaphorical patterns manifesting ANGER metaphors posited in the literature

| ANGER/BEING ANGRY IS | N |
|---|---|
| HOT FLUID IN A CONTAINER<br>*boiling/simmering anger*, *anger boil (up)/simmer (inside X/beneath surface)*, *anger seethe through X*, *anger boil over (into action)*, *anger reach boiling point*, *X boil/seethe with anger*, *X keep lid on anger*, *X vent anger (against Y)*, *X give vent to anger*, *seething of anger* | 26 |
| FIRE<br>*burning/flaring/searing anger*, *X burn/smoulder/spark with anger*, *X fan/fuel/spark/stoke (Y's) anger*, *resentment burn into anger*, *anger blaze into hatred*, *anger burn inside X*, *anger spark/flare (in X's eyes)*, *anger scorch X*, *anger rekindle X's eye*, *flare/flame(s) of anger*, *presence of anger in fire*, *X's eyes blaze/be ablaze with anger* | 35 |
| INSANITY<br>*frenzy of anger* | 2 |
| AN OPPONENT IN A STRUGGLE<br>*X fight against/down/off anger*, *X wrestle with anger*, *X overcome/placate/suppress/withstand anger*, *X protect Y from anger*, *X confront/deal with/encounter anger*, *X shrink away from anger*, *X control anger*, *X keep anger under control*, *X be overcome with anger*, *X be victim of anger*, *X fear anger*, *X lose Y to anger*, *anger overcome/have hold of X*, *anger be destructive/powerful*, *(un)controlled/repressed/suppressed anger*, *emotion overcome anger*, *emotion protect X from anger*, *struggle between anger and emotion*, *anger war with emotion*, *anger overcome emotion*, *conspiracy of emotion and anger*, *anger injure X* | 47 |
| A CAPTIVE ANIMAL<br>*anger be loosed*, *X unleash/let loose/release anger*, *X lock away/domesticate anger* | 22 |
| A BURDEN<br>*X carry anger*, *weight of anger* | 2 |
| AGGRESSIVE ANIMAL BEHAVIOR<br>*X's hackles rise in anger*, *savage/fierce anger* | 4 |
| TRESPASSING<br>— | 0 |
| PHYSICAL ANNOYANCE (I.E. PAIN)<br>*fit of anger*, *X be seized with anger*, *X's face contort with anger*, *X's face be(come) contorted/distorted with anger*, *X throb away with anger*, *X mitigate anger*, *X wince in face of anger* | 14 |
| A NATURAL FORCE<br>*climate of anger*, *flood/surge/wave of anger*, *anger surge*, *anger roil in(side) of X*, *anger sweep X beyond* EMOTION, *anger wash over/through X*, *anger subside/ebb away*, *X let anger unroll like wave*, *X staunch anger*, *haven from anger* | 17 |
| BEING A FUNCTIONING MACHINE<br>— | 0 |
| A SUPERIOR<br>*anger rule the day* | 1 |
| Total | 170 |

ceptualized as "the motion of an object to, or away from, the thing changing" (ibid.); a specific subcase of the latter is what we might call the possession system, where "the object in motion is conceptualized as a possession and the thing-changing as a possessor". Evidence for both major systems can be found in the sample investigated here. There are 121 examples where ANGER is conceptualized as a location, and experiencers as existing in, moving or being moved into or out of this location (*X act in anger*, *X run away from anger*, *X goad Y into anger*, etc.), i.e., the location system accounts for 10.2 percent of the metaphorical expressions in the sample. The object system and the possession system are instantiated 666 times in the sample, and thus constitute the majority of metaphorical expressions (56.15%). In this system, being angry can be conceptualized as possessing an object (e.g. *X's anger*, *X have anger*), and causing anger can be conceptualized as transferring an object (e.g. *X bring/pass on/share anger*); more generally, anger can be conceptualized as a moving object (*anger return*, *anger follow its course*, *anger sweep through X*, *anger be gone from X*), as a moved object (*X direct/target anger at Y*, *X divert anger into action*), and as an object in some location (*anger in(side) X*, *there be anger about X*, *X do sth. with anger*, etc.). Within the ANGER-AS-OBJECT system, the intensity of the anger can be conceptualized as physical size or quantity (*enormous/great/mounting anger*, *much/more anger*, etc.).

The two event-structure systems thus account for 787 cases, i.e. for 66.36 percent of all metaphorical expressions with *anger*. This shows that these metaphors play a central role in the conceptualization of emotions, and that excluding them from consideration is therefore a risky strategy (note that Lakoff does discuss some of these metaphors, e.g. Lakoff 1987: 397, 406). I will show in Section 5 that different emotion terms can differ significantly with respect to their participation in such general metaphors and that the analysis of such differences can yield important insights into the interaction between lexical semantics and metaphorical mappings.

Even ignoring these very general metaphors, however, the introspective method misses a fifth of the metaphorical expressions from the domain ANGER (20.03%). Table 1b shows all additional metaphorical mappings instantiated at least four times.

To be fair, the first three mappings in Table 1b, are discussed in Lakoff (1987: 387ff.). Clearly the two relatively general metaphors ANGER IS A SUBSTANCE/LIQUID (IN A CONTAINER) and ANGER IS HEAT also account for the mappings ANGER IS A HOT LIQUID IN A CONTAINER (which is a combination of the two, ANGER IS FIRE (which is a specific case of ANGER IS HEAT), and most examples of ANGER IS A NATURAL FORCE (which are specific cases

*Table 1b.* More ANGER metaphors identified via metaphorical pattern analysis

| ANGER/BEING ANGRY IS | N |
|---|---|
| A SUBSTANCE IN A CONTAINER (UNDER PRESSURE)<br>*X fill with anger*, *X be full of/filled with anger*, *X keep lid on/contain anger*, *held-in/pent-up anger*, *X be unable to contain anger*, *buildup of anger*, *anger build (up) (inside X)*, *pent-up/explosive/volcanic anger*, *outlet for anger*, *burst/explosion/outburst of anger*, *anger have volcanic eruptions*, *anger blow up/burst out/erupt/explode (into action)*, *X erupt/burst (out) with anger* | 49 |
| A LIQUID<br>*anger well up*, *anger seep into X('s voice),*, *anger bubble inside X*, *anger well/spill over*, *anger pour from eyes*, *anger pour out of X*, *X channel anger (against Y)*, *anger evaporate*, *anger drain from X('s face)*, *source of anger*, *spurt of anger* | 16 |
| HEAT/COLD<br>*anger have lava flow*, *X flush/be flushed with anger*, *anger flush cheek*, *hot anger*, *anger be/grow hot*, *anger be heated reaction*, *anger grow/turn cold*, *anger melt away* | 17 |
| A MIXED OR PURE SUBSTANCE<br>*mixture/mingling/combination of anger and* EMOTION, *X combine anger with* EMOTION, *anger be pure*, EMOTION *be mixed/mingled with anger*, *trace of anger*, *combined anger*, *X diffuse anger* | 17 |
| LIGHT<br>*flash/flicker/white glow of anger*, *blinding/scarlet anger*, *anger flicker across face*, *anger flash/glow in X's eyes*, *anger light X's eyes*, *X's eyes be alight/bright/brilliant with anger*, *X's eyes flash/glint/glitter with-anger* | 29 |
| DARKNESS<br>*black gloom of anger*, *dark/dull anger*, *anger eclipse* EMOTION, *eyes be dark with anger*, *eyes flash dark with anger*, *face darken with anger*, *face be black/dark with anger*, *features be darkly contorted with anger* | 10 |
| HIGH/LOW (INTENSITY)<br>*level of anger*, *anger rise (in X)*, *anger drop*, *anger arise/come arising from X*, *rising/high anger*, *level/height of anger*, *X get up Y's anger* | 21 |
| A SLEEPING ORGANISM<br>*X rouse anger*, *X arouse anger (in Y)* | 10 |
| A DISEASE<br>*bouts of anger*, *festering/impotent/paralysing anger*, *anger reemerge as cancer*, *X purge (X-self of) anger*, *X be apoplectic/sick with anger*, *X suffer anger* | 11 |
| GORGE<br>*anger rise into X's mouth*, *bitter anger*, *bitter with anger*, *X bite back/swallow anger*, *X strangle on anger* | 7 |
| A SHARP OBJECT<br>*sharp anger*, *pinpoint of anger*, *spike of anger*, *hook of anger*, *blunted anger*, *anger clip X's words* | 5 |
| A PLANT<br>*anger be rooted in X*, *anger stem from* EMOTION, *anger grow* | 4 |
| Total | 196 |

of ANGER IS A LIQUID). Taken together, these mappings account for 158 expressions in the sample, and thus form the largest single group after the object metaphor (13.3%).

The next mapping in Table 1b, ANGER IS A MIXED/PURE SUBSTANCE, could have partly been subsumed under the ANGER IS A LIQUID mapping, since some of the source-domain items used, e.g. *mixture* or *trace*, often refer to liquids. However, this strategy would have backgrounded the similarity between *mixture* and *combination*; note that MPA is essentially a bottom-up procedure, and decisions about which expressions should be grouped together must be guided by the richness of the corpus data.

The next mapping, ANGER IS LIGHT, is not mentioned in the literature (although it could conceivably be related to ANGER IS FIRE, since fire gives off light); interestingly, the opposite mapping, ANGER IS DARKNESS, is also found. Unlike in the case of HEAT, the two opposites here do not encode the opposite ends of a scale: there are no examples where *dark anger* refers to a less intensive (or less intensively experienced) anger (although *dull anger* is conceivably interpreted in this way). Instead, ANGER IS DARKNESS seems to highlight a different dimension of anger than ANGER IS LIGHT. While the latter is similar to the experiential aspects also picked out by ANGER IS FIRE, i.e. the experience of a heightened energetic state, the former makes reference to an assessment of emotions as positive or negative, where POSITIVE EMOTIONS ARE LIGHT and NEGATIVE EMOTIONS ARE DARKNESS (a mapping also found, for example, with *fear* and *happiness*, cf. below). The next mapping, INTENSITY OF ANGER IS HEIGHT could be the kind of general mapping discussed in the context of the event-structure metaphors above, i.e. a specific instance of a general metaphor MORE IS UP/LESS IS DOWN. I have included it because the domain HEIGHT sometimes structures the domain EMOTIONS directly (as in the case of HAPPY IS UP, cf. Section 3.3 below), and it is important to distinguish these two cases and to determine which mapping occurs with a given emotion.

The next four mappings are not discussed in the literature at all, though presumably ANGER IS A SLEEPING ORGANISM could be analyzed as belonging to the ANGER IS A FIERCE ANIMAL mapping, and ANGER IS GORGE is subsumed under ANGER IS A HEATED FLUID IN A CONTAINER by Lakoff (1987: 384). Finally, ANGER IS A PLANT is explicitly ignored by Kövecses on the basis that it can be used with any emotion; however, the same is potentially true of any metaphor and I see no grounds for this kind of *a priori* judgment (see further Section 4 below).

Taken together, the mappings in Table 1b account for 16.5 percent, bringing the coverage to 97.22 percent. The remaining 2.8 percent of the

sample instantiate a variety of infrequent metaphors such as ANGER IS A BALLOON (*X pierce Y's anger*, *X deflate Y's anger*), ANGER IS HARD (*anger turn hard*), ANGER IS BLOOD (*anger pump through body*).

### 3.2. FEAR

Kövecses (1998) lists the following eleven metaphorical mappings for the concept FEAR:

(10) FEAR/BEING AFRAID IS

| | | |
|---|---|---|
| a. | FLUID IN A CONTAINER | *The sight filled her with fear* |
| b. | A VICIOUS ENEMY | *Fear slowly crept up on him* |
| c. | A TORMENTOR | *My mother was tormented by fear* |
| d. | A SUPERNATURAL BEING | *He was haunted by fear* |
| e. | ILLNESS | *Jill was sick with fright* |
| f. | INSANITY | *Jack was insane with fear* |
| g. | AN INCOMPLETE OBJECT | *I was beside myself* |
| h. | AN OPPONENT IN A STRUGGLE | *Fear took hold of me* |
| i. | A BURDEN | *Fear weighed heavily on them* |
| j. | A NATURAL FORCE | *She was engulfed by panic* |
| k. | A SUPERIOR | *His actions were dictated by fear* |

(Kövecses 1998: 128–129)

Again, some of these mappings seem questionable. First, it is not clear why FEAR IS A VICIOUS ENEMY and FEAR IS A TORMENTOR are posited as separate mappings rather than being subsumed under something like FEAR IS AN ENEMY, together with FEAR IS AN OPPONENT IN A STRUGGLE. Second, the mapping in (10g), FEAR IS AN INCOMPLETE OBJECT, does not account in any straightforward way for the example *I was beside myself*, which seems to refer to an out-of-body situation rather than an incomplete object; nor is it clear why *I was beside myself* is categorized as referring to fear at all. In fact, the expression can refer to any strong emotion and there is no reason to assume that it is even particularly frequent with *fear*.[4]

4. This is confirmed by a web search using *Google*. In 200 random examples of the string [*beside myself with*], the ten most frequent emotion terms that occur with this expression are *joy* (14.5%), *anger* (9.5%), *glee* (9%), *grief* (8%), *excitement* (7%), *worry* (6%), *anticipation* (3%), *fury* (3%), and – in tenth place – *fear* (2.5%). Thus, it is doubtful that there is a strong connection between the expression *I was beside myself* and the emotion concept FEAR.

The sample of 1000 occurrences of *fear* yielded 886 metaphorical patterns. Table 2a lists those that instantiate one of the mappings in (8).

*Table 2a.* Metaphorical patterns manifesting FEAR metaphors posited in the literature

| FEAR/BEING AFRAID IS | N |
|---|---|
| FLUID IN A CONTAINER<br>*fear permeate X*, *fear well up inside X* | 2 |
| AN ENEMY/OPPONENT<br>*overwhelming/powerful fear*, *fear grip X('s stomach)*, *fear choke/take hold of/torment X*, *fear overcome X*, *fear occupy X's mind*, *fear exert constraining effect*, *fear bruise X's eyes*, *fear drive X away*, *X be seized/occupied by fear*, *X give way to y*, *X (be) victim of fear*, *X attack/combat/counteract/deal with/tackle fear*, *X banish/conquer/curb/hold down/overcome/push back fear*, *X be defense against fear* | 35 |
| A SUPERNATURAL BEING<br>*fear haunt/take possession of fear* | 4 |
| ILLNESS<br>*unhealthy/sick fear*, *X suffer from fear*, *X feel sick with fear*, *X suffer from fear*, *X' belly churn with fear*, *X recover from fear*, *X be immobilized with fear*, *fear create mental paralysis*, *X (be) dead of fear* | 9 |
| INSANITY<br>*irrational fear* | 1 |
| AN INCOMPLETE OBJECT<br>— | 0 |
| A BURDEN<br>— | 0 |
| A NATURAL FORCE<br>*wave of fear* | 2 |
| A SUPERIOR<br>*fear dominate X('s life)*, *fear spur X*, *fear dictate/govern X's action*, *fear keep X in line*, *fear constrict X('s actions)*, *X be driven by fear*, *X become free of fear* | 13 |
| Total | 66 |

With two exceptions, all of the metaphors identified via the introspective method are also found by MPA. The first exception, FEAR IS AN INCOMPLETE OBJECT, is unproblematic: the existence of this mapping was doubtful anyway, and the MPA essentially confirms these doubts. The second exception, the complete absence of FEAR IS A BURDEN, does present a problem, since WEIGHT is a source domain that would intuitively be expected to occur in the target domain FEAR. There are two reasons why this mapping could be absent from the sample: either it never manifests itself as a metaphorical pattern, or it does not do so frequently enough to occur in a sample of 1000 hits. The first possibility would be a serious problem for MPA, as it would suggest that there are metaphors that cannot be identified via this method; the second possibility would simply be a rela-

tively trivial sampling problem. In order to determine which of these possibilities applies in the present case, I created a complete concordance of the word *fear* on the basis of the BNC and searched specifically for metaphorical patterns instantiating the mapping FEAR IS A HEAVY OBJECT. Eight metaphorical patterns were found in the concordance of 7145 lines (*fear be a burden*, *burdened by fear*, *heavy with fear*, *outweighed by fear*, *X weigh Y's fear*, *EMOTION outweigh X's fear*), i.e. the mapping manifests itself on average 1.12 times per 1000 occurrences of the word *fear*). Thus, the fact that it was not found in the sample used here is not a fundamental problem of MPA but simply of the relatively small sample size chosen here.

Taken together, the mappings in Table 2a account for 7.4 percent of all metaphorical patterns found with *fear*. Again, the vast majority of cases missed by the introspective method consists of patterns instantiating the object metaphor (486 cases, or 51.35%) or the location metaphor (173 cases, or 19.5%). However, this again leaves around a fifth of all metaphors (18.2%) unaccounted for (more than twice the number it actually identifies!). The most frequent of these are shown in Table 2b.

The mappings in Table 2b account for 12 percent of all metaphors, bringing the total coverage up to 93.79 percent. The remainder is made up of infrequent metaphors such as FEAR IS METAL (*metal fear*) and FEAR IS A SLEEPING ORGANISM (*X raise/arouse fear*).

### 3.3. Happiness

Kövecses (1998) lists the following fifteen metaphorical mappings for the concept HAPPINESS:

(11) HAPPINESS/BEING HAPPY IS

| | | |
|---|---|---|
| a. | UP | *We had to cheer him up* |
| b. | BEING OFF THE GROUND | *I am six feet off the ground* |
| c. | BEING IN HEAVEN | *That was heaven on earth* |
| d. | LIGHT | *Lighten up* |
| e. | VITALITY | *He was alive with joy* |
| f. | WARM | *That warmed my spirits* |
| g. | HEALTH | *It made me feel great* |
| h. | AN ANIMAL THAT LIVES WELL | *He was happy as a pig in shit* |
| i. | A PLEASURABLE PHYS. SENSATION | *I was tickled pink* |
| j. | FLUID IN A CONTAINER | *He was overflowing with joy* |
| k. | CAPTIVE ANIMAL | *His feelings of happiness* |

*Table 2b.* More FEAR metaphors identified via metaphorical pattern analysis

| FEAR/BEING AFRAID IS | N |
|---|---|
| LIQUID<br>*source of fear*, *trickling/undercurrent of fear*, *sap of fear*, *X secrete fear*, *fear pour out*, *fear evaporate*, *expression dissolve into fear*, *X tap into fear* | 10 |
| A SUBSTANCE IN A CONTAINER (UNDER PRESSURE)<br>*X('s heart) be(come) filled with fear*, *X be full of/contain fear*, *X fill Y with fear*, *X put fear into Y*, *fear fill X*, *fear pour out*, *pent_up fear* | 15 |
| MIX<br>*tinge of fear*, *mixture of fear and* EMOTION, EMOTION *be combined/mixed with fear*, *relief be mixed with fear*, *X blend fear and* EMOTIONS | 9 |
| COLD<br>*icy/cold fear*, *land of cold and fear*, *shiver of fear*, *frozen mask of fear*, *X be/go cold with fear*, *X('s face) be frozen in fear* | 14 |
| HEAT<br>*heat of fear*, *fear fuel X*, *X fuel/spark off fear*, *X vent fear on Y*, *fear make X feel warm* | 7 |
| LIGHT<br>*bright fear*, *projection of fear*, *flicker of fear*, *X reflect fear*, *eyes glitter with fear* | 6 |
| DARK<br>*shadow of fear*, *fear darken X*, *X be overshadowed by fear*, *eyes (be) dark with fear* | 4 |
| HIGH/LOW (INTENSITY)<br>*fear be high among X*, *fear peak*, *fear be ascendant*, *fear rise*, *X heighten fear* | 7 |
| PAIN<br>*agony/convulsion/spasm/throes/throb/tremor of fear*, *X ache/be tortured with fear* | 8 |
| A SHARP OBJECT<br>*prick/shaft of fear*, *fear cut to X*, *fear slice through X*, *X strike fear into Y* | 7 |
| AN ORGANISM<br>*growing fear*, *root of fear*, *revival of fear*, *X breed/regenerate fear*, *X stem from fear*, *fear stem from X*, *X blossom into fear* | 9 |
| A WILD/CAPTIVE ANIMAL<br>*fear be fierce*, *fear lurk beneath X*, *X feed fear*, *X control fear*, *X handle/lose control over/unleash fear* | 6 |
| A BARRIER<br>*fear barrier*, *barrier of fear*, *fear (be) obstacle*, *fear block X from EVENT* | 4 |
| Total | 106 |

l. OPPONENT IN A STRUGGLE — *broke loose*
m. A RAPTURE/HIGH — *He was knocked out*
n. INSANITY — *I was drunk with joy*
o. A NATURAL FORCE — *They were crazy with happiness*
*He was swept off his feet*
(Kövecses 1998: 129)

As before, there are some problems with this set of mappings. First, it is unclear why (11b,c) are posited as separate mappings rather than special cases of (11a). The same is true for (11e,g); it is unclear what the exact difference is between VITALITY and HEALTH; the expression *feel great* could refer to both. Third, the example given for the mapping in (11h) is a simile, not a metaphor; moreover, it seems to refer to the PLEASURABLE PHYSICAL SENSATION mentioned in the next mapping down; again, it is unclear why it is posited as a separate mapping (if it exists at all). Finally, the example given for the mapping in (11i) is itself questionable. *To be tickled pink* seems to refer to health/vitality rather than to a pleasurable sensation, assuming that it refers to the source domain HEALTHY SKIN COLOR. Thus, it seems that we should collapse the mappings in (11e, g) into HAPPINESS IS VITALITY, and that we should take the existence of the mappings in (11h, l) as very provisional.

Before we can investigate the domain of HAPPINESS using MPA, we have to choose a word to represent the domain. The label HAPPINESS suggests that *happiness* may be the right choice, but there are two *a priori* reasons to choose the word *joy* instead. First, the word *joy* is roughly one-and-a-half times more frequent than *happiness* in the BNC. Second, three out of the five examples in (11) that are metaphorical patterns contain the word *joy* (11e, j, m), and the remaining two, (9k, n) also more typically found with the word *joy* than with the word *happiness*.[5] There is an *a posteriori* reason as well: only eight of the mappings are instantiated in the sample for *happiness*, as compared to eleven in the sample for *joy*, which suggests that the mappings in (11) refer to *joy* rather than *happiness*. I will return to this issue and a detailed comparison of the two words in Section 5.1 below; here, I will focus on the word *joy*.

The sample of 1000 hits for the word *joy* yielded 906 metaphorical expressions. Table 3a lists all metaphorical patterns in the sample that manifest one of the mappings in (11) above together with their frequency of occurrence in the sample.

As in the case of the previously discussed emotion concepts, most of the mappings identified via the introspective method are also identified by the MPA. The only exceptions are HAPPINESS IS BEING IN HEAVEN, BEING HAPPY IS BEING AN ANIMAL THAT LIVES WELL, and HAPPINESS IS A PLEASURABLE PHYSICAL SENSATION; note that these are exactly those mappings

5. A web search using the search engine *Google* turned up 570 hits for *crazy with joy* vs. 191 for *crazy with happiness*, and 11 hits for *joy break/breaks/breaking/broke/broken loose,* as compared to 5 for *happiness* (one of which was a citation of Kövecses' example).

*Table 3a.* Metaphorical patterns manifesting HAPPINESS metaphors posited in the literature

| HAPPINESS/BEING HAPPY IS | N |
|---|---|
| UP<br>*X be elated with joy, joy be lifted* | 2 |
| BEING OFF THE GROUND<br>*X('s heart) jump/leap for/with joy* | 12 |
| BEING IN HEAVEN<br>— | 0 |
| LIGHT<br>*sunny joy*, *glow/radiance of joy*, *X's face light up/shine with joy*, *joy shine in/lighten X's face*, *X's eyes be bright/luminous with joy*, *X light Y's eye with joy*, *X radiate joy*, *X beams with joy*, *X reflect joy*, *joy dim*, *X blot out joy* | 18 |
| VITALITY/HEALTH<br>*X's eyes be alive with joy* | 1 |
| WARM<br>*melting joy, joy generate warmth, X blush with joy, warm joy* | 4 |
| AN ANIMAL THAT LIVES WELL<br>— | 0 |
| A PLEASURABLE PHYSICAL SENSATION<br>— | 0 |
| FLUID IN A CONTAINER<br>*heart swell with joy, X swell heart with joy, joy pour into heart, X brim over with joy, joy seep from X, overflowing joy* | 6 |
| CAPTIVE ANIMAL<br>*X control fear, X unleash joy, joy be unconfined/unrestrained* | 4 |
| OPPONENT IN A STRUGGLE<br>*overwhelming joy, X be/feel overcome with joy, X beat/defeat/kill joy* | 7 |
| A RAPTURE/HIGH<br>*heady joy, ecstasy of joy* | 3 |
| INSANITY<br>*delirious joy* | 1 |
| A NATURAL FORCE<br>*flood/surge of joy, joy surge through X, joy sweep over/through X, X be swept away by joy, joy subside* | 7 |
| Total | 65 |

whose existence seemed questionable anyway.[6] Conversely, the mappings identified via the introspective method again represent only a small subset of those identified by MPA; all expression in Table 3a taken together

6. In fact, it is plausible to say that the mapping HAPPINESS IS A PLEASURABLE PHYSICAL SENSATION is instantiated by the expressions for HAPPINESS IS WARMTH, since warmth is typically a pleasurable sensation.

account for a mere 7.2 percent of all metaphorical expressions found in the sample. Again, a large portion of the missing patterns is made up of event structure metaphors (location: 81 cases or 8.9%, object: 628 cases or 69.31%). However, this leaves 14.6 percent of the metaphorical patterns unaccounted for. The most frequent of these are shown in Table 3b.

*Table 3b.* More HAPPINESS metaphors identified via metaphorical pattern analysis

| HAPPINESS/BEING HAPPY IS | N |
|---|---|
| HEAT/FIRE<br>*seething joy*, *flare/sparks of joy*, *joy be spark*, *X smother joy*, *X burn with joy* | 6 |
| A LIQUID<br>*effervescent joy*, *source/spring of joy*, *flow/river of joy*, *joy spring from X*, *X drink joy* | 11 |
| A SUBSTANCE IN A CONTAINER (UNDER PRESSURE)<br>*inner joy*, *X be filled with/full of joy*, *X contain joy*, *X fill Y('s) heart with joy*, *X leave Y empty of joy*, *X's heart fill with joy*, *explosion of joy*, *X explode/burst with joy*, *joy burst in X's heart*, *joy burst through X*, *X erupt in joy* | 38 |
| A MIXED/PURE SUBSTANCE<br>*pure/unalloyed joy*, *mixed joy*, *mixture of* EMOTION *and joy*, EMOTION *combine with joy*, *X combine* EMOTION *with joy*, EMOTION *mingle with X*, EMOTION *and X be mingled* | 19 |
| A DESTROYABLE OBJECT<br>*X break/destroy/mar Y's joy* | 7 |
| DISEASE<br>*sick joy*, *joy be infectuous*, *joy befall X*, *X feel sick with joy*, *X die of joy* | 5 |
| AGGRESSIVE ANIMAL BEHAVIOR<br>*fierce/wild/savage joy* | 6 |
| AN ORGANISM<br>*growing/short-lived joy*, *fruit of joy* | 7 |
| Total | 99 |

The patterns in Table 3b account for 10.9 percent, bringing the coverage up to 96.36 percent. The remaining 3.6 percent are made up of infrequent mappings like HAPPINESS IS A BALLOON (*bubble of joy*), HAPPINESS IS BLOOD (*joy pulsate through X*), HAPPINESS IS A SHARP OBJECT (*stab of joy*), and INTENSITY OF HAPPINESS IS DEPTH (*deep joy*).

### 3.4. SADNESS

Kövecses (1998) lists the following thirteen metaphorical mappings for the concept SADNESS:

(12) SADNESS/BEING SAD IS

| | | |
|---|---|---|
| a. | DOWN | *He brought me down with his remarks* |
| b. | DARK | *He is in a dark mood* |
| c. | LACK OF HEAT | *His remarks threw cold water on the party* |
| d. | LACK OF VITALITY | *This was disheartening news* |
| e. | FLUID IN A CONTAINER | *I am filled with sorrow* |
| f. | VIOLENT PHYSICAL FORCE | *That was a terrible blow* |
| g. | VIOLENT NATURAL FORCE | *Waves of depression came over him* |
| h. | ILLNESS | *Time heals all sorrows* |
| i. | INSANITY | *He was insane with grief* |
| j. | BURDEN | *He staggered under the pain* |
| k. | LIVING ORGANISM | *He drowned his sorrow in drink* |
| l. | CAPTIVE ANIMAL | *His feelings of misery got out of hand* |
| m. | OPPONENT | *He was seized by a fit of depression* |

(Kövecses 1998: 130)

Again, some of the mappings are open to discussion. First, the mapping in (12c) is not licensed by the example: *to throw cold water on something* means to discourage or disillusion someone, not to make someone sad. Second, both the source and the target domain posited for (12d) are questionable: if *disheartening* is taken as literally referring to the removal of the heart (in analogy to *dismember*), then the source domain should be DEATH; at the very least, this could be subsumed under (12h), ILLNESS; however, even so, the mapping does not belong here, since *disheartening* does not mean 'causing sadness', but rather 'causing disappointment or hopelessness', much like *throw cold water on something*. Third, the example in (12g), *X be a blow*, refers to a feeling of shock rather than sadness. Thus, the existence of the mappings in (12c, d, h) must be taken as a working hypothesis at best, given these examples. As a minor point, we might also ask why the source domain in (12g) is characterized as '*violent* natural force', rather than simply 'natural force', as before.

Also as in the case of the preceding mappings, some of the examples are metaphorical patterns, and interestingly, none of them contain the word *sadness*. Instead, they contain related words: *depression* in (12g,m), *sorrow* in (12h, k), *grief* in (12i), and *misery* in (12l). While the emotions these words refer to all share some aspect of SADNESS, they also differ in ways that argue against simply including all of them under this emotion concept. Especially *grief* seems to refer to a much stronger emotion than *sadness*, and moreover, it is typically associated with the loss or death of

someone. The question thus arises, which word to take as representative of the domain SADNESS. In terms of frequency and unmarkedness, the only plausible choice is *sadness*; but this means that we may miss some of the mappings associated with related, but not identical emotions.

There are 737 hits for *sadness* in the BNC, and these contain 716 metaphorical patterns. Table 4a shows those patterns instantiating one of the mappings in (12), together with their frequencies of occurrence, normalized to 1000 hits (the actual frequencies are given in parentheses).

*Table 4a.* Metaphorical patterns manifesting SADNESS metaphors posited in the literature

| SADNESS/BEING SAD IS | N |
|---|---|
| BEING DOWN<br>*sinking feeling of sadness* | 1 (1) |
| DARKNESS<br>*dull/purple sadness*, *sadness dull* EMOTION, *X's eye be dim with sadness*, *sadness cloud X's features* | 7 (5) |
| LACK OF HEAT<br>*dank sadness*, *X cool from bitterness to sadness*, *eye grow chill with sadness*, *sadness manifest as cold feeling* | 6 (4) |
| LACK OF VITALITY/ILLNESS<br>*X suffer sadness*, *X heal Y of sadness* | 6 (4) |
| FLUID IN A CONTAINER<br>— (but cf. SADNESS IS A FLUID and SAD PERSON IS A CONTAINER as separately occurring metaphors below) | 0 (0) |
| VIOLENT PHYSICAL FORCE<br>— | 0 (0) |
| NATURAL FORCE<br>*rush/wave of sadness*, *sadness sweep/wash over/through X* | 10 (7) |
| INSANITY<br>— | 0 (0) |
| BURDEN<br>*heavy sadness*, *burden of sadness*, *X make sadness heavy*, *heart be heavy with sadness*, *sadness weigh heavily in heart*, EMOTION *outweigh sadness* | 10 (7) |
| LIVING ORGANISM<br>*sadness grow* | 1 (1) |
| CAPTIVE ANIMAL<br>*X control sadness, X release sadness* | 3 (2) |
| OPPONENT<br>*overwhelming sadness, sadness overwhelm/suffocate X, sadness take hold of X, X be overcome with sadness, sadness be overpowering, X confront/counteract/endure/ward off sadness, sadness close in on X* | 21 (15) |
| Total | 65 (45) |

With two exceptions, all mappings posited in the literature are identified by MPA. The first of these exceptions is expected: it concerns the source domain VIOLENT PHYSICAL FORCE, whose occurrence in the target domain SADNESS was questionable anyway. The second exception concerns one of the mappings that was posited to account for a metaphorical pattern containing the word *grief*. The fact that this was not found for *sadness* suggests that the there may be a difference between these two words concerning their participation in this mapping. An informal web search confirms this: using the *Google* search engine, I searched all websites with the country suffix *.uk* for the strings [*insane with sadness*] and [*insane with grief*]. The first pattern did not occur at all, the second pattern occurred 22 times. Taking into account the overall frequency of the words *sadness* (n = 79,100) and *grief* (n = 139,000), the expected frequencies are 8 for *sadness* and 14 for *grief*, and the observed distribution, i.e. the fact that *insane with X* occurs with *grief* but not with *sadness* is thus highly significant (Fisher Exact, $p < 0.001$). The question remains, of course, why this difference should exist. I would argue that it has to do with the intensity of the emotions referred to by these two words: the emotion referred to by *sadness* is simply not strong enough to be conceptualized as *insanity*. This is confirmed by a look at the words *anger* and *rage*, which also seem to differ in intensity: using the same criteria as before, I searched for the strings [*insane with anger*] and [*insane with rage*]: the former occurred 18 times, the latter 30 times. Given the base frequencies for each word, the expected frequencies are 29 for *anger* (n = 399,000) and 19 for *rage* (n = 270,000), and the deviance from this, i.e. the fact that *insane with anger* occurred less frequently than expected, confirms the connection of the mapping AN EMOTION IS INSANITY to the intensity of an emotion. Clearly, then, the choice of search word is very important for MPA (cf. Section 5).

Taken together, the metaphorical patterns in Table 4a account for 6.4 percent of all metaphorical patterns occurring with *sadness* in the sample. The majority of unaccounted-for cases consists of manifestations of the event-structure metaphors (object: 470, i.e. 65.64%; location: 33, i.e. 4.6%), but more than a fifth (23.26%) remain unaccounted for even if we ignore these. Table 4b shows the most frequent cases.

The patterns in Table 4b account for 18.3 percent, bringing the coverage to 95.04 percent. The remaining 4.96 percent are made up by minor metaphors like SADNESS IS LIGHT (*glimmer of sadness*), SADNESS IS A SHARP OBJECT (*piercing sadness*), and SADNESS IS HEART/BLOOD (*sadness pulse within X*).

*Table 4b.* More SADNESS metaphors identified via metaphorical pattern analysis

| SADNESS/BEING SAD IS | N |
|---|---|
| A MIXED/PURE SUBSTANCE<br>*mingled sadness*, *tinge of sadness*, *amalgam/combination/mixture of* EMOTION *and sadness*, *mixed* EMOTION *and sadness*, EMOTION *be mingled/mixed/tinged with sadness*, *memory be mingled/tinged with sadness*, *event be(come) tinged with sadness*, *sadness be mixed/tinged with* EMOTION, EMOTION *and sadness mix*, EMOTION *tinge sadness*, *sadness suffuse event* | 59 (42) |
| DEPTH<br>*deep sadness*, *sadness be deep*, *event deepen sadness* | 31 (22) |
| A SUBSTANCE IN A CONTAINER (UNDER PRESSURE)<br>*X include sadness*, *sadness fill X's heart*, *X's eye/mind fill with sadness*, *X('s heart/voice) be full of sadness*, *X fill up with sadness*, *X be filled with sadness*, *X contain/hold sadness*, *X fill Y with sadness*, *burst of sadness* | 42 (30) |
| A LIQUID<br>*pool of sadness*, *source of sadness*, *undercurrent of sadness*, *undertow of sadness* | 7 (5) |
| AN AURA<br>*aura of sadness*, *there be sadness about X* | 14 (10) |
| A SOUND<br>*cadence/note/ring/tone of sadness*, *notes rent air with sadness*, *sadness echo* EMOTION, *voice be strident with sadness* | 11 (8) |
| A WEATHER PHENOMENON<br>*air/fog of sadness*, *atmosphere become tinged with/change to sadness* | 11 (8) |
| TASTE<br>*sweet sadness*, *sadness rise to throat* | 4 (3) |
| HEAT<br>*sadness consume X*, *X ventilate sadness* | 4 (3) |
| Total | 173 (131) |

## 3.5. DISGUST

DISGUST is not a frequently discussed emotion concept. It is not mentioned in Kövecses (1998) or his other publications (Kövecses 1989, 2002). The *Master Metaphor List* available via the web site of the UC Berkeley lists only one relevant mapping, DISGUST IS NAUSEA. The BNC contains 604 hits for the noun *disgust*, which occur in 747 metaphorical patterns. Only one of these patterns could be construed as referring to NAUSEA, *X be sick with disgust*; one additional example is found in a simile (*disgust rise like bile in X's throat*). This accounts for 0.13 percent of all mappings. Interestingly, an even larger portion than usual is taken up by patterns instantiating event-structure metaphors (object: 248, i.e. 38.02%;

location: 371, i.e. 49.66%), but this still this leaves 12.18 percent unaccounted for. Table 5 shows all metaphorical patterns which instantiate a mapping occurring more than 3 times per 1000 words (as in the case of *sadness*, the frequencies were normalized, the actual frequencies are given in parentheses.

*Table 5.* Metaphorical patterns manifesting DISGUST metaphors

| DISGUST/BEING DISGUSTED IS | N |
|---|---|
| A MIXED/PURE SUBSTANCE<br>*pure disgust*, *combination/mixture of disgust and* EMOTION, *tinge/trace of disgust*, *disgust mix/be mingled with* EMOTION | 22 (13) |
| A SUBSTANCE IN A CONTAINER (UNDER PRESSURE)<br>*X fill Y with disgust*, *disgust fill X*, *X be full of disgust*, *X's eyes be filled with disgust*, *outlet for disgust*, *disgust build up among X*, *X burst with disgust*, *disgust be locked up inside X* | 23 (14) |
| AN OPPONENT<br>*repressed disgust*, *X fight down/repress/suppress disgust*, *disgust invade/penetrate X*, *disgust kill/overwhelm X* | 15 (9) |
| PARALYSIS/A DISEASE<br>*disgust paralyze X*, *X be stiff/rigid with disgust*, *X suffer from disgust*, *X be sick with disgust*, *X become immune to disgust* | 11 (7) |
| HIGH/LOW (INTENSITY)<br>*high disgust*, *disgust rise (in X)* | 8 (5) |
| COLD<br>*shiver of disgust*, *cold disgust*, *disgust shiver through X* | 7 (4) |
| FOOD<br>*candied disgust*, *bitter disgust, sour gasp of disgust* | 7 (4) |
| LIQUID<br>*disgust flood through X*, *disgust spill into X*, *X secrete disgust* | 5 (3) |
| PAIN<br>*tremor of disgust*, *pained disgust*, *X wince at disgust* | 5 (3) |
| AN ORGANISM<br>*growing disgust*, *root/seed of disgust* | 5 (3) |
| HEAT<br>X fuel disgust | 3 (2) |
| A SHARP OBJECT<br>*disgust be spur*, *shaft of disgust* | 3 (2) |
| A BALLOON<br>*X inflate with disgust*, *balloon of disgust* | 3 (2) |
| A HEAVY OBJECT<br>*heavy disgust*, *X outweigh disgust* | 3 (2) |
| Total | 120 (73) |

The examples in Table 5 account for 9.77 percent, bringing the coverage to 97.59 percent. The remaining 2.41 percent are made up of infrequent mappings like DISGUST IS BREATH (*X blow disgust through X's teeth*), and INTENSITY IS DEPTH (*disgust deepen*, *deep disgust*).

### 3.6. Summary

Metaphorical Pattern Analysis has identified the vast majority of metaphors postulated in the literature on the basis of the introspective approach. Where it has failed to do so, this was in all but two cases due to the fact that the mapping was postulated on the basis of insufficient or misanalyzed evidence; in other words, MPA has proven to be more precise than the traditional method. The one genuine failure concerns the mapping FEAR IS A HEAVY OBJECT (or FEAR IS A BURDEN), which did not manifest itself in the sample, but which was shown to be identifiable in principle via MPA. The other potential failure concerned the mapping SADNESS IS INSANITY, which was shown not to apply to the lexical item *sadness*, but which can be identified given the right search word (in this case, *grief*).

What is more, MPA has identified a large number of mappings not mentioned in the previous literature (in fact, at least as many as *are* mentioned). In terms of coverage, then, MPA is clearly superior to the introspective method. Moreover, the fact that metaphorical patterns are easily quantifiable also allows us to make statements about the relative importance of these mappings, which is the topic of the next section.

## 4. Are there emotion-specific metaphors?

We are now in a position to begin to address seriously the question whether there are emotion-specific metaphors, i.e. metaphors that are used in the conceptualization of only a subset of human emotions. Note that this is fundamentally a question about language use, i.e., about what is frequent or typical, rather than about the linguistic system, i.e. about what is 'possible'; the limits of what emotion *can* be conceptualized via which target domain are defined by how speakers construe these emotions. In the case of metaphorical patterns, usage data are especially important, since such patterns are essentially grammatical templates providing one or more slots for target domain vocabulary, and there is nothing in the linguistic system that would prevent a speaker from inserting any given word into one of these slots. For example, *seething X* is a pattern that we would typically associate with ANGER, but the sample actually also contains the ex-

pression *seething joy*, and we could use it with any of the other emotions investigated above (*seething disgust*, *seething fear*, *seething sadness*) and get expressions that may sound somewhat unusual, but are nevertheless straightforwardly interpretable (incidentally, a web search yields hits for all three expressions, although *seething sadness* is very infrequent). In other words, introspective judgments about such patterns can only be judgments about their likelihood of occurrence with particular emotion terms anyway.[7]

Thus, the question whether there are emotion-specific metaphors cannot be meaningfully answered in terms of categorical judgments as to which metaphors *can* occur with which emotion concept, but only in terms of statements as to which metaphors *do* occur with that concept in actual usage. However, the informal web search for *seething X* suggests that, given a large enough corpus, all metaphors will be instantiated for all emotions, so the question which metaphors occur in actual usage can itself not be answered categorically. Instead, it must be answered in terms of statistically significant associations of particular metaphors to particular domains, i.e. we must investigate whether there are metaphors that are significantly more strongly associated with a given emotion than would be expected. Since expected frequencies are calculated on the basis of the overall frequency of a given metaphor across different emotion concepts, it is important to choose a representative sample of emotion concepts. As has become clear above, in the present paper this was attempted by selecting five emotion concepts that are widely agreed upon to be basic emotions. Clearly, this can only be seen as a heuristic, and this must be kept in mind when interpreting the results presented in the following subsections.

In order to identify metaphors that are significantly more or significantly less frequent than expected with a particular emotion concept (i.e., that are attracted to or repelled by this domain), I cross-tabulated the frequencies of all 86 metaphors identified in the sample by the MPA (including the event-structure metaphors) with the five emotion concepts discussed in the preceding section. This cross-table shows that the five emotion terms differ significantly in their association to particular metaphors ($\chi^2 = 2772.91$, $df = 340$, $p < 0.001$). The specific associations were then identified by determining the contribution that each combination of

7. Kövecses' work confirms this implicitly, in that he refers likelihood of occurrence or conventionality throughout his discussion, saying that metaphors are "unlikely to occur" with a particular emotion (Kövecses 1998: 134) or that it "can be imagined" that a particular emotion would make use of a given metaphor but that it "would stretch the ordinary, everyday understanding" of it (ibid.: 135).

an emotion concept and a metaphor makes to the overall chi-square value. The results of this analysis are presented in this section.

### 4.1. Metaphors significantly associated with *ANGER*

The most strongly associated metaphor for ANGER is EMOTION IS HEATED LIQUID ($\chi^2 = 50.97$, $p < 0.001$), and several metaphors that belong to the same system are also significantly associated with this emotion concept: EMOTION IS A SUBSTANCE UNDER PRESSURE ($\chi^2 = 22.74$, $p < 0.001$), the more general metaphor EMOTION IS HEAT ($\chi^2 = 15.96$, $p < 0.05$), and the related metaphor EMOTION IS FIRE ($\chi^2 = 38.38$, $p < 0.001$). The other specific metaphor identified by the statistical analysis is ANGER IS EMOTION IS A FIERCE/CAPTIVE ANIMAL ($\chi^2 = 16.85$, $p < 0.05$). This supports the central place that these metaphorical systems have been accorded in the literature on ANGER; note that both metaphors are found with the other four emotion concepts too, but not significantly frequently; their special status with respect to ANGER only becomes apparent through a statistical evaluation of their distribution across emotion concepts.

In addition, there are three very general, event-structure-like metaphors that are significantly associated with ANGER: EMOTION IS AN OBJECT DIRECTED AT SOMEONE ($\chi^2 = 38.12$, $p < 0.01$), as in *X direct/target anger at Y* or *X experience/feel anger at Y*, EMOTION IS POSSESSED OBJECT ($\chi^2 = 22.34$, $p < 0.01$), as in *X's anger* or *X have anger*, and INTENSITY OF EMOTION IS HEIGHT ($\chi^2 = 15.35$, $p < 0.05$), as in *anger rise/drop*, *X get up Y's anger*. Note that INTENSITY OF EMOTION IS HEIGHT is consistent with the EMOTION IS A HEATED LIQUID mapping, since heated liquid in a container will expand and hence its level will rise, and EMOTION IS AN OBJECT DIRECTED AT SOMEONE is consistent with (though not necessarily associated with) the image of a fierce animal attacking its prey.

Of course, there are also metaphors that occur significantly less frequently than expected with ANGER. Most interestingly, the LOCATION event-structure metaphor is among these ($\chi^2 = 20.16$, $p < 0.01$), but also CAUSING ANGER IS TRANSFERRING AN OBJECT ($\chi^2 = 16.77$, $p < 0.05$) and BEING/ACTING IN AN EMOTIONAL STATE IS BEING ACCOMPANIED BY AN EMOTION ($\chi^2 = 30.67$, $p < 0.01$), which are part of the OBJECT event-structure metaphor, and INTENSITY OF EMOTION IS SIZE ($\chi^2 = 15.58$, $p < 0.05$), e.g. *great anger*. While the latter can presumably be accounted for by the strong preference to express the intensity of ANGER via the HEIGHT metaphor, the first three show that there are indeed significant differences between emotion terms concerning event-structure metaphors, and that these can therefore not simply be assumed to apply equally to all emotion concepts.

### 4.2. Metaphors significantly associated with *FEAR*

The most strongly associated metaphor for FEAR is EMOTION IS A SUPERIOR ($\chi^2 = 33.47$, $p < 0.001$), followed by an event-strucure-like metaphor, EMOTION IS A FOUNDATION ($\chi^2 = 16.06$, $p < 0.01$), as in *X's actions be* BASED ON *fear*, *X* BASE *actions* ON *fear*, and FEAR IS A CAUSER ($\chi^2 = 18.82$, $p < 0.05$), as in *fear force X to act*. Since no claims have been made in the literature as to which metaphors are particularly important to FEAR, this is a genuine new insight. It is probably no accident that all three metaphors construe FEAR as an entity that compels the experiencer to act (or not to act) in a particular way. In other words, the most salient aspect of FEAR does not seem to be the experience of the emotion itself, but the consequences of that experience.

There are also two mappings that occur less frequently than expected with FEAR, namely ACTING ON AN EMOTION IS ACTING IN A LOCATION ($\chi^2 = 18.37$, $p < 0.01$), as in *X act* IN *fear* (this is part of the LOCATION model also repelled by ANGER) and EMOTION IS AN OBJECT DIRECTED AT SOMEONE ($\chi^2 = 30.03$, $p < 0.001$), as in *X vent fear* ON *Y*.

### 4.3. Metaphors significantly associated with *HAPPINESS*

The most strongly associated metaphor for HAPPINESS is part of the OBJECT event-structure metaphors ignored in Section 3, CAUSING EMOTION IS TRANSFERRING AN OBJECT ($\chi^2 = 142.96$, $p < 0.001$), as in *X bring/give (Y) joy*, *X provide (Y with) joy*, *X share X's joy*. This is not significantly attracted by any of the other emotion concepts investigated here, which again stresses the importance of including event-structure metaphors in the investigation. Three other general metaphors are also identified by the statistical analysis, TRYING TO ATTAIN AN EMOTION IS SEARCHING FOR AN OBJECT ($\chi^2 = 34.82$, $p < 0.001$), as in *X find joy (in Y)*, INTENSITY OF EMOTION IS SIZE ($\chi^2 = 17.28$, $p < 0.05$), and INTENSITY OF EMOTION IS QUANTITY ($\chi^2 = 15.56$, $p < 0.05$). Note that these three metaphors are also compatible with the OBJECT model. The first of these is particularly interesting, since it forms part of a PURSUIT-OF-HAPPINESS model which is strongly entrenched in English-speaking cultures (cf. Stefanowitsch 2004, see also further Section 4.1 below).

Among the more specific metaphors discussed in Section 3, only one is significantly associated with HAPPINESS, but it is the one perhaps most expected: EMOTION IS UP/BEING OFF THE GROUND ($\chi^2 = 42.19$, $p < 0.001$). As in the case of ANGER, thus, the analysis has identified what is felt to be the 'most typical' metaphor for this domain.

There are two mappings that are less frequent than expected with HAPPINESS, namely EMOTION IS A LOCATION ($\chi^2 = 39.96$, $p < 0.001$), and ACTING

ON AN EMOTION IS ACTING IN A LOCATION ($\chi^2 = 31.42$, $p < 0.001$). Note that, again, both of these belong to the LOCATION metaphor, while the significantly associated mappings mostly belong to the OBJECT metaphor.

### 4.4. Metaphors significantly associated with *SADNESS*

The most strongly associated metaphor for SADNESS is INTENSITY OF EMOTION IS DEPTH ($\chi^2 = 67.73$, $p < 0.001$), as in *sadness deepen*, *deep sadness*, but INTENSITY OF EMOTION IS SIZE ($\chi^2 = 29.19$, $p < 0.001$) is also found. What is not identified is the counterpart to HAPPINESS IS BEING UP/OFF THE GROUND, i.e. SADNESS IS BEING DOWN. This was to be expected given that it only occurs once in the sample (cf. Table 4a above). However, it is probably not an accident that SADNESS is the only emotion concept investigated here that is significantly attracted to the INTENSITY OF EMOTION IS DEPTH mapping; note that this way of construing intensity is maximally compatible with EMOTION IS BEING DOWN.

Four of the specific mappings discussed in Section 3.4 above are identified by the statistical analysis: EMOTION IS AN (IM)PURE SUBSTANCE ($\chi^2 = 35.21$, $p < 0.001$), EMOTION IS AN AURA ($\chi^2 = 22.6$, $p < 0.001$), EMOTION IS PAIN ($\chi^2 = 19.01$, $p < 0.01$), and EMOTION IS WEATHER ($\chi^2 = 16.63$, $p < 0.05$). None of these would have been expected to be central to SADNESS on the basis of the literature. In addition, the mapping BEING/ACTING IN AN EMOTIONAL STATE IS BEING ACCOMPANIED BY AN EMOTION, which is part of the OBJECT metaphor, is significantly attracted ($\chi^2 = 32.93$, $p < 0.001$).

Metaphors that are significantly less frequent than expected are, again, EMOTION IS A LOCATION ($\chi^2 = 16.67$, $p < 0.05$), and ACTING ON AN EMOTION IS ACTING IN A LOCATION ($\chi^2 = 34.30$, $p < 0.001$).

### 4.5. Metaphors significantly associated with *DISGUST*

None of the specific metaphors discussed in Section 3.5 are significantly associated with DISGUST, including DISGUST IS AN ILLNESS, which might have been expected to be. Instead, the only two mappings that are found significantly more frequently than expected are EMOTION IS LOCATION ($\chi^2 = 437.14$, $p < 0.001$), and ACTING ON AN EMOTION IS ACTING IN A LOCATION ($\chi^2 = 298.31$, $p < 0.001$), i.e. the mappings that are less frequent with the other four emotions.

Again, there are metaphors that occur less frequently than expected, namely INTENSITY OF EMOTION IS QUANTITY ($\chi^2 = 18.49$, $p < 0.01$), INTENSITY OF EMOTION IS SIZE ($\chi^2 = 17.93$, $p < 0.05$), EMOTION IS AN OBJECT IN A LOCATION ($\chi^2 = 16.82$, $p < 0.05$), and CAUSING EMOTION IS TRANSFERRING AN OB-

JECT ($\chi^2 = 16.03$, $p < 0.05$). Note that all of these are cases of the OBJECT metaphor. Thus, we see a general pattern found with all emotion terms investigated here that they either attract the OBJECT model and repel the LOCATION model, or vice versa. Moreover, DISGUST is the only emotion investigated here which prefers the LOCATION mapping. This fact is hard to interpret, given that only five emotion concepts were investigated, but it may be related to the degree of control that the experiencer has over the emotion in question: it would make sense if more controllable emotions preferred the OBJECT model (where the emotion is seen as an object that can potentially be manipulated by the expericencer), while emotions that are less easily controllable prefered the LOCATION model (where the emotion is seen as a location surrounding the experiencer on all sides).

### 4.6. Summary

The analysis has confirmed the importance of metaphors that have been claimed in the literature to play a central part for the emotion concepts in question: the HEATED-LIQUID and the FIERCE-ANIMAL systems for ANGER, the UP/OFF-THE-GROUND system for HAPPINESS, and to some extent the DOWN metaphor for SADNESS. In addition, it has identified central metaphors for those emotion concepts that have been discussed in less detail in the literature, such as the AURA and PAIN metaphors for sadness and the SUPERIOR and FOUNDATION metaphors for FEAR. The only emotion concept for which it has not identified any specific metaphorical mappings is DISGUST, where we might have expected the ILLNESS metaphor to be identified. That this did not happen is due to the fact that this metaphor occurs with all five emotion concepts with a similar relative frequency (ANGER 0.93%, DISGUST 0.94%, FEAR 1.24%, HAPPINESS 0.55%, and SADNESS 0.56%). In all cases, the central metaphors yield insights about the emotion concepts in question if we take them to pick out the most important aspects of the metaphors in question.

Clearly, the relatively exhaustive attempt at listing metaphorical mappings (via metaphorical patterns) presented in Section 3 and the attempt to identify central metaphors presented in this section complement each other. On the one hand, it is important to know what mappings are found with a given emotion concept in a reasonably large corpus, since this gives us a notion of which metaphors are conventionalized in a given culture/language (although, of course, the lists are never complete). On the other hand, it is just as important to know what source domains are particularly strongly attracted to (or repelled by) a given emotion concept, since this

will give us a notion of what distinguishes this emotion concept most clearly from other concepts in the culture/language in question.

## 5. The lexeme-orientation of metaphorical pattern analysis: synonyms and antonyms

The preceding section has shown that MPA allows us to identify metaphorical mappings strongly associated with a given emotion concepts as compared to others. The procedure rests on the assumption (among other things) that it is possible to choose a representative word to stand for each of the concepts investigated. Thus, the procedure glosses over potential differences between different words referring to the same general emotion concept. This is especially evident in cases where there is no obvious unmarked candidate for a given emotion concept, as perhaps with *anger* and *rage* or *happiness* and *joy*, but it is also true in cases where one candidate is clearly marked, as in the case of *sadness* and *grief*, where the latter refers to a feeling of sadness connected to a loss. In this section, I will look into this issue by contrasting two rough synonyms, *happiness* and *joy* (cf. Section 3.3 above). For the sake of completeness, I will also briefly look at two rough antonyms, *happiness* and *sadness*, although this is not fundamentally different from looking at a whole set of words from the same semantic field, as was done in the preceding section.

### 5.1. *Happiness* and *joy*

Seventy-five of the 87 metaphors identified in the sample occur with *joy* and/or *happiness*. Each mapping's frequency with these two words was cross-tabulated against the frequency of occurrence of all other mappings and submitted to a Fisher-exact test.[8] As is standard procedure for multiple tests, the levels of significance were corrected by of dividing them by the total number of tests performed, in this case, seventy-five.

Only three mappings reached the corrected levels of significance: TRYING TO ATTAIN AN EMOTION IS SEARCHING FOR AN EMOTION ($p < 1.33E–05$, ***) is significantly associated with *happiness*, and BEING/ACTING IN AN EMOTIONAL STATE IS BEING ACCOMPANIED BY AN EMOTION ($p < 1.33E–05$, ***) and BEING

8. Since, unlike in Section 4, only two words are contrasted here for each metaphor, an exact test is preferable (cf. Pedersen 1996, Stefanowitsch and Gries 2003, Gries and Stefanowitsch 2004 for a discussion of why the Fisher exact test is optimally suited to dealing with natural language data).

HAPPY IS BEING UP/OFF THE GROUND ($p < 6.67E–04$, *) are significantly associated with *joy*. Before we turn to these in detail, note that the fact that only 3 out of 75 mappings distinguish between the two words, may seem disappointing if we are interested in subtle semantic differences between near synonyms, but it is actually a desirable result in the more general context of identifying metaphors associated with a given target domain, since it suggests that the results of MPA do not depend too heavily on the particular word chosen to represent a target domain (but cf. below).

Note that two of the three metaphors just mentioned were already identified in Section 4 as being significantly associated with the domain HAPPINESS in general. The fact that within this domain they are associated with different words is thus intriguing, as is the way in which they qualitatively differ for *happiness* and *joy*.

Let us begin by looking at the mapping TRYING TO ATTAIN AN EMOTION IS SEARCHING FOR AN EMOTION. While the mapping does occur with the word *joy*, it does not do so very frequently (16 occurrences per thousand hits; significantly more frequently than with any of the other basic emotion words/concepts investigated in Sections 3 and 4). Moreover it is instantiated by only three patterns, *X find joy (in Y)*, *X recapture joy*, and *newfound joy*. In contrast, the mapping is instantiated more than six times as frequently with *happiness* (110 occurrences per thousand hits), by 28 different patterns. These patterns are shown in (13a–c):

(13) a. TRYING TO ATTAIN HAPPINESS IS SEARCHING/HUNTING FOR SOMETHING
*sought-after happiness, unlooked-for happiness, pursuit of happiness, search/quest for happiness, path/route/way to happiness, X chase (after) happiness, X be in search of happiness, X harry after happiness, X look for happiness (in X), X search for happiness, X pursue happiness, X seek happiness, X reach out towards happiness, X snatch at happiness, X stretch out hand for happiness*

b. ATTAINING HAPPINESS IS FINDING/CAPTURING SOMETHING
*happiness seem within reach, X attain happiness, X find happiness (in/through/with X), X capture/grab/recapture happiness, X reach happiness*

c. NOT BEING ABLE TO ATTAIN HAPPINESS IS INABILITY TO REACH SOMETHING
*X stand in way of happiness, happiness elude X, happiness be irretrievable*

Apart from the fact that the mapping is instantiated much more frequently for *happiness* than for *joy* in terms of both types and tokens, there is a crucial qualitative difference between the two words. While the patterns instantiating the mapping with *happiness* refer to different aspects of it (the search itself, the route to be taken, the moment of finding, and the possibility of not finding or not being able to reach the desired thing), *joy* occurs only with the sub-mapping ATTAINING HAPPINESS IS FINDING OR CAPTURING SOMETHING. The motivation for this difference can presumably be found in our (culturally mediated) perception of the role that the two emotions play in our lives: while *happiness* and *joy* refer to similar emotions, HAPPINESS is potentially a less intensely experienced emotional state (see below), and hence potentially a more stable one and one whose attainment is more easily conceptualized as being the responsibility of the experiencer. Thus, it is possible to actively look for HAPPINESS (and hold on to it once it is found), while the more intense, short-lived JOY can only be stumbled upon by chance (see also Stefanowitsch 2004).

The greater intensity of the emotional experience referred to by *joy* is most likely also responsible for the fact that the mapping BEING HAPPY IS BEING UP/OFF THE GROUND is significantly associated with *joy* as compared to *happiness*, if such an difference in intensity in fact exists.

Goddard (1997: 93), summarizing discussions in Wierzbicka (1992, 1996: 215ff.), suggests that it does. Contrasting the English word *happy* with its French and German translation equivalents, *heureux* and *glücklich*, he claims that the latter two refer to a more intense emotional experience than the former, and he uses a metaphor to express this difference:

> Essentially, English *happy* conveys a "weaker," less intense emotion than *glücklich* and *heureux*. Speaking metaphorically, emotions such as *Glück* and *bonheur* FILL A PERSON TO OVERFLOWING, leaving no room for any further desires or wishes (Goddard 1997: 93, emphasis added).

These cross-linguistic claims will not be discussed here (they are discussed in Stefanowitsch 2004), but they are relevant to the comparison between *happiness* and *joy*, since Goddard remarks that English *joy(ful)* is comparable in intensity to *hereux* and *glücklich* (Goddard 1997: 94). This suggests that his general claim also applies to *joy(ful)*. Note that Goddard is not making statements about metaphors associated with the words under discussion; he is simply *using* a metaphor in order to express something about their meaning in general. Still, if his characterization is correct, it could be reflected in the metaphorical system he uses. In the remainder of this subsection, I will briefly investigate this possibility.

The metaphorical system consists of the mappings AN EMOTION IS A LIQUID and AN EMOTION IS A SUBSTANCE IN A CONTAINER. These metaphors are not among those that differ significantly for *joy* and *happiness* in terms of their frequency. However, Goddard's quote suggests a qualitative difference, not a quantitative one: both words should be associated with LIQUID and CONTAINMENT metaphors, but in the case of *joy* there should be a higher proportion of patterns that refer to full or overflowing containers. Table 6 shows all patterns from the sample that instantiate the metaphors in question, divided into two sets: patterns referring to liquids or containment in general, and patterns referring to full or overflowing containers or liquids under pressure or under the influence of a strong force.

As the comparison of the observed frequencies with the expected ones (given in parentheses) shows, FULLNESS/PRESSURE metaphors are indeed more frequent for *joy* and less frequent for *happiness*, and this difference is statistically significant (Fisher exact, $p < 0.01$, **).

The case of LIQUID/CONTAINMENT metaphors shows that at least in some cases, a quantitative comparison of metaphors at the most general level does not suffice to uncover differences in the metaphorical behavior of near synonyms. Instead, it is necessary to take into account the qualitatively different ways in which such general metaphors manifest themselves in specific cases (these differences can then of course also be quantified).

### 5.2. *Happiness* and *sadness*

The direct comparison of the words *happiness* and *sadness* more or less confirms the results obtained by contrasting all five basic emotion terms in Section 4. Sixty-nine of the 87 metaphors identified in Section 3 occurred with *happiness* and/or with *sadness*. Their frequencies for these two words were submitted to a series of Fisher-exact tests, as in the preceding subsection. Twelve metaphors reached the corrected levels of significance, six of which are associated with *happiness* and six with *sadness*.

The two mappings most strongly associated with *happiness* as compared to *sadness* are the ones that were also identified as most significant by the comparison of all five emotion concepts in Section 4: TRYING TO ATTAIN AN EMOTION IS SEARCHING FOR AN EMOTION ($p < 1.45E–05$, ***), and CAUSING AN EMOTION IS TRANSFERRING AN OBJECT ($p < 1.45E–05$, ***), as well as, two mappings that are related to the latter, namely EMOTIONS ARE POSSESSIONS ($p < 7.25E–04$, *) and THE CAUSE OF AN EMOTION IS THE DEPARTURE POINT OF A MOVING OBJECT ($p < 1.45E–04$, **). In addition, two of the specific mappings discussed in Section 3 were identified: EMOTION IS LIGHT

*Table 6.* LIQUID metaphors for happiness and joy

| | | *happiness* | *joy* |
|---|---|---|---|
| *source of* $NP_{emot}$ | | 12 | 6 |
| $NP_{emot}$ *spring from X* | | 1 | 1 |
| *X open self to* $NP_{emot}$ | | | 1 |
| $NP_{emot}$ *pour into heart* | | | 1 |
| *inner* $NP_{emot}$ | | 1 | 2 |
| *X contain/include/hold* $NP_{emot}$ | | 7 | 1 |
| $NP_{emot}$ *be in X* | | | 2 |
| *distillation of* $NP_{emot}$ | | 1 | |
| *X drink* $NP_{emot}$ | | | 1 |
| $NP_{emot}$ *evaporate* | | 1 | |
| *X leave X empty of* $NP_{emot}$ | | 1 | 1 |
| | TOTAL | 23 (16) | 16 (23) |

| FULLNESS, PRESSURE, and BURSTING metaphors | | *happiness* | *joy* |
|---|---|---|---|
| *effervescent/seething* $NP_{emot}$ | | | 2 |
| *pressure of* $NP_{emot}$ | | 1 | |
| *swell of* $NP_{emot}$ | | 1 | |
| *heave of* $NP_{emot}$ | | 1 | |
| *rush of* $NP_{emot}$ | | 1 | |
| *surge of* $NP_{emot}$ | | 2 | 1 |
| *river be* $NP_{emot}$ | | | 1 |
| *flood of* $NP_{emot}$ | | | 1 |
| $NP_{emot}$ *subside* | | | 1 |
| *filled/loaded with/full of* $NP_{emot}$ | | 8 | 15 |
| *heart (be) full to bursting with* $NP_{emot}$ | | 1 | |
| *heart fill/swell with* $NP_{emot}$ | | | 2 |
| *X fill/swell Y('s heart) with* $NP_{emot}$ | | 1 | 6 |
| $NP_{emot}$ *brim in heart* | | 1 | |
| *burst/explosion of* $NP_{emot}$ | | 1 | 1 |
| *cold void run over with* $NP_{emot}$ | | 1 | |
| $NP_{emot}$ *burst in/through X('s) heart* | | | 2 |
| $NP_{emot}$ *overflow* | | | 1 |
| *X brim over with* $NP_{emot}$ | | | 1 |
| *X burst/erupt/explode in/with* $NP_{emot}$ | | | 6 |
| $NP_{emot}$ *surge/sweep/wash over/through X* | | 1 | 3 |
| *X be swept away by* $NP_{emot}$ | | | 1 |
| *X pour* $NP_{emot}$ | | | 1 |
| *flow of* $NP_{emot}$ *emanate from X* | | | 1 |
| $NP_{emot}$ *seep from X* | | | 1 |
| | Total | 20 (27) | 47 (40) |

(p < 1.45E–05, ***), as in *bright/shining happiness*, *X shine/sparkle with happiness*, and EMOTIONS ARE FRAGILE OBJECTS (p < 7.25E–04, *), as in *X damage/destroy/ruin happiness, X hack happiness to shreds.* The relation of *happiness* to LIGHT, like that of ANGER to HEAT, is presumably an experiential one. Light and darkness are actually physiologically related to happiness and sadness: long periods of darkness can cause so-called *seasonal depression*, which can be treated by exposure to bright light.[9] The relation of *happiness* to FRAGILE OBJECTS is presumably related to the cultural value we place on happiness: happiness is something we are forever trying to attain (cf. the PURSUIT-OF-HAPPINESS model), and once we do, we try to protect it from potential causes of unhappiness. Sadness, in contrast, is not a state we try to attain, and if we enter it through circumstances beyond our control, we try to change this as quickly as possible. Thus, it makes sense that we conceptualize the end of *happiness*, but not that of *sadness*, as the destruction of a fragile object.

Turning to *sadness*, we find that five of the six mappings that are significantly associated with *sadness* as compared to *happiness* were already identified by the comparison of all five emotion concepts in Section 4, and need no further comment: BEING/ACTING IN AN EMOTIONAL STATE IS BEING ACCOMPANIED BY AN EMOTION (p < 1.45E–05, ***), EMOTIONS ARE PURE/MIXED SUBSTANCES (p < 1.45E–05, ***), EMOTION IS PAIN (p < 1.45E–05, ***), INTENSITY OF EMOTION IS DEPTH (p<1.45E–05, ***), and EMOTION IS AN AURA (p < 7.25E–04, *). One mapping, EMOTION IS A MOVING OBJECT DIRECTED AT SOMEONE (p < 7.25E–04, *) was identified in addition; note that it is part of the OBJECT model and thus consistent with our previous results.

In sum, although no major surprises emerged from a direct comparison of the words *happiness* and *sadness* in light of the previous comparison of all five emotion words, the direct comparison did yield some additional detail missed by the general comparison. Two things in particular are worth pointing out. First, in the overall comparison we were dealing with the words *joy* and *sadness*; the fact that a comparison of *happiness* and *sadness* yields such similar results confirms the claim that near synonyms will broadly be associated with the same metaphors (and thus, that it is possi-

9. Cf., for example, Ferenczi (1997). The HAPPINESS IS LIGHT metaphor forms a rich, coherent system of metaphorical patterns in the data that often make use of a SUN-AND-CLOUDS/SHADOW imagery, where HAPPINESS IS SUNLIGHT,, as in *shining/unclouded happiness*, *X beam/shine with happiness*, *happiness shine from X*, *happiness beam out in yellow beams*, and A DECREASE IN/ABSENCE OF HAPPINESS IS A SHADOW (CAST BY CLOUDS) *X cloud happiness*, *X cast a shadow on happiness*, *clouds make happiness a memory*, *happiness burst through clouds of sorrow.*

ble to investigate emotion concepts via individual lexical items). Second, even though *happiness* and *sadness* are antonyms, the metaphors they are significantly associated with do not fall into pairs of opposing metaphors. For example, we might expect that if *happiness* is significantly associated with LIGHT, then *sadness* should be significantly associated with DARKNESS, or that if *sadness* is significantly associated with PAIN, then *happiness* should be significantly associated with PHYSICAL WELLBEING. That this is not the case suggests that the emotions referred to by *happiness* and *sadness* are not primarily understood as opposites, but that each of them is conceptualized (and presumably experienced) on its own terms.

### 5.3. Summary

This brief discussion of how individual lexemes may differ quantitatively or qualitatively in their participation in particular metaphorical mappings has shown at least two things. First, the lexeme-specificity of metaphorical pattern analysis is not a disadvantage in a context where it is the aim of an investigation to uncover mappings associated with entire emotion concepts. Even if we choose just one word to represent such a concept, chances are that we will not miss any major metaphors. Second, the lexeme-specificity of MPA is actually a great advantage where it is the aim of an investigation to uncover subtle differences within a given general emotion concept.

## 6. Conclusion

This paper has shown that metaphorical pattern analysis is superior to the introspective method often used by researchers working in the conceptual theory of metaphor (and in other frameworks). It outperforms the traditional method in the identification of metaphorical mappings associated with a given target domain, and by allowing strict quantification of the results, it opens up completely new avenues of research.

Of course, this paper has done little more than demonstrate the feasibility of the method. In order to unfold its full potential, the method will have to be systematically applied in a large number of target domains, and hopefully the growing interest in quantitative corpus-based studies will result in such applications. Ultimately, we 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.

There are many practical and theoretical uses for the kind of information gained by metaphorical pattern analysis (whether in the form of a database or in the form of small-scale studies of individual target domains). On a descriptive level, MPA may complement lexical semantic approaches to word meaning, for example in the generation of dictionaries. On a theoretical level MPA allows us to address central questions concerning metaphorical mappings, for example: (i) the systematicity and productivity of individual metaphorical mappings; (ii) the universality of metaphorical mappings (MPA can serve as a basis for contrastive studies investigating cross-cultural and cross-linguistic similarities and differences in the metaphorical conceptualization of experience); and (iii) the psychological reality of metaphorical mappings (the results of MPA, esp. the possibility to assess the importance of a given metaphorical mapping for a given target domain, can serve as a basis for generating specific hypotheses concerning the mental representation of such mappings).

## Data Sources

BNC British National Corpus, World Edition.

Src 1 *News 10 Now*: Oswego County bar owners rally against smoking ban. Online at http:// news10now.com/content/all_news/ ?ArID=10946, last access April 2004)

Src 2 www.angelfire.com/tx3/taylez/dlb02.html, last access April 2004.

## References

Athanasiadou, Angeliki and Elzbieta Tabaskowska
1998 *Speaking of emotions. Conceptualization and expression*. Berlin and New York: Mouton de Gruyter.

Black, Max
1962 Metaphor. In: *Models and metaphors. Studies in Language and Philosophy*, 25–47. Ithaca, NY: Cornell University Press.
1992 [1979] More about metaphor. In: Andrew Ortony (ed.), *Metaphor and Thought*. Second edition. Cambridge: Cambridge University Press, 20–41.

Ferenczi, Michael A.
1997 Seasonal depression and light therapy. *Mill Hill Essays*, Vol. 3. London: National Institute for Medical Research.

Gibbs, Raymond
1994 *The poetics of mind. Figurative Thought, Language, and Understanding*. Cambridge: Cambridge University Press.
Goddard, Cliff
1997 *Semantic Analysis. A Practical Introduction*. Oxford: Oxford University Press.
Hunston, Susan and Gil Francis
1999 *Pattern grammar*. Amsterdam: John Benjamins.
Jäkel, Olaf
1997 *Metaphern in abstrakten Diskurs-Domänen*. Frankfurt a.M.: Lang.
Kövecses, Zoltan
1986 *Metaphors of Anger, Pride and Love*. Amsterdam and Philadelphia: Benjamins.
1989 *Speaking of Emotions*. New York: Springer.
1998 Are there any emotion-specific metaphors? In: Angeliki Athanasiadou and Elzbieta Tabaskowska (eds.), *Speaking of Emotions. Conceptualization and Expression*, 127–151. Berlin and New York: Mouton de Gruyter.
2002 *Metaphor. A Practical Introduction*. Oxford: Oxford University Press.
Lakoff, George and Mark Johnson
1980 *Metaphors We Live By*. Chicago and London: The University of Chicago Press.
Lakoff, George
1987 *Women, Fire, and Dangerous Things*. Chicago: The University of Chicago Press.
1993 The contemporary theory of metaphor. In: Andrew Ortony (ed.), *Metaphor and Thought*. Second edition, 202–251. Cambridge: Cambridge University Press.
Langacker, Ronald W.
1987 *Foundations of Cognitive Grammar*. Vol. I: *Theoretical Prerequisites*. Stanford: Stanford University Press.
Niemeier, Susanne and René Dirven (eds.)
1997 *The Language of Emotions*. Amsterdam and Philadelphia: Benjamins.
Ortony, Andrew and Terence J. Turner
1990 What's basic about basic emotions? *Psychological Review* 97: 315–331.
Pedersen, Ted
1996 Fishing for exactness. *Proceedings of the SCSUG 96*, 188–200. Austin, TX.
Sinclair, John
1991 *Corpus, Concordance, Collocation*. Oxford: Oxford University Press.
Stefanowitsch, Anatol
2004 HAPPINESS in English and German: A metaphorical-pattern analysis. In: Michel Achard and Suzanne Kemmer (eds.), *Language, Culture, and Mind*, 134–149. Stanford: CSLI.
Stefanowitsch, Anatol and Stefan Gries
2005 Covarying collexemes. *Corpus Linguistics and Linguistic Theory* 1: 1–46.

Ungerer, Friedrich and Hans-Jörg Schmid
1996 *An Introduction to Cognitive Linguistics*. London and New York: Longman.
Weinrich, Harald
1976 *Sprache in Texten*. Stuttgart: Klett.
Wierzbicka, Anna
1992 Talking about emotions: semantics, culture and cognition. *Cognition and Emotion* 6: 289–319.
1996 *Semantics. Primes and Universals*. Oxford: Oxford University Press.