A frame-semantic approach to logical metonymy*

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Pustejovsky's well-known analysis of so-called logical metonymy, such as *she began the book* (= 'reading' or 'writing' the book), fails in several respects (cf. e.g. Godard & Jayez 1993, Lascarides & Copestake 1998, Verspoor 1997). The main problem is that his account is based on just a few prototypical examples of logical metonymy. When more examples with other verbs and other objects are analysed, his theory runs into problems. Since verb-concrete object combinations diverge widely in their interpretations, one can even ask to which extent metonymy is actually involved. With the help of FrameNet, this article analyses the semantics of these verbs and their combinations with metonymical objects. On this basis, a new analysis of logical metonymy is proposed.

Keywords: metonymy, logical metonymy, Pustejovsky, frame semantics, FrameNet

1. Examples of logical metonymy

Over the last twenty years linguists have become interested in what they have dubbed 'logical metonymy'. Sentences (1)–(3) illustrate this phenomenon.

(1) Mary began the book.

(2) Mary finished the book.

(3) John enjoyed the sandwich.

Strictly speaking, one cannot begin or finish an object as such. One can only begin or finish activities. Sentences (1) and (2) are thus interpreted as meaning that Mary

* I owe many thanks to my supervisors, Wim Honselaar and Fons Moerdijk, for their help and support. I would also expressly like to thank two anonymous reviewers and Kyoko Hirose Ohara for their useful comments on earlier versions of this paper.

Constructions and Frames 2:1 (2010), **1–32.** DOI 10.1075/cf.2.1.01swe
ISSN 1876–1933 / E-ISSN 1876–1941

began (or finished) reading or writing the book. We infer an activity in which the book plays a central role. Similarly, enjoying an object presupposes some time interval of exposure to the object or some experience with the object. Therefore, we understand that if John enjoyed a sandwich, he enjoyed eating it. In all three examples, we interpret some implicit event in which the explicitly expressed object is involved. For this reason, the metonymy is also named after the metonymical pattern, OBJECT FOR ACTION IN WHICH THE OBJECT IS INVOLVED (cf. Ruiz de Mendoza & Pérez 2001). In most studies, however, the term 'logical metonymy' is used (e.g. Godard & Jayez 1993, Pustejovsky 1991, Verspoor 1997), because, apart from the metonymical shift, an additional shift in the interpretation takes place, namely a shift from a concrete object to an additionally interpreted abstract event. This additional shift is formally a type shift, also called a logical shift (Verspoor 1997: 166–167). Hence, the name logical metonymy.[1]

In all research on logical metonymy there are two related shortcomings. The first is that the analyses are based on introspection and a very limited amount of data. As far as I know there are only three studies in existence that use examples from corpora (Briscoe et al. 1990, Lapata & Lascarides 2003, Verspoor 1997). Lapata and Lascarides examine a lot of verbs, but use real data only to check automatic predictions on the interpretation of logical metonymies. Briscoe et al. did a small corpus study of a total of 235 examples unequally divided over seven different verbs (and over 10% of these examples (24 examples) were not taken into account, because the authors had difficulty classifying them). Verspoor exhaustively examined the two prototypical examples of *begin* and *finish* and has interesting findings that will be discussed in Section 2.

The second shortcoming is that differences among the verbs that can be combined with logically metonymical objects are neglected. They are all put under the umbrella of logical metonymy, without analysing distinctions among them. Of course, this second problem follows from the first, since differences are easily overlooked when one does not take sufficient real data into account. In this article I will therefore discuss the semantics of a large range of verbs that can appear with

1. One can also find another reason for calling this *logical metonymy*. The above examples of metonymy are said to be different from other forms of metonymy because the metonymy is of a structural kind (Pustejovsky 1995: 54, cf. also Horacek 1996: 120). Sometimes the term *logical metonymy* is even used in a different sense, namely for all examples of logical polysemy that are motivated by metonymy (cf. Nunberg 1995: 116, Kleiber 2007: 169). I will use *logical metonymy* in the narrower sense. Furthermore, I will only take into account examples of concrete direct objects combined with verbs that semantically require an event. However, it is sometimes said that something similar occurs with subjects (Pustejovsky 1995: 53ff), and that this type of metonymy can be combined with some prepositions and even adjectives (cf. e.g. Godard & Jayez 1993: 170).

logically metonymical objects. On this basis, I will give a more precise and insightful analysis of the metonymy involved.

The paper is organised as follows. Section 2 discusses Pustejovsky's well-known analysis of logical metonymy, and the objections that can be raised against his account. Section 3 discusses several verbs that are said to appear with logically metonymical objects. I will uncover new problems for Pustejovsky by taking into account more verbs and examples of logical metonymy taken from corpora. In Sections 4 and 5 I will analyse what the involved metonymy actually does from a cognitive point of view. In these sections I will offer a new explanation for all kinds of examples of logical metonymy, without denying the semantic differences among them. On the basis of the developed frames by the FrameNet project (http://framenet.icsi.berkeley.edu/), I will demonstrate that frame semantics is a useful tool for this purpose. Sections 6 and 7 examine the advantages of my approach. In Section 6 I will explain that my frame-based analysis solves existing problems with Pustejovsky's account. In Section 7 I will examine other examples of logical metonymy that can be found in dictionaries. These examples have never been taken into account before, although they neatly fit the above definition of logical metonymy. These observations will bring me to my conclusions in Section 8.

2. Previous analyses: Pustejovsky's account and its problems

Many scholars have wondered how hearers can infer the correct interpretation of sentences such as *Mary began/finished the book* or *John enjoyed the sandwich* (cf. (1)–(3)). What motivates us to mention an object instead of an activity, and how do we infer the relevant activity?

The best-known explanation for this is Pustejovsky's account. He explains logical metonymy with the notions *coercion* and *qualia structure*. According to Pustejovsky, the possibility of the combination of a non-eventive NP with a verb that requires from a semantic point of view an activity such as *to begin a book* is possible because of a semantic coercion of the noun. The noun is coerced into an event and ceases to be a concrete object. This coercion takes place on the basis of a rich semantic representation of the noun, which is called its qualia structure. A qualia structure consists of four essential roles (based on Aristotle's theory): a so-called 'constitutive role', a 'formal role', an 'agentive role' and a 'telic role' (Pustejovsky 1995: 76). The first two roles give information about inherent characteristics of the object: what it is made of and what its physical properties are. The agentive and the telic roles describe typical actions in which the object is involved: how it is brought about (the agentive role) and what the purpose or function of the object

is (the telic role). The qualia structures for *book* and *sandwich* thus look as follows (cf. Pustejovsky & Boguraev 1993: 211, 207):

book(x)	sandwich(x)
CONST = {text, paper,…}	CONST = {bread,…}
FORMAL = physobj(x)	FORMAL = physobj(x)
TELIC = read(P,y,x)	TELIC = eat(P,y,x)
AGENTIVE = write(T,w,x)	AGENTIVE = artefact(x)

This makes it possible to explain, on a lexical basis, how we arrive at the correct interpretation of sentences which involve logical metonymy, such as in (1)–(3). The interpretation of the complement is based on an associated activity, found in the telic (or possibly the agentive) role of a lexical item. *To begin a book* means beginning some activity in which the book plays an essential role, thus beginning writing or reading. *To enjoy a sandwich* is interpreted as 'enjoying eating a sandwich', since the associated experience originates from the telic role. In this way the qualia structure can be seen as a semantic bridge between the event structure and the argument structure of a verb.

Although Pustejovsky's account explains what is happening and how we can infer the relevant activity in the case of combinations with concrete objects, there are, as already pointed out by others, some problems with his theory. These problems concern the central theoretical notions *coercion* and *qualia structure* used by Pustejovsky, as well as factors that seem to play a role but are neglected in Pustejovsky's theory. In the rest of this section I will consider three general problems that have been discussed in previous studies.

In the first place, it is questionable whether coercion as a real change of meaning and type of the NP is plausible (Godard & Jayez 1993: 168). Godard and Jayez describe three simple linguistic tests which help to determine whether the nouns are really changed into events, or whether they keep their concrete object type. These tests involve the use of relative clauses, anaphoric reference and coordination of predicates, as illustrated by the following sentences.

(4) John began a book that was very thick.

(5) *John began a book that took two hours.

(6) John began his book at ten and put it away at eleven.

(7) *John began his book at ten and didn't stop it till eleven.

(8) Il a commencé et finalement mangé le saumon. (Godard & Jayez 1993: 169)

(9) He ate and enjoyed the salmon.

(4) and (5) give examples with relative clauses. Sentence (4), in which the relative clause refers to a property of the concrete noun is perfect, while (5) with the relative clause referring to the reading event is infelicitous. If the referent of *a book*, however, had not only caused an inference to an event but also really changed its type into one, one would have expected the opposite. Since it is only possible to refer to a property of a concrete object, such as the thickness of the book, and not to a property of the interpreted event, such as duration, the referent of the noun *book* seems to remain a concrete object.

The same goes for the anaphoric references in (6) and (7). The anaphor can only be used to refer to a concrete object such as the book that is put away, not to the associated event (i.e. reading) that is stopped at a certain moment. Again, if the referent of the noun had really been coerced into an event, one would have expected the opposite.[2]

In the last test, the coordination test, one concrete noun is combined with two predicates, one that needs a concrete object and one that requires an eventive phrase as a direct object (DO). The coordination test is illustrated by (8) and (9). Since it is no problem to combine the two predicates with only one NP, it does not seem likely that the noun has changed its type. Otherwise the examples would be zeugmatic.

2. One of the reviewers has pointed out that there are problems with Godard & Jayez's arguments. First of all, even if no 'type coercion' in the strictest sense has taken place, this does not preclude the possibility that an inference from *the book* to *reading the book* has occurred. Secondly, the reviewer has his/her doubts, as to whether referring to the event is actually impossible. As an illustration he/she gives the example (*?*)*At ten, John began his new book, which he did for two hours; at noon he had a light lunch, after which he prepared his courses for the next day*. Thirdly, the reviewer points out that one could give another explanation as to why it is only possible to refer to the concrete thing. As Ruiz de Mendoza and his collaborators have shown, there are two types of metonymies. Metonymical expressions can be sub-domains of the intended concept (a source-in-target metonymy) but it can also be the other way around (target-in-source). An example of the latter metonymy is *she tied her shoes* (the target 'shoelaces' is a sub-domain of the shoes) and of the former *the ham sandwich is waiting for his check* (the target 'customer' includes the sub-domain 'order'). According to the Domain Availability Principle (cf. Ruiz de Mendoza & Pérez 2001: 351, Ruiz de Mendoza & Díez Velasco 2004: 500) anaphors can only refer to the super-domain or domain matrix, not to a sub-domain. This explains the use of the possessive pronoun in *the ham sandwich is waiting for his/*its check*. It is only possible to refer to the source in a source-in-target metonymy, since the source is the super-domain. For target-in-source metonymies it works the other way around (*She tied her shoes. They were brown/*One was broken*). However, this theory makes wrong predictions for logical metonymies. Since logical metonymies are considered as source-in-target metonymies (cf. Ruiz de Mendoza & Pérez 2001: 340), it should be possible to refer to the matrix domain 'read' instead of to the concrete book, whereas actually it seems to be the other way around (cf. sentence (4)–(7)).

A second problem is the fact that not all interpretations, even very obvious ones, can be derived from qualia structure. Pustejovsky tries to incorporate all the necessary world knowledge into the semantics of a word, and in this way denies the role that the context can play. The next two sentences, taken from Lascarides and Copestake (1998), can be used to illustrate how contexts can block a default interpretation.

(10) John began the book.

(11) Mary enjoyed the book that John gave her.

Suppose that (10) has been uttered in a situation in which we know that John is a hungry goat who has escaped and run into the library. The interpreted activity will not be reading or writing: instead we will understand that the goat has probably started eating the book. Similarly, if the given book is made of marzipan, the interpretation of (11) will be that Mary enjoyed eating this particular kind of candy (Lascarides & Copestake 1998: 392). Interpretations on the basis of qualia structures can thus be overruled by knowledge of context and situation.[3] As a consequence, interpretations cannot be explained solely in terms of qualia structure.[4] For a better account of the metonymy involved, a more flexible procedure seems to be necessary. I will come back to this point in Section 6.

A third problem involves the occurrence of logical metonymies in actual language use. If one analyses corpus data, it turns out that only some kinds of interpretations are actually expressed by metonymical sentences. In a corpus study of the verbs *begin* and *finish* Verspoor finds (contrary to the findings of Briscoe et al. 1990: 45) that metonymical combinations are not that frequent. One third of a sample of BNC sentences containing *finish* + NP is metonymical (319 out of 940) and only 3.7% of the *begin* + NP-examples in the BNC are metonymical combinations (164 out of 4470) (Verspoor 1997: 186–187). Furthermore, she observes that almost all interpretations are "coming into existence" interpretations, based on the agentive role of artefacts (Verspoor 1997: 188) and that only a few telic roles for about twenty categories of NPs (such as things you can read, eat, smoke, etc.) occur as interpreted events in the data (Verspoor 1997: 187). These findings

3. However, this is only the case if one accepts the example in this specific, contextual interpretation. An anonymous reviewer has pointed out that he/she doubted whether this interpretation could be inferred at all. This shows how dangerous it is to base claims solely on introspective data.

4. Or one should, for the interpretation of (10), assume that qualia structures themselves are context-sensitive and that in the context of a goat, for example, *book* has a different qualia structure (a different telic role) than in the context of a human agent (as suggested to me by Wim Honselaar). A problem with this solution is that qualia structures are considered to be lexical representations of nouns, and lexical representations must be context independent.

led her to the conclusion that the agentive role is interpreted by default, and that only some conventionalised telic roles are available for the interpretation of metonymical sentences. In addition, Verspoor notices differences between *begin* and *finish* on the one hand and between these verbs and *enjoy* on the other (1997: 187, 191–192). These differences indicate that, in all likelihood, not all combinations of verbs and metonymical concrete objects are totally similar. I will examine this idea in more detail in the following sections.

3. Logical metonymy: A gradual notion?

The three verbs *begin*, *finish* and *enjoy* may be the prototypical cases of logical metonymy, but they are not the only verbs that seem to behave in this way. In previous studies twenty-one English verbs have been found that appear with NPs metonymically interpreted as events.[5] These verbs can be divided into three general groups. The first group consists of aspectual verbs, sometimes also called eventive verbs (Verspoor 1997) or phase verbs (Honselaar 1980). Verbs like *begin*, *complete*, *continue*, *finish*, *postpone*, and *start* belong to this group. The second group consists of verbs that may be called evaluative or emotive, since they give information about the agent's mental state or feelings towards an event.[6] Typical verbs are *choose*, *endure*, *enjoy*, *expect*, *fear*, *prefer*, *regret*, *savour*, and *want*. The third group is an in-between category, as the verbs in this group give some aspectual as well as some evaluative information: they tell us in which sense or in which way the agent has dealt with an event. The group includes verbs such as *attempt*, *master*, *miss*, *resist*, *survive*, and *try*.

Since all combinations of these verbs with concrete objects are said to be metonymical, it is assumed that they all require, from a semantic point of view, an eventive direct object. There has, however, never been any analysis of what kind of events these words require, and consequently whether they all have logically metonymical complements in the same way. I will demonstrate that in fact they do not, although the underlying metonymical mechanism will turn out to be the

5. This inventory, resulting in twenty-one verbs, has never been done before and I could not find any study in which all the verbs were mentioned together. The two studies in which I found the largest number of verbs included thirteen and seventeen verbs respectively (McElree et al. 2001, Lapata & Lascarides 2003). Strangely enough, Briscoe et al. state that they found twenty-four verbs that appeared with logically metonymical objects, but they only mention seven of them explicitly (Briscoe et al.1990: 44–45).

6. Cf. for example, Ruiz de Mendoza & Pérez 2001: 342, who make a slightly different categorization, or Brdár 2007: 148.

same. A close look at real language data (taken from the British National Corpus[7]) reveals several differences in the logically metonymical behaviour of objects combined with these verbs. These differences cannot be accounted for in terms of coercion and qualia structure.

First of all, it is possible that the event interpreted can be very unspecific, because, for example, several events are referred to at the same time, as in (12).

(12) (BNC #62986690) When we *finish* our house in Sussex,

If one finishes a house, one can finish building it, arranging the furniture, painting it or doing (and finishing) all these activities. Even in the context of (12) it remains unclear whether it is necessary to interpret a specific activity. Such examples pose a problem for coercion and qualia structure. Apparently, one does not necessarily change the noun into an event. It is even possible to understand the sentence without interpreting some specific event: it can be left very vague ('finish creating the house') or filled in by several events at the same time ('finish building and painting the house and arranging the furniture in it'). It is, however, unclear how this unspecific, vague event should be derived from the qualia structure of the noun alone.

In fact there are many more examples that cannot be explained with the help of qualia structure. It has already been mentioned in the previous section that contextual information can overrule interpretations on the basis of qualia structure. In some examples the derivation of an activity on the basis of qualia structure is problematic, even without taking additional contextual information into account. This is for instance the case when there is no clear telic or agentive role employed for the NP. Illustrative are examples with *enjoy*, such as *to enjoy the sun* (fifteen examples in the BNC). The sun is not made by humans and thus has no clear agentive role. It is also difficult to say what the telic role is, since the sun does not seem to have a specific goal. Another example is *to enjoy (grand)children* (five out of seventeen relevant examples are metonymically used in the BNC): an agentive role is certainly not intended, but it is also unclear what the telic role should be. It is rather difficult to make the enjoyed event explicit in these examples. One simply enjoys some experience with the children, such as just having them, the time one spends with them, or seeing what they do. Similarly, *to enjoy the sun* means to be exposed to the sun in some particular way, such as seeing it, feeling it, lying in it or walking into it. It poses no problem in the interpretation of the sentence that the way in which someone enjoyed the sun is left unspecified, just as it is no problem to interpret (12) without knowing the exact finished activity.

7. The numbering of the BNC-examples follows the BNC token number of the relevant verb in the sentence (in italics).

Real examples reveal other problems concerning the relation between verb, concrete object and implicit event. Consider (13) and (14).

(13) (BNC #107590681) I *want* a car

(14) (BNC #75896367) I *want* a car, a nice home, a working wife, a child, and to go on holiday.

If you want a car, this does not necessarily mean that you want to drive a car, but rather that you want to obtain a car (i.e. buy or get it) and become the possessor of that car. However, the same goes for a nice home, a working wife and a child, as in (14). Thus, it again remains unclear how the intended interpretation can be inferred. If all kinds of NPs in combination with *want* are interpreted as 'to become the possessor of/get the NP', then the shifted interpretation cannot come from the qualia structure of the noun alone. It is even open to discussion to what extent one can speak of metonymy in these cases. Given that in all cases the same shift appears independently of the (kind of) noun, it is questionable whether it is the noun itself that is metonymically associated with the interpreted event. The same goes for other verbs, such as *choose*.[8] I will come back on this at the end of Section 5.

The same shift can even occur when the verb is already combined with an event, as in (15).

(15) (BNC #15215238) He just *wanted* a quiet, restful life.

Wanting a quiet, restful life means wanting to get a quiet, restful life. This sentence therefore shows that it cannot, at least in these cases, be the missing event that induces the metonymical interpretation. Event-event shifts also occur in verbs that do not have one general shift for all occurrences. An example is *enjoy the lecture*. Although *lecture* is an event itself, this direct object is sometimes treated as logically metonymical, since it can mean *enjoy attending the lecture* or *enjoy giving the lecture* (cf. Lapata & Lascarides 2003: 274). In such cases it is not possible for the shift to be induced on the basis of a missing event. It can thus be questioned whether the logical shift, the fact that a concrete object is shifted into an event, is of any importance.

8. In previous analyses it is stated that sentences with *choose/want* and a concrete object are interpreted on the basis of the agentive or telic role (cf. among others Pustejovsky 1995: 45–46, Ruiz de Mendoza & Pérez 2001: 342). This may be true in some cases, but definitely not in all of them. A sentence such as *I want/choose a beer* does indeed seem to imply that one is going to drink it, but a sentence such as *I want/choose this book* certainly does not have to mean that one will read (or alternatively write) the book. According to my intuition this simply means that the speaker wants to obtain the book, thereby becoming the possessor of the book. One can easily want a book without wanting to read it.

Three important observations can be made on the basis of the preceding findings. In the first place, the examples discussed above and the different classes of verbs introduced at the beginning of this section show that the verbs do not form a homogeneous group. Verbs seem to vary in the type of event that needs to be interpreted. Sometimes the associated event can easily be made explicit, as is the case for most examples of aspectual verbs or verbs of the in-between class. For other verbs it can be difficult to make explicitly clear which event is actually meant. Examples of the latter kind are some emotive-evaluative verbs, such as *endure*, *enjoy* or *fear*. We know that the subject experiences the object in one way or another. Sometimes it is easy to make this experience or exposure explicit (an experience with a book by default means reading it), but in other cases, such as with the sun or children, it is difficult to determine exactly which experience is meant.

Some verbs evoke one and the same specific activity, independently of the kind of direct object. The verb *to want* illustrates this, since for both non-eventive and eventive direct objects the missing activity is often interpreted as *to get/obtain something*. Consequently, as a second conclusion, a correct analysis of logical metonymy should also be able to account for event-event shifts.

A third important observation is therefore that the examples discussed above show that interpreting logically metonymical sentences is not a rigid operation. Although verbs of the aspectual group, for example, clearly need to be combined with an event, even for this group it is not always necessary for our understanding of the sentence to interpret this event in a very specific way, as demonstrated in example (12).

Furthermore, if all verbs and all kinds of examples are subject to logical metonymy, it should be explained why this is so. In other words, it should be explained to what extent these verbs really require an event as a complement, and in what way metonymy is actually involved.

4. Explaining the metonymy in examples of 'logical metonymy'

Apart from the lack of analysis of the differences between the verbs that are said to appear in logically metonymical combinations, it is remarkable that authors do not explain why they call these cases examples of metonymy. Sometimes scholars say that in examples of logical metonymy "one phrase is used in place of another" (Verspoor 1997: 166). This is, however, a rather poor definition of metonymy. Also, although Pustejovsky tries to explain where the conceptual link between noun and verb comes from (from qualia structure), he offers hardly any explanation as to why this should be called metonymy, nor does he define what metonymy actually is. Interestingly, there is a lot of debate in cognitive linguistics about how to define

metonymy (cf. e.g. Barcelona 2000, Panther & Radden 1999, Peirsman & Geeraerts 2006). In this section I will analyse how insights from cognitive linguistics can help to clarify why logical metonymy can be seen as an instance of metonymy.

Since the publication of a chapter on metonymy in *Metaphors we live by* (Lakoff & Johnson 1980: 35–40), the number of cognitive linguistic studies on metonymy has substantially increased. Although the understanding of what metonymy actually is has grown as a result of these studies, it still seems difficult to give an exact definition for it. Most definitions seem to be working definitions, used to contrast metonymy with metaphor (cf. Ruiz de Mendoza & Pérez 2001: 323).

The most important difference between metaphor and metonymy is that the former is based on a conceptual comparison between two things belonging to two different domains, whereas the latter establishes a link between two concepts based on a relationship in the real world. This is in line with traditional accounts that define metaphor as an association based on comparison or analogy and metonymy as an association based on contiguity (cf. Panther & Thornburg 2007: 237).

This association based on contiguity, that is, on a relation in the real world, is also reflected in one of the most famous definitions of metonymy, which was provided by Kövecses and Radden. They write, "[m]etonymy is a cognitive process in which one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target, within the domain or ICM [idealized cognitive model]" (Kövecses & Radden 1998: 39). With this definition they essentially follow Langacker (cf. also Panther & Thornburg 2007: 241), who analyses metonymy as a reference point phenomenon (Langacker 1993: 30). According to Langacker, the metonymical expression is used as a reference point to an intended concept. Because an inference has to be made from one concept to another related concept, other scholars speak of conceptual mapping within a semantic domain or conceptual structure (Ruiz de Mendoza 2000: 130, cf. also Lakoff & Turner 1989, Lakoff 1987). In essence, all these accounts are basically the same, the only difference being that they originate at different starting points. A definition in terms of conceptual mapping focuses directly on the link between concepts (the literally expressed and the intended one), whereas a definition which uses phrases such as 'mental access' or 'reference points' concentrates on language users and the inferences they have to make from one concept to another.

Croft analyses in detail how conceptual mapping within a domain actually works. He explains that this domain-internal mapping can be understood as "domain highlighting" or, in the case of several embedded domains, highlighting within a domain matrix (Croft 1993: 348, 350, Croft 2006: 320–323). Domain highlighting is a conceptual effect which emphasises certain semantic features of a concept (cf. Cruse 1986: 53). Croft illustrates domain highlighting by examining the different meanings of the phrase *Time magazine*, which, depending on the

highlighting, can denote the newspaper itself, its publishing company, etc. This definition of metonymy is in line with much earlier acounts, especially those in which the focus lies on metonymy as a mechanism for explaining certain instances of polysemy (cf. Moerdijk 1989).

In this way, Croft's definition shows us that metonymy is a shift in semantic features within a relevant part of a conceptual or semantic structure.[9] However, metonymy not only causes a shift in semantic features but also, and most importantly, causes a shift in the expressions used. Instead of making the target concept explicit, a different metonymically shifted word is used: the source or vehicle. The "domain highlighting" thus actually involves a highlighting from two different perspectives. The highlighting can be analysed in the traditional way, from the used word to the metonymically intended concept, as well as the other way around (i.e. semasiologically as well as onomasiologically). It is not the target as such that has been made explicit, but instead a semantic element of the target-concept has been highlighted by explicitly expressing this in a sentence. These two perspectives on highlighting can be illustrated with a traditional example of metonymy such as *I am reading Shakespeare*. The interpretation of *Shakespeare* has shifted. *Shakespeare* should not be interpreted as the author, instead the semantic feature that indicates that authors write books has been emphasised. However, this highlighting depends on the fact that the author-element of the interpreted *book* concept is explicitly highlighted in the sentence by the use of the author's name. To summarise, the highlighting of a certain meaning aspect of the metonymical word is caused by the fact that the use of this word is an explicitly highlighted aspect of the interpreted concept.

The same applies to logical metonymy. Because metonymy is involved, semantic traits that do not constitute the literal meaning of an object are shifted (i.e. highlighted). This explains the fact that the metonymical object gives conceptual access to an event. The shift in interpretation follows, however, from the fact that some element (the object) of the interpreted event is explicitly given more importance (i.e. explicitly highlighted) in the sentence. This theoretical explanation is an exact description of what is going on intuitively. Instead of expressing the whole

9. Although domain highlighting is often cited as a definition for metonymy given by Croft, according to Croft himself domain highlighting cannot be a sufficient characteristic for metonymy, since in some cases, highlighting part of a semantic structure is not an instance of metonymy (Croft 1993: 349). He gives the examples of the sense distinctions of *window* (as a sheet of glass or as an opening) or of *book* (as a text or as a tome) (cf. also Koch 2001). I do not, however, see a crucial difference between examples of metonymically driven polysemy given by Croft, such as *newspaper* (the magazine, the company, etc.) and the sense distinctions of *book* or *window*. The context dependent senses of *window*, for example, are sometimes even given as an example of metonymy (cf. Ruiz de Mendoza & Pérez 2001: 235).

event, only a crucial element of the event is highlighted, and this causes the expression used to be interpreted slightly differently. In order to work this out beyond intuitions, one should try to explain which kind of semantic domains or cognitive structures are involved in all the cases mentioned above.

Because it is so difficult to spell out what semantic domains or cognitive structures actually look like, research on metonymy often leaves the domains implicit. As Peirsman and Geeraerts point out, this is problematic and has often been criticised, because the definition of metonymy relies heavily on the notion of there being one domain or one domain matrix (cf. Peirsman & Geeraerts 2006: 270–271). According to them there are two solutions to this problem. Either one can try to specify the conceptual structures (domains, frames or ICMs), or one can define metonymy by focusing on the nature of the conceptual relationship as such (Peirsman & Geeraerts 2006: 273). In their paper they choose the second approach and make a prototypically structured analysis of all kinds of contiguity relations. Although their prototypically structured category beautifully avoids vagueness and is an important contribution to the field of metonymical research, it is less useful for grammatical metonymies (such as logical metonymy). This is because their contiguity category is solely based on lexical patterns and semantic changes (Peirsman & Geeraerts 2006: 309, 310, cf. also Croft 2006: 324).

This paper therefore opts for the other solution, that of specifying the conceptual structures. In fact, there is a long tradition of researching semantic domains and conceptual structures, independently of theoretical research on metonymy. FrameNet is very important in this respect (http://framenet.icsi.berkeley.edu/). Based on Fillmore's concept of a frame, FrameNet is a project which tries to design, as precisely as possible, a description of such structures on the basis of real linguistic data.

Such a structure, a semantic frame, is seen as "a script-like conceptual structure that describes a particular type of situation, object or event" (Ruppenhofer et al. 2006: 5). If metonymy is a cognitive process that highlights part of a conceptual structure, it must be possible to analyse a logically metonymical noun as a highlighted part of a frame. Frames can thus be very useful in explaining the metonymy of logical metonymy.

Frames are evoked by words or, more formally, lexical units (LUs). Each frame, and in particular a frame describing events, is connected with participants that are necessary for the conceptualisation of the meaning. These participants, or roles, are called frame elements (FEs) (Ruppenhofer et al. 2006: 5), and can be divided into core and non-core frame elements. Core frame elements are "conceptually necessary components of a frame" (Ruppenhofer et al. 2006: 26). In order to account for logical metonymy, one should first analyse which frames are involved in non-metonymical sentences, such as (16).

(16) Mary began to read / reading.

FrameNet analyses sentences as the evocation of a frame by the main verb, with the other words in the sentence analysed as syntactic realisations of its frame elements (Ruppenhofer et al. 2006: 5–6). In (16) the main verb *began* is a lexical unit (LU) that evokes the so-called `Activity_start` frame. Two core frame elements are included in this frame: an AGENT and an ACTIVITY (cf. http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Activity_start&). In (16) both frame elements are realised: *Mary* is the AGENT of the started ACTIVITY *reading/to read*.

It is interesting to note, however, that the lexical unit expressing the ACTIVITY evokes its own frame. The verb *read* evokes the `Reading` frame with a READER and a TEXT as core frame elements. Therefore, one can say that in (16) the `Activity_start` frame is combined with the `Reading` frame.

This idea of multi-layered conceptual structures can explain what is going on in (17) (the metonymical counterpart of (16)).

(17) Mary began the book.

Again the verb *begin* evokes the knowledge structure of starting an activity. The core frame elements of this structure are, as explained above, an AGENT and an ACTIVITY. The AGENT is obvious: it is realised as *Mary*. The ACTIVITY is missing, but instead some element of the frame corresponding to the intended ACTIVITY can be found: the object that plays a key role in it. Since we understand that not the ACTIVITY itself is expressed, but only a core frame element of the embedded frame is highlighted, we know how to interpret this sentence. The semantics of *book* is metonymically enriched (cf. Jackendoff 1997: 47ff), because it is the lexical unit that corresponds to the core frame element TEXT of the `Reading` (or `Writing`) frame.

The meanings conveyed by (16) and (17)[10] are represented in Figure 1. Figure 1 is a graphic representation of what is described in the previous sections. The lexical unit *begin* in (16) and (17) belongs to, and therefore evokes, the `Activity_start` frame. This frame has two core frame elements, namely an AGENT and an ACTIVITY. In both sentences the AGENT is expressed by the lexical unit *Mary*. Sentences (16) and (17) differ with respect to the explicitness of the core frame element ACTIVITY. The square brackets are used in Figure 1 to indicate this difference. In (16) the second core frame element of the `Activity_start` frame

10. Of course, the meaning represented in Figure 1 only applies to (17) under the assumption that a reading and not a writing event is intended by the sentence.

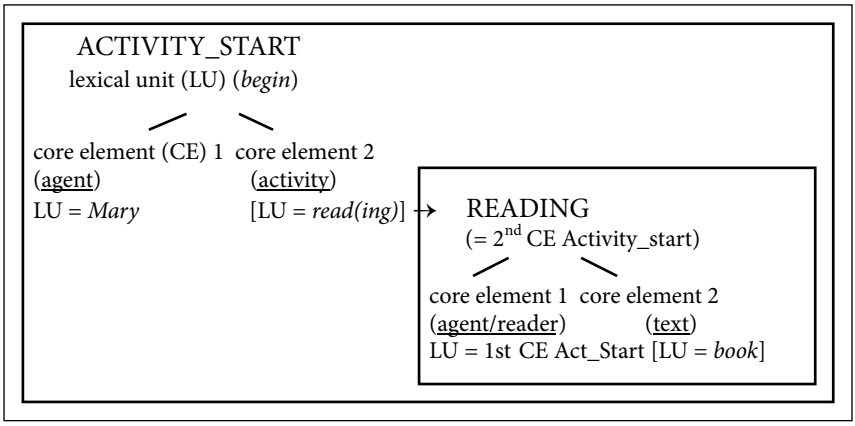

Figure 1. The conceptual structure for *Mary began reading / the book*

is made explicit as *reading*. This lexical unit evokes its own conceptual structure.[11] Given the combined structure, the same meaning can be expressed in a different way, as in (17). In this case the required ACTIVITY is expressed metonymically: only a core frame element of the conceptual structure corresponding to the intended ACTIVITY (i.e. reading) is highlighted, while the ACTIVITY itself is left implicit. Since we know that we need to interpret an event, and that *book* is a TEXT, we understand that *book* can be the expression of the second core frame element of the `Reading` frame. In this way we understand that Mary began to read.[12]

It is important to note that FrameNet itself has an explicit but different analysis of how to account for "Pustejovskian coercions" within frames (Ruppenhofer et al. 2006: 12–13). The explanation is illustrated by the difference between *want to win* and *want an orange*. Because a frame element should be in a constant relationship with the verb, each frame element must be of a specific type. The phrases *want to win* and *want an orange* both belong to the `Desiring` frame, but *to win* has a different relation to *want* within the frame than *an orange* because of the type difference. There are therefore different frame elements involved. This idea is reflected in the `Desiring` frame: a core frame element of this frame is FOCAL_PARTICIPANT.

11. Because FrameNet does not use embedding in this sense I will avoid using the term *frame* and will simply call them *conceptual structures* (with their names in normal font starting with a capital and core element names between single quotes in the main text). I will only use the term *frame* when I am referring directly to the conceptual structures that FrameNet have defined on their website (http://framenet.icsi.berkeley.edu/).

12. Or to write, since TEXT is also a core frame element of the `Text_creation` frame, to which *write* belongs (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Text_creation&). Pragmatics and context make it possible to choose the correct option.

The direct object of *to want an orange* is explained as the realisation of the Focal_participant of the Desiring frame.

There are, however, a number of drawbacks to this explanation. In the first place FrameNet does not use the notion Focal_participant consistently in its databank on the Internet. Among the thirteen frames developed for the twenty-one English verbs that can appear with logically metonymical direct objects (cf. http://framenet.icsi.berkeley.edu/), there are only two frames with this kind of Focal_participant as a frame element.[13] Even in the case of the prototypical aspectual verbs like *to begin* or *to finish*, nothing is said about the realisation of a Focal_participant.[14] Secondly, other cases of metonymy, such as *I am reading Shakespeare*, are never explained with the help of Focal_participant (cf. e.g. the Reading frame). Such classical metonymies, however, behave in a very similar way. Instead of the realisation of the Text frame element of the Reading frame the Author frame element of the Text frame is explicitly highlighted and as a result the interpretation of *Shakespeare* is metonymically shifted. The approach taken in this paper does not have these drawbacks, owing to combinations of conceptual structures. The 'focal_participant' is already present in the main conceptual structure, because it is a core element of the embedded Activity conceptual structure.

To summarise, the frame-semantic analysis developed in this section provides an explanation for the metonymy in logically metonymical sentences such as (17). Because part of a conceptual structure is explicitly highlighted, the object metonymically gives mental access to an event. It also makes clear which 'focal_participant' can be metonymically selected. Only core frame elements of the frame (evoked by the specific started activity) can appear metonymically, signifying the frame as a whole. In addition, the explanation presented in this section solves some of the problems discussed above. However, before I explain in detail in Section 6 how these problems are solved under the present account, I will first clarify how the above analysis can be applied to different verbs that appear with logically metonymical direct objects.

13. The thirteen relevant frames are Activity_finish, Activity_ongoing, Activity_start, Activity_stop, Attempt, Change_event_time, Choosing, Desiring, Expectation, Experiencer_focus, Preference, Surviving (cf. Section 6). The two frames with the Focal_participant frame element are the Desiring and Preference frame.

14. The relevant frames can be found at http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Activity_start& and http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Activity_finish& respectively.

5. Accounting for the continuum of logical metonymies

In the previous section I offered an explanation, by means of conceptual structures, of what metonymy does in logical metonymy. I used FrameNet as a basis for these conceptual structures, although the argumentation itself differs from FrameNet (Ruppenhofer et al. 2006: 12–13), because I assume that specific conceptual structures (CSs) can be combined. The combination of CSs is reflected in sentences such as (16), where the Reading CS is incorporated in the main Activity_start CS. The combination of CSs allows us to explain the metonymical object of sentence (17) without stipulating a specific core element (such as a 'focal_participant') in the main CS (the frame evoked by the main verb). Instead, the concrete object is considered to be a highlighted eventive core element of the Activity CS. This fits perfectly in the definition of metonymy proposed above.

All verbs of the aspectual group behave in a straightforward way. They all take an Agent and an Activity as their core frame elements, independent of whether the `Activity_start` frame (*begin*, *start*), the `Activity_ongoing` frame (*continue*), the `Activity_stop` or `Activity_finish` frame (*finish*, *complete*) or the `Change_event_time` frame (*postpone*) is evoked.[15] In all examples, the expression of the Activity evokes a more specific CS. As well as expressing this CS right away (as in (16)), it is possible to highlight one of its core elements (as in (17)). Based on the core element of a combined CS we can understand which CS is referred to. This observation applies to all combinations of all relevant aspectual verbs and a concrete noun, as in (18)–(25).

(18) (BNC #21242366) I've *begun* a novel!!!

(19) (BNC #55429521) Charlotte *began* a new book — Emma, she called it.

(20) (BNC #42724097) And, after he *completed* his report in about three months' time, it would be published, she said.

(21) (BNC #66009259) In fact, now you've rumbled me, may I, would you mind if I *postponed* the coffee just a few moments more?

(22) (BNC #37893)We *finished* our coffee

(23) (BNC #11483772) Mariana had *finished* the soup. She lowered the mug under her own volition and he took it from her.

(24) (BNC #22729772) Ben the actor appeared beside them and *started* his piece,

15. In the latter structure FrameNet speaks about an Agent/Cause and an Event. The type shift between a concrete object and an event does of course remain the same.

(25) (BNC #38708637) Mr. and Mrs. Harvey, the master and matron, were both away on sick leave in the early months of 1900, and the Board received a letter from their general practitioner, Mr. C. G. Johnson, to say that they were making good progress and that he recommended *continuing* the champagne which had contributed to their recovery. The clerk was instructed to inform Mr. Johnson however that the guardians 'did not see their way to continuing supplying champagne'.

A core element of the CS is highlighted in these sentences (*the text*, *the drink*, *the food*, *the play*, *the medicine*), instead of fully expressing the intended event structures (*writing*, *drinking*, *eating*, *playing*, *using as a medicine*). All these sentences can thus schematically be represented in a figure such as Figure 1, with slightly different main structures and with activity structures filled in specifically. Figure 2 illustrates this.

In fact, all verbs that can be combined with logically metonymical direct objects can be accounted for by a figure such as Figure 2. Although each verb belongs to a different main CS, each of them needs to combine with some kind of event. One thus expects all of them to have an eventive second core element, irrespective of the exact details of their main CS.

The two frames with the Focal_participant frame element namely the `Desiring` and `Preference` frames, are evoked by the verbs *desire* and *prefer* of the emotive-evaluative group. If one examines these two frames, one notices that they are basically the same as the frames for the aspectual verbs, since their second core frame element is an Event. The only difference is that instead of an Agent they take an Experiencer as their first core frame element. As explained above, the third frame element Focal_participant is redundant, because it is automatically incorporated into the embedded frame evoked by the Event.

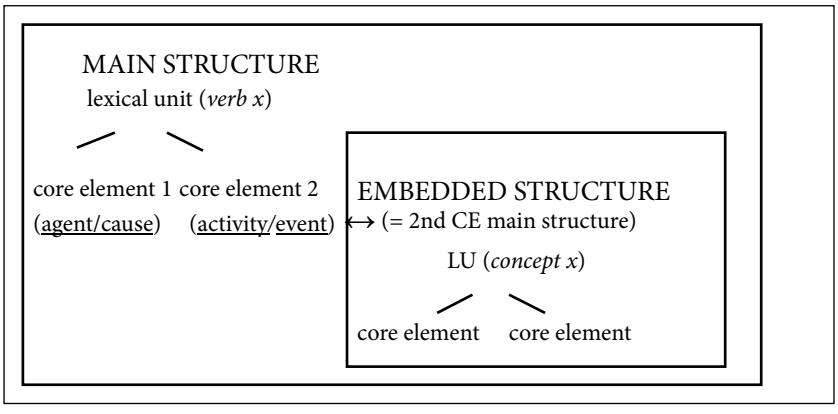

Figure 2. The representation of a conceptual structure with an event as 2nd core element

The Desiring and Preference frames are closely connected to the Experiencer_focus frame.[16] The Experiencer_focus frame is by far the most dominant frame within the evaluative-emotive verbs: *enjoy*, *fear*, *regret* and *savour* directly belong to this frame and *endure*, which has not been defined yet in any frame in the FrameNet online-database, also evokes the Experiencer_focus frame. Since the Desiring and Preference frames, which have an Event as a core frame element, are so closely related to the Experiencer_focus frame, one would expect that the Experiencer_focus frame also has an Event as one of its core frame elements.

Although it is the case that the Experiencer_focus frame contains the frame element Event, this is nonetheless problematic. The Experiencer_focus frame is defined as describing "an Experiencer's emotions with respect to some Content" and this Content may "refer to an actual, current state of affairs" and "quite often it refers to a general situation" (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Experiencer_focus&). It is therefore possible to conclude that the Content must be some kind of event. This is exactly in line with our intuition that some sort of activity is required for the correct interpretation of these evaluative or emotive verbs. However, apart from the eventive Content another separate core frame element of this frame is an Event. The fact that the Experiencer_focus frame contains this additional eventive core frame element is problematic, because it seems possible that the Event ("the occasion or happening that Experiencers in a certain emotional state participate in") coincides with the Content ("what the Experiencer's feelings or experiences are directed towards or based upon"), exactly as stated in the above definition of Content. It is thus debateable whether there are really two different frame elements involved.

In my opinion, we are only dealing with one core frame element, the Event, which causes the Experiencer's emotional state. In order to avoid confusion as to whether the Content is an event or whether some Event includes some Content, I will use 'experience' as a label for the second core element. Intuitively, this core element seems to be interpreted as an experience and furthermore, it perfectly fits both descriptions of Content and Event. The "actual, current state of affairs" or "general situation" that "Experiencers in a certain emotional state participate in" (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Experiencer_focus&) is the experiencer's experience. The CS

16. The Preference frame 'inherits from' the Desiring frame, which 'uses' the Experiencer_focus frame. This means that the Preference frame is a subtype of the Desiring frame and the latter presupposes the Experiencer_focus frame (Ruppenhofer et al. 2006: 8, 104, 110).

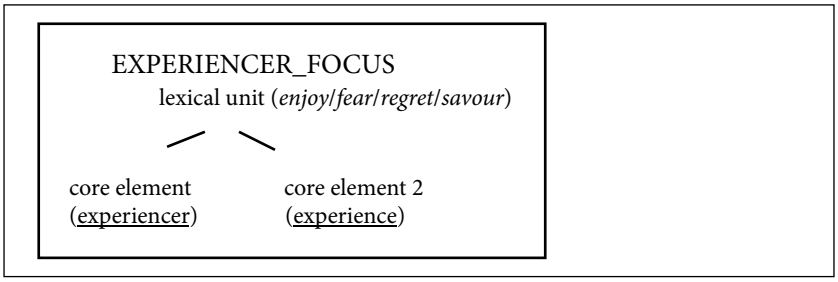

Figure 3. The conceptual structure Experiencer_focus (new definition of the original frame)

Experiencer_focus can thus be redefined as: some 'experiencer' is brought into a certain state by some 'experience'. The CS can be schematically represented as Figure 3.

The 'experience' can of course be made more explicit by a certain lexical unit. In that case, the 'experience' evokes a new CS, just as in all the other cases discussed above (cf. Figure 2). In the same way as *Mary began reading* combines the Reading CS within the Activity_start CS (cf. Figure 1), a sentence such as *Mary enjoys eating* embeds the Eating CS within the Experiencer_focus CS (Figure 3, 4). In the case of logical metonymy of *Mary enjoys the sandwich*, the 'experience' itself is not expressed, but instead one of its core elements is highlighted.[17] It is easy for us to understand the metonymical object, since we interpret enjoying the sandwich as enjoying some experience with a sandwich, such as enjoying the taste or, more generally, eating it. The metonymical link between *sandwich* and *eating* is thus established by the fact that a sandwich is a kind of food and 'food' is a core element of the Eating CS. We can interpret the metonymy correctly thanks to our understanding of the metonymical link and due to the fact that we know that eating is a specific 'experience' of the type we were looking for.

Although this example can be analysed in the same way as examples with aspectual verbs, such as *begin*, the second core element is not just any possible activity. The event required by *enjoy* has already been specified as an 'experience'. In the case of a concrete direct object one therefore has to search for a more specific event than simply an activity. This explains why *begin a sandwich* requires an actual

17. In the time between the first and final version of this paper the frame for *enjoy* has been updated by FrameNet: the verb *enjoy* is said to belong not only to the `Experiencer_focus` (previously labelled `Experiencer_subj`) frame, but also to the `Emotions_of_mental_activity` frame. The core frame elements of the latter frame are an Experiencer and a Stimulus. I would suggest that the Stimulus is already incorporated in my conceptual structure for *enjoy*, since it could be considered as a core element of the embedded 'experience' CS (in a similar way as is the case for a Focal_participant).

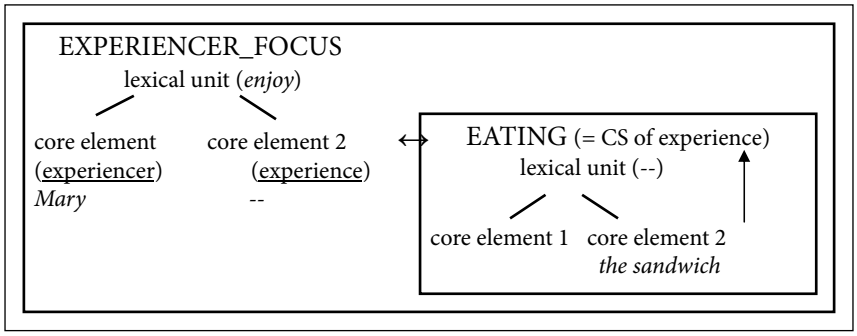

Figure 4. The conceptual structure for *Mary enjoys the sandwich*

event to be started (namely eating or preparing the sandwich), whereas *to enjoy the sandwich* seems to mean something like *to enjoy experiencing the sandwich* (eating or tasting it). This intuition is reflected in language data, because it is often difficult to make the exact experience explicit, such as in *to enjoy the sun* or *to enjoy your children* (cf. Section 3). An analysis based on conceptual structures is thus more specific and more flexible at the same time. Since we know that some 'experience' is conveyed in the case of *enjoy*, we by no means need the sentence to be more explicitly specific. It is only possible to make the experience explicit, if the experienced object is the core element of a specific experience CS, such as with different types of food that are core elements of the Eating CS.

The relevant CS of the emotive-evaluative verb *expect* also requires some kind of event. The verb belongs to the `Expectation` frame with Cognizer and Phenomenon core frame elements. The Phenomenon is defined as "what the Cognizer believes will happen in the future". It is thus not as specific as in the case of the `Experiencer_focus` verbs, but more specific than just any event, since it is something that will probably happen in the future. This future event evokes its own CS, and in the case of (logical) metonymy it is not the Phenomenon itself which has been made explicit, but only some core element in the CS. An example is *expect a reply* (cf. Lapata & Lascarides 2003) which means 'expect to get a reply or answer'.[18]

The eventive core element of the verbs in the in-between class is similarly a type of event that is more less specific than the Event frame element of the `Experiencer-focus` frame, but specific than the eventive core element of the

18. According to FrameNet, a third core frame element of the `Expectation` frame is Topic, defined as "An entity that serves as the focus of a predicted Phenomenon" (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Expectation&). Since I am assuming that an event like 'phenomenon' evokes its own frame, the 'topic' is automatically incorporated into the main CS via the embedded CS, and we do not need to add it as a core element of the main structure (just as was the case with the Focal_participant).

aspectual class. The verb *survive*, for instance, belongs to the Surviving frame, which consists of the frame elements Survivor and Dangerous_situation. Again, the logical metonymy can be analysed in the same way. It is possible to leave the Dangerous_situation implicit and highlight only one of its elements. This option gives us metonymical sentences in which only a core element within a CS is highlighted. Since we know that some Dangerous_situation must be involved, we have no trouble interpreting these metonymical objects. (26) and (27) illustrate logical metonymy with *survive*.

(26) (BNC #34230932) Another child, who *survived* the bacteria, was found to be carrying it on July 15.

(27) (BNC #15595835) In order to *survive* the jungle and live to tell the tale it is important not only to have good companions, but also to have the best available equipment.

The dangerous events that must be survived are infection by some bacteria in a hospital and travelling through or living in the jungle, but only some part of these situations (i.e. of the Medical_conditions and the Travel or Residence frames) are highlighted (namely the Cause and the Area or Location respectively).[19] We are able to understand these sentences, because we know that bacteria are causes of diseases and the jungle is an area or location. In other words, we know that they can be the lexical units corresponding to the core elements of these CSs.

The verbs *attempt* and *try* in the in-between group both belong to the Attempt frame, with the core frame elements Agent and Goal.[20] This goal must also be some kind of event, since it is defined as "what the Agent attempts to achieve" (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Attempt&). If a sentence is uttered in which the Goal as such is left implicit, we can still understand it correctly, since we know that we have to interpret an event that is intended as a final Goal. We thus understand that if one tries the door, one tries to open it, if one tries the sandwich, one tastes it and if one

19. Sentence (27) again shows that the noun does not have to be coerced into a specific event. In order to understand the sentence, it is not necessary to decide which of the two events (i.e. travelling trough or live in) should be interpreted. It is even possible that they are both intended.

20. As for *resist*, *miss* and *master*, no frames have yet been developed in FrameNet for the relevant meanings: The verb *resist* only belongs to the Repel frame, *miss* to the Succession_or_failure and the Hit_or_miss frames, and *master* to the Teaching_education frame.

attempts a summit or difficult questions, one actually attempts to climb this summit or answer the difficult questions.[21]

Various verbs that are said to appear with logically metonymical direct objects thus form a single class in the sense that in each case some kind of event needs to be interpreted, and this event evokes its own CS. In the case of metonymy, core elements of the embedded structure are highlighted, and this causes the highlighted elements to be interpreted on the basis of something more than their literal meaning. This explanation does not deny the existence of a continuum of cases. On the contrary, since verbs vary in the specificity of the required event (their second core element), the continuum is accounted for. The requirement for an event is stronger in *to begin a book* than in *to enjoy a book*, since the former requires some activity in general, whereas the latter needs to be combined with a certain experience.

We reach the boundaries of the continuum of logical metonymy at the point where we no longer require an event, in other words, in the absence of an eventive core element. An example is an emotive-evaluative verb *choose* in the `Choosing` frame. The second core frame element Chosen can but does not necessarily have to be an event. It can be "either an item or a course of action", that is, it "identifies the entity or the course of action which is selected" (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Choosing&). *Choose* thus belongs to the periphery of verbs that can appear in logically metonymical verb-direct object combinations. This reflects our intuitions perfectly. *Choosing something* can simply mean 'selecting an object' without interpreting an additional event in order to make the interpretation of the assertion complete.

6. Some problems resolved

This paper's account does not only incorporate the continuum of logical metonymies but also has some other advantages. In this section I will demonstrate that an analysis in terms of conceptual structures based on the frames of FrameNet presents a solution for the problems examined above, because such an analysis can explain language use and linguistic data much more satisfactorily in several respects.

In Sections 2 and 3 I discussed problematic linguistic tests and examples that could not be explained in terms of qualia structure. The account I present in this

21. There are numerous examples of this, on the Internet as well as in the BNC (e.g. (BNC #6948008) She *tried* the door.; (BNC #29270605) Rickie would not even *try* a sandwich; (BNC#44839007) Carlos told her he would wait at Camp IV while she *attempted* the summit; (BNC #15096392) … that teachers will be advising 'average' pupils not to *attempt* the difficult questions).

paper is not confronted with such problems. In the first place, this is a consequence of the fact that my analysis does not presuppose that core elements change their type. Metonymical expressions, or highlighted core elements, are not really changed into events as such, i.e. into the whole embedded frame. While a metonymical core element keeps its literal meaning, it is only the interpretation as a whole which is enriched by highlighting semantic features. Therefore, the tests used by Godard and Jayez 1993 (cf. (4)–(9)) pose no problems to the present approach, although one can still assume that the main verb has one and the same meaning (the same CS), independently of whether it is combined with an explicit activity or a concrete metonymical object.

The enrichment of the interpretation as a whole stems from two sources. Firstly from the connection of concrete objects with CSs that have these objects as core elements, and secondly from the required core elements of the matrix verb. *To begin a book*, for example, is interpreted as *to begin reading* or *writing* because *book* is a core element of the Read and Write CSs, and also because the evoked `Activity_start` frame needs an Activity frame element.

As a consequence, the interpretation can remain vague. It is not a problem that, for example, *to finish a house* can involve several actions (cf. sentence (12)), since it is not assumed that *house* coerces into a specific activity nor that this activity can only be made explicit on the basis of the NP. The interpretation of an activity involving a *house* that is finished can simply be filled in with something like *creating*. The use of CSs allows this flexibility: one simply searches for an activity with *house* as the lexical unit filling in one of its core elements. Embedding an (implicit) Creating CS fulfils this requirement, since *house* can be the linguistic realisation of its core element 'created entity' (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Creating&).

This approach implies that the flexibility of these structures allows interpretations that do not originate in the semantics of the concrete object alone. It is possible that one specific kind of shift occurs with different concrete direct objects, since the intended interpretation does not only arise on the basis of an object being a core element of a CS, but also on the basis of the eventive core element of the main verb. An illustrative example is *to want something*, which is often interpreted as *to want to become the possessor of something* (cf. sentences (13)–(15)). The desired event does not need to be very specific, it can simply be filled in by the desire to *obtain/get* something. The possible concrete objects fit in the interpreted Getting CS, since they can be interpreted as the realisation of the obtained element that comes into one's possession (the core element 'theme') (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Getting&). This core element can even be an event in itself, which explains why *want a nice life* in (15) can be spelled out as 'want to get a nice life'. The interpretation does

not simply come directly from the semantics of the direct object, but also arises on the basis of the interplay between knowledge of the semantic requirements of the main verb, general knowledge (the fact that obtaining/getting something can be a desire), and knowledge of core frame elements of frames that match these requirements. In this way, the present analysis is able to account for real language data in a better way than previous accounts.

Furthermore, this account can handle the pragmatic dimension of metonymy. Because the interpretation arises from the combination of semantic restrictions on the main verb (the main CS) with semantic restrictions on the interpreted event (the embedded CS), an interpretation is only possible if all core elements fit together (cf. Figure 2). The fact that all CSs have to fit explains how default interpretations can be blocked by contextual knowledge. If a book is made of marzipan or if John is a goat, it is not possible to get a Reading or Writing interpretation for *John began the book*, since not all elements fit within these evoked structures. In the first case conceptually *book* is not a 'text' anymore, and cannot be the second core element of a Reading or Writing CS. Thanks to the knowledge language users have about the direct object *book*, they will interpret an Activity CS involving some type of 'food' as a core element. We thus end up with the Eating CS, and correctly understand that Mary began to eat the marzipan book. In the second case, if we know that Mary is a goat, a Reading or Writing structure cannot be inferred due to a mismatch with the first core element of these embedded CSs (cf. Figure 1). The Reading and Writing CSs have two core elements, a 'text' and a 'reader' or 'writer' respectively, and since the agent (Mary the goat) can neither read nor write, both CSs are blocked.[22] The sentence is reinterpreted by searching for an activity that can be performed by a goat with a book. Since two CSs are combined, all core elements play a role in inferring the correct interpretation. It is essential that all elements should fit, and therefore properties of the direct object (e.g. the marzipan book) as well as properties of the subject (the goat Mary) can block the interpretations of certain CSs (in this case Reading and Writing).

Additionally, the present account provides an answer to the question of which concrete objects can be used metonymically. Only core elements can be highlighted in order to interpret the correct CS. Analysing logical metonymy as highlighting core elements of CSs can thus equally account for the metonymical link. The metonymical association is still based on lexical-conceptual information, though on being a core element of a conceptual structure rather than on a rich representation like qualia structure. This analysis clearly puts logical metonymy in line

22. In fairytales goats can sometimes read or write, and in such contexts both interpretations are not necessarily blocked. This is correct, since in a fairytale *Mary the goat began the book* can mean that she began a reading or writing activity.

with other forms of metonymy, such as using the name of an author for his work (*I am reading Shakespeare*) or metonymical polysemy (the metonymically related meanings of *newspaper* as the magazine, the company, the people working there, etc. cf. Croft 1993). In each of these examples the metonymical link, a 'real world' relation, is established due to the fact that the word used is a core element of a CS.

In summary, one can say that the approach in this paper accounts for the variety of verbs and examples, is compatible with Godard and Jayez linguistic tests, allows more flexibility than previous accounts and explains why certain contextual information (such as properties of the subject or object) can generate non-default interpretations. In addition, various types of language data are captured, such as event-event shifts and a single shift for all nouns. Furthermore, it explains why logical metonymy is an instance of metonymy, and how the metonymical link is established. In the next section I will discuss an additional advantage.

7. Another kind of logical metonymy

The above analysis does not exclude the possibility of core elements other than the second core element of the embedded CS being highlighted. The question can be raised whether it is possible to highlight the first core element of an embedded CS if this core element is not co-referential with the subject of the main verb. This question can be formulated more generally, by asking whether there are logically metonymical direct objects (i.e. metonymical direct objects with an additional shift between concrete thing and event) of a different form than OBJECT FOR ACTION IN WHICH THE OBJECT IS INVOLVED. Highlighting the first core element will result in a logical metonymy of the pattern PARTICIPANT (AGENT) FOR ACTION.

Such metonymies do indeed exist. Some main verbs which require an event from a strictly semantic point of view, allow the agent or another crucial participant of an event as their direct object. Although such examples have been neglected in modern studies, they have been recognised as instances of metonymy by dictionaries. In some traditional Dutch dictionaries (such as WNT and Van Dale) these examples are labelled as *metonymisch* ('metonymical') or *objectsverwisseling* ('object change'). The latter is defined as a special instance of metonymy and is considered to be a metonymical shift between related participants involved in the meaning expressed by the verb (cf. Van Dale 2005 under the lemma *objectsverwisseling*). These metonymical direct objects can even be concrete individuals, although an event is required for a full interpretation.

A clear example of a verb that can be combined with a first core element instead of an event is *to interrupt* (Dutch: 'onderbreken'). Strictly speaking, it is only possible to interrupt events (activities or processes), such as, for example,

conversations or presentations. It is, however, also possible to use the combination *to interrupt someone/the speaker*. Since there exists an obvious real world relation between the speaker and the presentation or conversation, we understand that the conversation or the presentation of the speaker was interrupted.

This example has to be regarded as an instance of metonymy in the sense that the interpretation involves more than the literal meaning, since the expression used (the vehicle) gives mental access to the event (the target). This mental access, or conceptual mapping, is possible on the basis of a contiguity relation. It is a mapping within one domain or frame, and therefore highlighting is involved. The example is an instance of logical metonymy because the metonymical shift is paired with a type shift, because a concrete person who is involved in the event is mentioned as the direct object, instead of the interrupted event.

As far as I know, such examples are not discussed in the existing literature on logical metonymy. These cases are probably neglected because they follow a different metonymical pattern than the examples discussed above, and therefore cannot be explained in terms of qualia structure. In the present account, which explains logical metonymy as highlighted elements of incorporated frames, they can be analysed in the same way as the other instances of logical metonymy.

To see how a similar analysis applies to these examples, consider (28).

(28) Mary interrupted the talk.

The main verb in (28) evokes the `Interrupting_process` frame. The core frame elements of this frame are a Cause (with a related Actor) and a Process "that goes into the paused state due to the Cause or Actor" (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Interrupt_process&). Both of the core frame elements are realised in the sentence above: Mary is the Actor who interrupts a Process or event, in this case the talk.

Since a talk is an event in itself, it evokes its own frame. According to FrameNet the word *talk* belongs to the `Discussion` frame, which has a Topic and possibly several Interlocutors as frame elements (http://framenet.icsi.berkeley.edu/index.php?option=com_wrapper&Itemid=118&frame=Discussion&). This combination of CSs is schematically represented in Figure 5.

We interpret metonymical sentences, such as (29), on the basis of conceptual knowledge as represented in Figure 5.

(29) Mary interrupted John.

Since Mary cannot interrupt a person as such, we understand that she interrupts what John is doing, in this case talking. The expression *John* is metonymical, since it is a highlighted core element of the implied event. If (29) is used to express the state of affairs as represented in the CSs of Figure 5, John is one of the highlighted

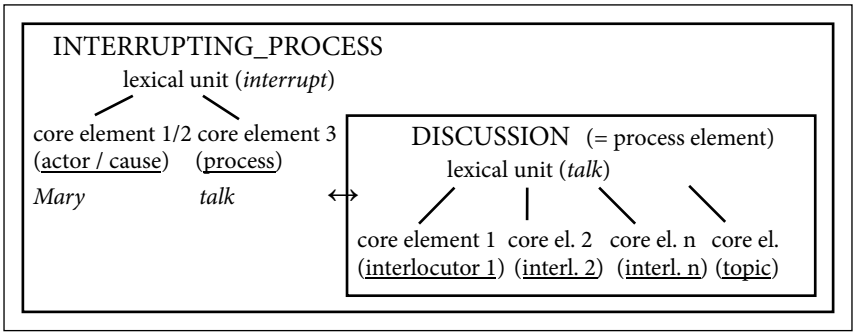

Figure 5. The conceptual structures for *to interrupt a talk*

interlocutors of the paused talk. Other interpretations are similarly possible. If John is interrupted by Mary while giving a lecture, we understand that John, whom we know to be the speaker, is the highlighted agent of the lecture.

Another verb that allows the combination with logically metonymical direct objects is the Dutch verb *afvlaggen* ('to flag down'). Strictly speaking, events like races are flagged down, but since races are executed by race-drivers, it is possible to highlight the driver and mention him in the direct object position. Apart from *de race afvlaggen* ('flag down the racing') one can use *de coureurs afvlaggen* ('to flag down the racing drivers').[23]

8. Conclusions

There are two assumptions that underlie all research on logical metonymy of verb-concrete object combinations. The first is the implicit assumption that all combinations work in a similar way, because all main verbs actually need to be combined with an event. The second assumption, which is made explicit but is hardly ever explained, is that all combinations of these verbs with concrete direct objects are cases of metonymy. These assumptions have never been questioned, probably due to the fact that in most studies only prototypical verbs, or a limited number of data confirming the theory in advance, have been taken into account (with Verspoor 1997 as a notable exception). In this paper, however, both assumptions have been

23. This example shows that there are cross-linguistic differences. Although the latter expression is intelligible in English, it is not correct. German behaves in a similar manner as Dutch, since it does allow this kind of metonymical shift (*Rennen/Rennfahrer abwinken*). Metonymies are thus constrained differently in different languages. Although some studies on this topic have been published (cf. Godard & Jayez 1993, Horacek 1996, Peters 2003, Waltereit 1998) more research needs to be done.

challenged by taking into account the semantics of individual verbs and analysing the metonymy involved.

Since an account for the metonymical interpretation on the basis of qualia structure is faced with too many problems and since it is not satisfactory to say that metonymy is involved just because "one phrase is used instead of another" (Verspoor 1997: 166), an alternative, cognitive linguistic analysis has been proposed in this paper. Metonymy can be defined as a conceptual mechanism that makes some semantic traits of a word more important than they would normally be (cf. Croft 1993, Croft 2006, Moerdijk 1989). I have argued that this shift in importance is due to the fact that a core element within a certain conceptual structure is explicitly highlighted in a sentence. This account places logical metonymy in line with other examples of metonymy. In a sentence such as *I am reading Shakespeare* the AUTHOR core frame element of the *book* concept is explicitly highlighted, whereby specific semantic elements of 'the author Shakespeare' have become more important than they would ordinarily be. In the same way, in a sentence such as *Mary begins the book* an element of an activity is highlighted thereby enriching the interpretation of the concrete object (cf. Jackendoff 1997: 49). The metonymical link, a real world relation, is not accounted for by a rich lexical interpretation of the noun (its qualia structure), but by virtue of the fact that the word employed is a core element of the interpreted eventive CS.

The metonymy involved is thus explained as a conceptual mechanism that highlights a core element in a conceptual structure or frame. Each verb that can occur in a logically metonymical combination has in its evoked knowledge structure (its frame) some eventive core element ('event', 'experience', 'phenomenon', 'dangerous situation' and so on). Since these eventive elements evoke their own CSs including their own core elements, there are several options to refer to the same situation in reality. One can make the eventive core element of the main CS explicit, one can express the eventive core element of the main CS as well as a core element related to this event (a core element of the embedded CS), or one can leave the eventive element of the main CS implicit, expressing only some core element of the embedded eventive CS. These three options correspond to (30)–(32).

(30) Mary began reading / to read.

(31) Mary began to read the book / reading the book.

(32) Mary began the book.

In (32) a core element of the required activity CS is highlighted, so this example can be considered as an instance of metonymy. Since we know that we have to interpret some event (or eventive element) in (32), we can infer event-CSs with *book* as a core element. This analysis does not have to make use of the notion of *coercion*

in the sense that the object is changed into an event. The direct object seems to keep its literal meaning and only in addition gives mental access to the event (cf. Kövecses & Radden 1998: 39). The intended event can be interpreted in this way, without assuming that the direct object really changes.

An account along these lines does not only explain the involved metonymy in more detail, but is also much more useful in the handling of linguistic data. The logical metonymy of each direct object-verb combination can be given a uniform explanation, although at the same time the idea that they form a continuum of cases is supported. The underlying mechanism is the same, but not all verbs require an event in the same way. There are differences in the type of eventive core element of the conceptual structures which they evoke. Whereas all aspectual verbs have an 'agent' and an 'activity' as their core elements, and therefore leave utterly open which activity needs to be interpreted, other verbs have more specific eventive elements, such as a future event ('phenomenon'), a 'dangerous situation' or, as for most evaluative verbs, an 'experience'. A better description of the event required (based on FrameNet) results in a much more precise analysis of logical metonymy than the simple statement that all verbs require an event.

By taking into account the type of the eventive core element the continuum of cases is incorporated (as well as demarcated). Furthermore, this more subtle picture explains why event-event shifts are possible (an event can also be a highlighted element of an embedded frame), which objects can be used metonymically (core elements), how a hearer can infer the intended interpretation and how it is possible that contextual information blocks default interpretations, since all elements have to fit together.

In addition to this, another kind of logical metonymy has been discussed that is characterised by the fact that the shift between a concrete object and an event does not follow the pattern OBJECT FOR ACTION IN WHICH THE OBJECT IS INVOLVED, but rather AGENT FOR ACTION. Although these combinations of verbs and direct objects are labelled by dictionaries as instances of metonymy and although they involve a shift in type, they have never been taken into account in previous studies on logical metonymy. The most probable reason for this is that they cannot be explained in terms of qualia structure. The present analysis, however, accounts for these shifts in exactly the same way as for other instances of logical metonymy. In all examples of logical metonymy a core element of an incorporated eventive conceptual structure is highlighted.

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