6. Grammatical relations

Words in a phrase or a sentence are closely connected to each other; this is precisely what makes phrases and sentences (fairly) self-contained wholes rather than arbitrary bunches of random words. However, not all elements of a phrase or a sentence are related to each other in the same way. For instance, in (1) the first indefinite article *a* is more closely associated with *cat* than with *on* or *mat*. Similarly, the *yellow* in (1) specifies the cat rather than the mat, even though in principle *mat* can also go with a color adjective. In complex expressions words create groupings of closely related elements. The grouping may form hierarchies: individual words form smaller groups and the groups may function as elements of yet more complex assemblies. For instance, in (1) *a mat* forms a tightly connected pairing, which in turn is a part of the entire phrase.

(1) *a yellow cat on a mat*

In this chapter we will discuss in more detail two kinds of fundamental grammatical relations holding between elements of sentences and other expressions: modification and complementation. The relations are used to form **composite expressions**, which can be defined tentatively as meaningful combinations of words, regardless of whether they are fully-fledged sentences or not. Yet before we move on, we need to introduce a new theoretical term: **elaboration site** (**e-site** for short).

6.1. Elaboration sites

The notion of elaboration has been discussed briefly in the context of dimensions of construal (see Section 2.2). The process consists in specifying a more schematic (i.e. general) concept in more detail. For example, the schematic concept ANIMAL can be elaborated into the more specific concept CAT. An elaboration site is a schematic element of word's meaning that can be specified by other element of an expression. This is perhaps best illustrated with words involving relational construals like prepositions. For example, in its basic sense, the preposition *in* denotes a spatial relation between two entities, but it does not specify in any appreciable detail what these entities are. The technical terms for the entities in the relation are already familiar: the more prominent one is the trajector (e.g. the entity in a "container") and the other one is the landmark (the "container" entity in which the trajector is located). However, the fact that the entities are not specified does not mean that they are entirely absent from the meaning of the prepositions; it only means that they function as "slots" to be "filled in" by something prompted by other words in a sentence. In fact, even when the preposition appears in isolation, we may be able to say something more about the trajector and the landmark. For example, in the case of *in*, we know that the landmark will have to be a thing and that the trajector can be either a thing (as in ***a cat*** *in a box*) or a relation (as in ***I bought the cat*** *in January*). This information about the participants is "built into" the meaning of the preposition. If this were not the case, we would not be able to say anything about the participants on the basis of *in* alone.

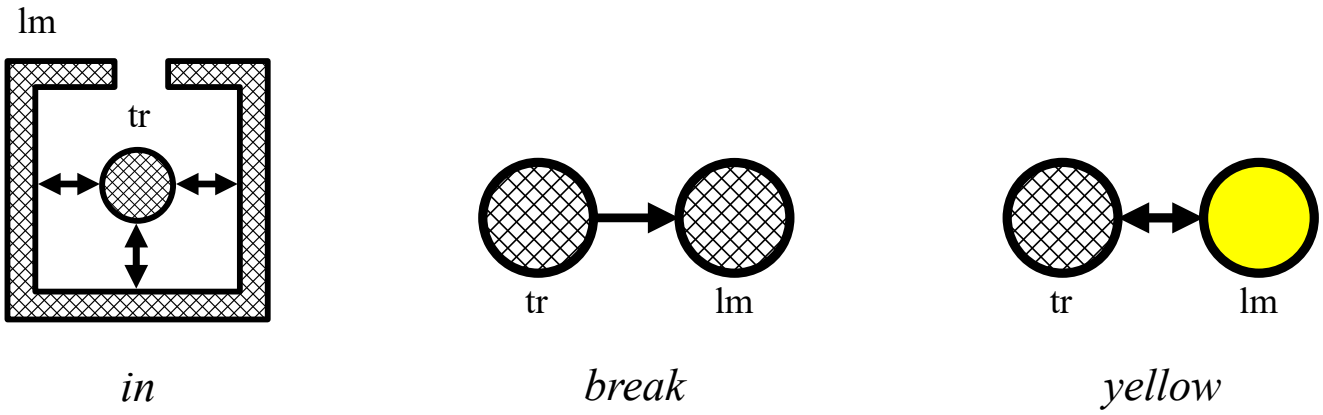

Figure 6.1: Elaboration sites of *in*, *to break*, and *yellow*

In general, a word with a relational profile involves an elaboration site when a participant of the relation is schematic and very little can be inferred about the participant on the basis of the word alone. For instance, when we specify that the word *yellow* is used as an adjective, we do know that the word specifies the color of a thing, but we do not know what this thing is. Therefore, the thing serving as the trajector of *yellow* is a part of the word's semantics, but it remains schematic and is an elaboration site of the adjective. Similarly, the process denoted by the verb *to break* suggests two participants, the trajector performing the action of breaking and the landmark that is broken, but the verb does not say much about either of the participants; hence, the participants are schematic elaboration sites of the verb. Figure 6.1 sketches the profiles of *in*, *yellow*, and *to break*; the cross-hatched elements are the respective e-sites.

6.2. Modification

The name of this relation may be misleading. Strictly speaking, modification does not necessarily change anything about the "modified" word; usually, it merely provides additional information about the word's referent. A typical instance of modification is the relation between an adjective and a noun in a noun phrase. In (1), the relation holds between *yellow* (the modifier) and *cat* (the modified element).[6] Thus, the relation between an adjective and a noun will serve as a basic illustration of the mechanisms behind this grammatical relation.

As already mentioned (Section 3.2), within the CG formalism adjectives profile relations. This indicates that their meaning typically features as least two elements, the trajector and the landmark, connected with a relation of some sort. In the case of color terms like *yellow*, the landmark is a region of the color space. When the adjective appears in isolation, outside the context of a larger phrase, the trajector is an unspecified thing, i.e. it is an unelaborated e-site. For *yellow*, this configuration is sketched in Figure 6.2(a). The e-site is marked with cross-hatched circle and for the sake of simplicity only the relevant part of the color spectrum is presented in the landmark.

[6] For the sake of simplicity, we will omit the contribution of the indefinite article *a* from the analysis in this and the following section. We will return to the role of the indefinite article in Section 15.2.

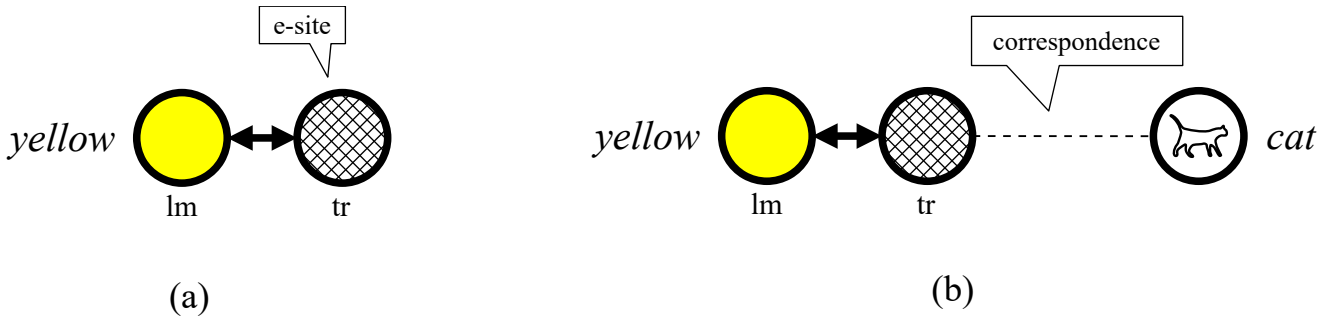

Figure 6.2: The construal behind *yellow*

Moving on to the composite expression *yellow cat*, the e-site of the adjective is compatible with a nominal construal, i.e. there is no fundamental conflict in meaning between the two. A cat is a kind of thing (in the technical CG sense) and the two differ only with respect to how much detail they feature. In general, from the purely formal point of view, any word that profiles a thing should make a well-formed phrase with *yellow* (at least in principle), although the resulting phrase may be quite nonsensical (e.g. *yellow democracy*). In the CG formalism, we may say that when a noun is combined with an adjective, the profile of the noun **corresponds** to an elaboration site of the adjective. In Figure 6.2(b), this correspondence is marked with the dashed line. Since the profile of *cat* is compatible with the e-site of *yellow*, the former can "fill in" the e-site, like a tab of a piece in a jigsaw puzzle fills in the corresponding indentation in another piece. Once the process is complete, we end up with a coherent construal of cat (provided by the noun *cat*) related to a region of the color space (provided by the adjective *yellow*), as sketched in the upper part of Figure 6.3. Note that (leaving some visual simplifications aside) the upper portion of the figure is similar to Figure 3.6, where the construal of *yellow ball* was sketched.

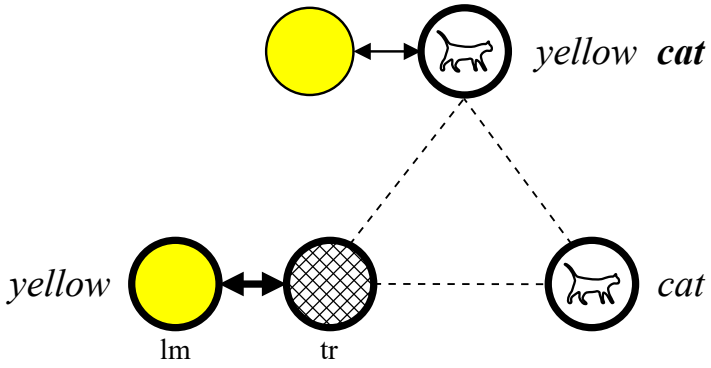

Figure 6.3: The construal behind *yellow cat*

In order to offer a comprehensive description of a composite expression, one needs to determine its profile. Notice that the profiles of the components of *yellow cat* are of different types: *yellow* profiles a relation and *cat* profiles a thing. Since the composite expression cannot have two incompatible profiles at the same time, the profile of the entire expression is usually inherited from one of the components. *Yellow cat* inherits the profile of *cat*, because the entire expression denotes (a kind of) cat rather than (a kind of) yellow. In Cognitive Grammar the element of a composite expression that determines the expression's profile is called **the head**. In Figure 6.3, the profile of the expression is marked with the heavy-line circle around the cat and the bold font marks the head of the expression.

We are now in a position to propose a general definition of the relation of modification in composite expressions.

(I) **Modification** takes place when element X elaborates an e-site of another element Y and the composite expression inherits its profile from X.

This configuration is sketched in Figure 6.4.

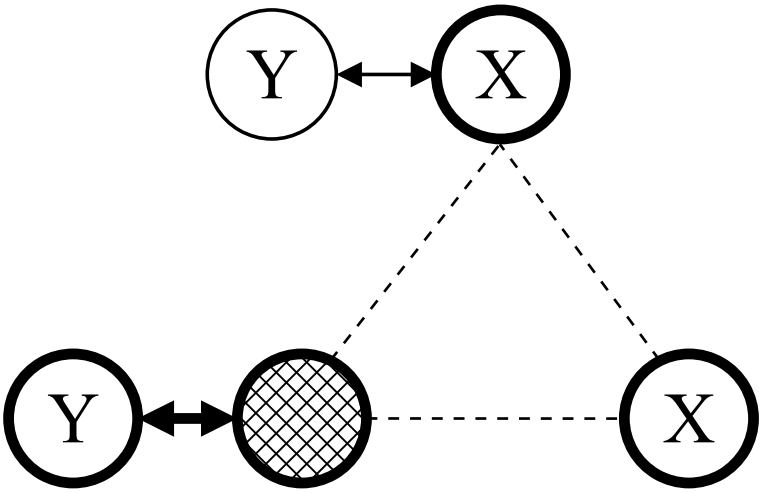

Figure 6.4: The basic mechanism of modification

6.3. Complementation

Roughly speaking, complementation takes place when a word or phrase provides information required by another word or phrase. We will illustrate complementation with the relation between the preposition *on* the *a mat* in (1). The basic building blocks of the analysis are already in place – once again, the key elements are e-sites, elaboration, and profile inheritance, which have already appeared in Section 6.2. Let us start with the preposition *on*, which is (1) has a very prototypical meaning: it denotes a spatial relation between two things. Thus, the meaning of *on* features two elaboration sites for things, one for the trajector and one for the landmark, supplied by other elements in a composite

expression. One of the elements is the concept MAT, whose profile corresponds to the profile of the e-site for the landmark (see Figure 6.5).

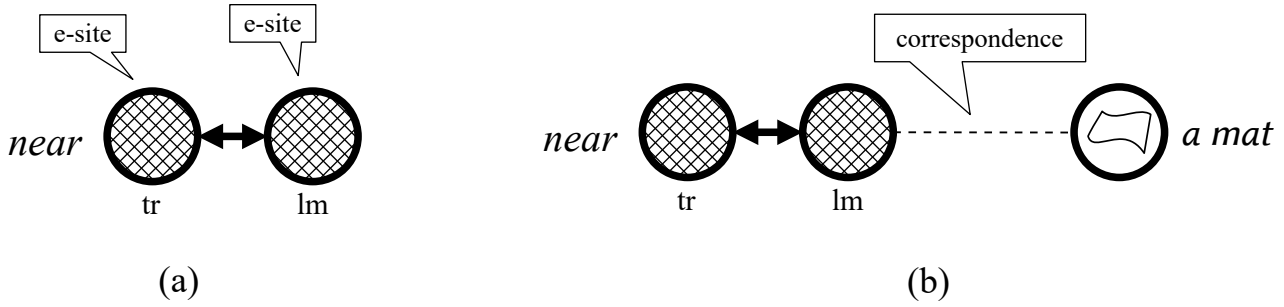

Figure 6.5: The construal behind *on*

Once the landmark e-site is elaborated by the referent of *mat*, the composite expression *on a mat* arises. What is the profile of the entire composite expression? *On the mat* denotes a spatial location (rather than a mat), so the profile is inherited from the preposition (rather than the noun). The entire configuration is presented in Figure 6.6. Pay attention to the patterns of bold lines signaling profiling in the upper and lower part of the diagram.

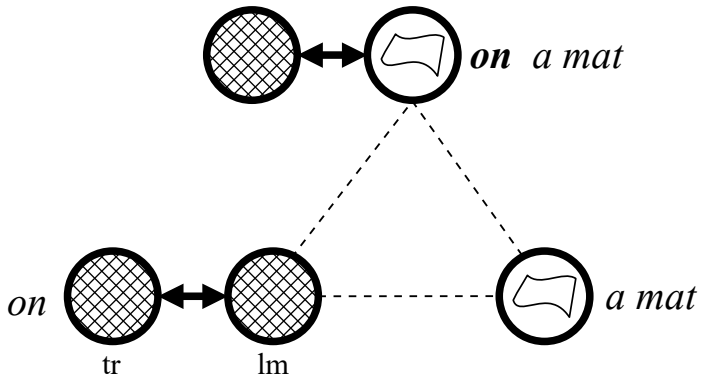

Figure 6.6: The construal behind *on a mat*

On the whole, complementation can be defined in as follows:

(II) **Complementation** takes place when element X elaborates an e-site of another element Y and the composite expression inherits its profile from Y.

This configuration is sketched in Figure 6.7 As you may have notice, the difference between (I) and (II), as well as between Figures 6.4 and 6.7, is slight. Essentially, it boils down to the question about which component word supplies the profile of the entire composite expression. In modification, the

profile is inherited from the element elaborating the e-site of another element. In complementation, it is inherited after the element whose e-site is elaborated.

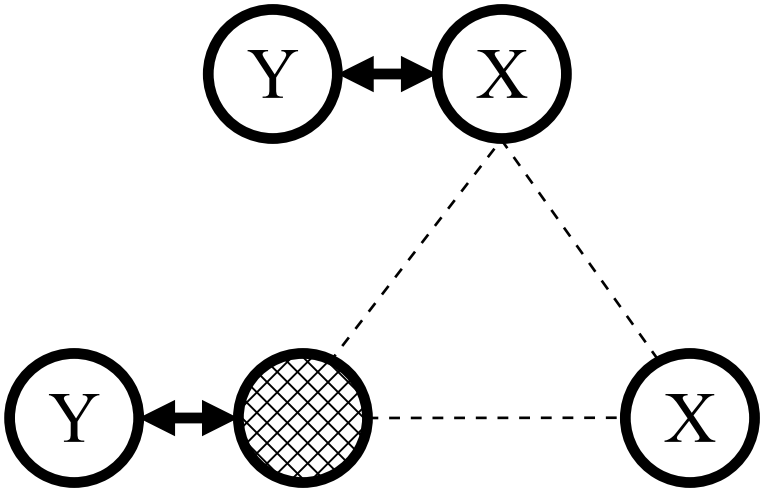

Figure 6.7: The basic mechanism of complementation

6.4. Compositional paths

We have already accounted to the formation of *yellow cat* (modification) and *on a mat* (complementation). However, we have not yet described the creation of the entire expression in (1). In essence, the process of putting together larger phrases like (1) is very similar to the process of putting together smaller phrases like *yellow cat* and *on a mat* – it consists in combining smaller elements into bigger structures by means of modification and complementation (and possibly other grammatical processes, some of which will be discussed in the following chapters). This time, however, the elements in question are phrases rather than individual words. *Yellow cat on a mat* can be put together from smaller components in two slightly different ways. One option is that the phrases *yellow cat* and *a mat* are combined with the prepositions *on* – the former elaborates the trajector of the preposition and the latter elaborates its landmark. This analysis is sketched in Figure 6.8. The lower left portion of the diagram is the same as Figure 6.3; this is where the composite expression *yellow cat* is put together by means of modification. Then, the phrase corresponds to the trajector of *on* in the middle of the diagram and the landmark of the preposition corresponds to *a mat*. Once all of the elements are put together on the higher level of linguistic organization, the entire composite expression *yellow cat on a mat* is formed. The profile of the expression is inherited from *yellow cat* (the bold-line circle around the image of a cat), because the entire expression refers to a cat rather than to the relation of being on the mat.[7] Moe formally speaking, *cat* is the head of the entire composite expression. Since *cat* elaborates an e-site of *on* and the resulting expression inherits the profile of *cat*, the process of combining the two is modification. This conclusion is perfectly compatible with the intuitive understanding of modification

[7] In other words, to determine the profile of the expression like *yellow cat on a mat* you can ask yourself a question: "Does the expression denote a kind of cat or a kind of being on?"

as the relation between an adjective and a noun: *on a mat* provides more information about the animal and therefore its function is similar to that of the adjective *yellow*. The entire sequence of processes leading up to the final composite phrase is called a **compositional path**. In Figure 6.8 the path begins at the bottom of the diagram and ends at the top.

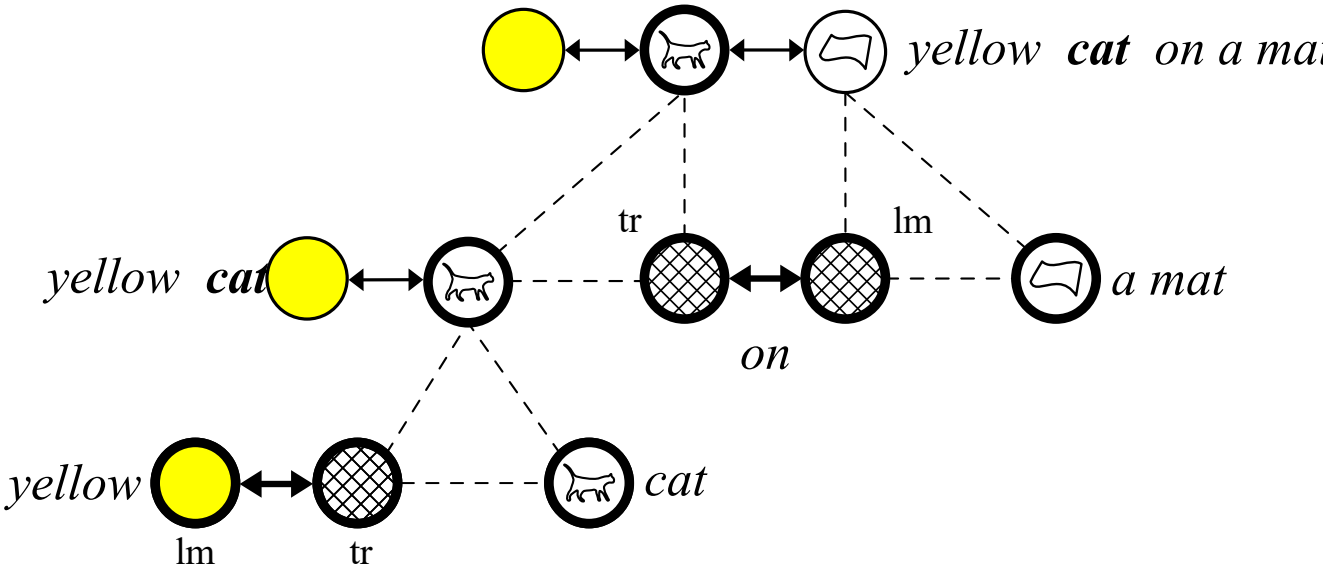

Figure 6.8: Compositional path of *yellow cat on a mat*

There is, however, one more way in which (1) can be put together, sketched in Figure 6.9. *Yellow cat* is composed like in the previous version, but now *on a mat* is pre-built into a single phrase before *yellow cat* elaborates the trajector of *on*. In this alternative compositional path, *on a mat* functions as a separate component that is combined with *yellow cat* on a higher level composition (see the lower right part of Figure 6.9). Then, just like in the first version of the path, *yellow cat* elaborates the trajector of *on* and the resulting phrase is one again *yellow cat on a mat*. The entire composite expression denotes a cat (i.e. cat is the head of the expression), so the process still counts as modification.

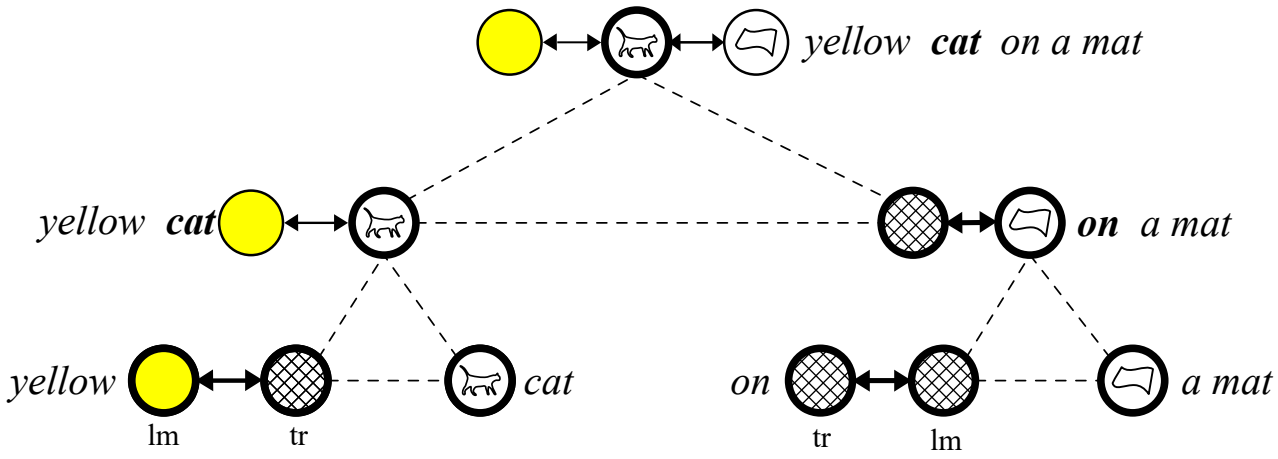

Figure 6.9: Alternative compositional path of *yellow cat on a mat*

The two compositional paths sketched in Figures 6.8 and 6.9 are equivalent in that they both account for how (1) is gradually put together from individual words via the modification and complementation. The alternative path in Figure 6.9 may have one advantage over the first path, because there is some evidence that *on a mat* does function as a separate composite phrase. Imagine that you are pronouncing (1) is a slow deliberate way, pausing for a while between various parts of the expression, as if you were hesitating. Probably the most natural place for a longer pause would be between *cat* and *on* rather than *on* and *a mat*, as in (1′).

(1′)(a) *yellow cat* | *on a mat*
(b) ???*yellow cat on* | *a mat*

While this is not a knock-down argument against the compositional path in Figure 6.8, it does suggest a kind of "boundary" between *yellow cat* and *on a mat*, which is explained by Figure 6.9: at some point of the compositional path, *on a mat* functions as a separate component that resists getting broken up by hesitation pauses. The compositional path in Figure 6.8 does not have *on a mat* appearing anywhere as a separate component, so it accounts for the hesitation pauses in (1′) less successfully.

6.5. Interlude: compositionality and analyzability

We can talk about two different ways in which individual components function as parts of the entire composite expression. One way is to think about the way each component contributes some meaning to the whole expression. In (1), the words *yellow*, *cat*, *on*, and *mat* chip in smaller bits of meaning that are combined into a complex conception A YELLOW CAT ON A MAT. This aspect of a composite expression is termed **compositionality**. Compositionality is a matter of degree, so expressions can be compositional to smaller or greater extent. The meaning of a fully compositional expression is a simple sum of the meanings of its components. We may also say that the meaning of a fully compositional expression is fully predictable from the meaning of its components. In this sense, (1) is compositional to a very large extent.

Consider, however, the word *catnip*. Etymologically, the word is a combination of *cat* and *to nip*, which certainly makes a lot of sense, when you know what the plant is and how cats tend to react to it. Yet *catnip* is not fully compositional, since the meaning of the word is something else than a simple sum of CAT + TO NIP. A catnip is neither a cat, nor an action of nipping, so the actual referent, i.e. the plants of the species *Nepeta cataria*, is not explicitly signaled in the expression. This means that a person who does not know what a catnip is most probably would not be guess the meaning on the basis of the word's phonological form. In other words, compositionality decreases, when the semantics of a complex word or expression is something more than a simple sum of the component meanings and the composite meaning cannot be fully predicted on the basis on the parts. By this token, the word *catmint*, an alternative name for *Nepeta cataria*, is slightly more compositional than *catnip* in that the morpheme *mint* gives the hearer a better idea about what the referent is. Nonetheless, *catmint* cannot be said to be fully compositional either, since the meaning of the word is still something more than the sum CAT + MINT. Most probably, a person familiar with this word could define along the lines of (i). While the plant and cats are indeed mentioned in *catmint*, most of the meaning in (i) cannot be inferred from the meaning, so the word is still largely non-compositional.

> (i) a plant that acts as a mild stimulant for cats and produces in these animals short-lived effects reminiscent of joyful intoxication

Another way is to think about the degree to which speakers are aware of the semantic contribution of each component to the meaning of the whole expression. This aspects is termed **analyzability**. Once again, analyzability is a matter of degree and (1) can be said to be analyzable to a very large extent. We may safely assume that the hearers of (1) are very much aware that the words *yellow*, *cat*, *on*, and *mat* are parts of *a yellow cat on a mat*. Arguably, most speakers of English are also aware that *catnip* includes the words *cat* and *nip*, but since the name of the plant is used routinely as a single word, it would not be entirely surprising if some speakers were oblivious to the fact that the name "made up of" two words. If this is the indeed the case, *catnip* is analyzable to a smaller extent than (1). Now consider a situation when a speaker defines the word *catalog* as (ii).

(ii) a booklet containing a photographs and descriptions of cats

Needless to say, this is a jocular example and it is highly unlikely that a competent speaker of English really believes that (ii) is a correct definition of the word. Yet it is not hard to see how this joke could work. Obviously, from the point of view of compositionality, catalog is certainly not *cat* + *alog*. Yet in principle, it is possible to play with the word and decompose it into these two elements; after all, no one could deny that the chunk *cat-* is very much a part of *catalog*. If this hypothetical scenario actually happened, we could claim that the compositionality and the analyzability of *catalog* do not match – even though the word in not composed of the word *cat*, it is nonetheless analyzed by speakers into this phonological form.

Study questions

1. What are the grammatical relations between the words in the following phrases? (You may ignore the relations between the articles *a*/*an* and *the* and nouns, as well as *to* and verbs.)

    a) *a big black car*
    b) *an elf on a shelf*
    c) *to want a banana*
    d) *to eat with a spoon*
    e) *to sneeze quietly*
    f) *a very noisy cat*

2. The word *bikini* referring to a type of swimsuit, comes from the name the Bikini Atoll, a group of islands in the Pacific Ocean. After some time, *bikini* gave rise to words for other types of swimwear, e.g. *monikini* and *burkini*. How can we explain the creation of these words if we bear in mind that in English the geographical name Bikini is not a composite expression?
3. The expression *a yellow cat mat* is syntactically ambiguous – it has two different meanings depending on how the expression is put together from constituent words. Can you sketch two compositional paths leading up to these two meanings?

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    - Sections 3.2.2 and 7.3
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