5.3: Compositionality and Idiomaticity

Compositionality

Exercise \(\PageIndex{1}\)

What kinds of knowledge would be required for the interpretation of a phrase the hearer has never heard before such as purple apple or apple soup?

In this section we'll look more generally at what is involved in producing and understanding meaningful combinations of words. People's ability to do this is based on what is probably the most important property of human language, compositionality, the property that the meaning of a phrase is derived from the meanings of the words in the phrase and the grammatical relation that joins them. The details of this property and how it works in the production and understanding of language are somewhat complicated though; in fact, there's quite a lot of controversy about these details. Most of the complexity revolves around what conventions Speakers and Hearers need to store in long-term memory to make things work and the degree to which language actually is compositional.

Let's begin by again considering the interpretation of an unfamiliar phrase. Say a Hearer hears or reads the phrase bitter grape for the first time, and say there is no help from the context about what this means. The Hearer is familiar, however, with the words bitter and grape. To come up with an interpretation for the new phrase, the Hearer would first need to retrieve the meanings for bitter and for grape from long-term memory, specifically from the Hearer's lexicon. Recall that the lexicon is a sort of list of conventions for words, how they are pronounced (and written if the language has a writing system and the person is literate) and what they mean. The meaning of grape would be some representation for the category of things grape, and the meaning of bitter would be some representation for the attribute bitter that things may have when they are tasted.
The Interpretation of a Phrase Involves Both Lexical and Grammatical Conventions

But how are the meanings of the two words to be combined? The knowledge of how to do this comes from another convention, the grammatical convention that spells out how attribution works in English. Specifically, as we discovered in the last section, this convention specifies that the meaning of a phrase consisting of an adjective modifying a noun is a subcategory of the noun's meaning whose members all have the attribute that is the adjective's meaning. We can think of this as a rule to be followed in producing or understanding a phrase or as a pattern that describes the meaning of the phrase in terms of its parts. As with nearly every other aspect of language, there is a lot of disagreement about whether Speakers and Hearers actually have such an explicit rule in their minds (or brains). For now, let's just assume that we're trying to come up with a way of describing their behavior.

So the Hearer puts all of this together by inserting the meanings of the individual words into the grammatical pattern: the meaning of the phrase bitter grape is the subcategory of grape whose members all have the attribute bitter. One use of the phrase bitter grape, the only one we've considered so far, would be to refer to a particular grape, as in the slightly longer phrase the bitter grape. The Hearer would understand this expression to refer to some member of the category designated by bitter grape.

To summarize what we've seen so far, the meaning of a phrase is the composition of the meaning of its parts, that is, the meanings of the parts substituted into a general rule for how the meanings of the parts of a phrase of that type are combined. This involves two kinds of conventions, lexical conventions, that is, knowledge about the meanings of words (grape, bitter), and grammatical conventions, that is, knowledge about how meanings are combined for particular grammatical relations (such as attribution).

But the example we considered was relatively simple because each of the words has a meaning that is more or less independent of its context. How we interpret the noun grape and the adjective bitter does not seem to depend much on what other words are present in the utterance. Such meanings are said to be context free; they don't rely on their linguistic context, that is, the other words in their environment, for their interpretation.

Many cases are not this simple. We have already seen one type of example, involving adjectives whose meanings seem to change with the noun they modify. Bitter is a scalar adjective, but one whose meaning seems to vary little with the context. A scalar adjective such as mushy, on the other hand, apparently requires a standard for its interpretation. As we learned in the section on attribution and adjectives, the standard could be the default value on that dimension for the head noun category, or it could come from the context of the utterance containing the adjective. So for a phrase like mushy grape, the hearer would have to combine the category grape with an adjective meaning like mushy relative to some standard and would have to figure out what the relevant standard is.

But even in this last case, the basic information required to figure out the meaning is available in the lexicon (the meanings of mushy and grape) and the grammar (the attributive rule for combining the meaning of adjective and head noun). This knowledge would only need to be supplemented with the additional ability to find the appropriate standard (either the default for the head noun category or the average over some set of members of that category in the context). So we are still talking about pure compositionality, the possibility of coming up with the meaning of the phrase on the basis of the lexical knowledge of the words in the phrase and general grammatical knowledge.

But there are further cases where it seems that additional linguistic knowledge is behind the interpretation of a phrase.
Consider how a hearer would handle the phrase \textit{grape pie}. Remember that in such noun + noun phrases, there are a number of possible relations between the semantic categories that the two nouns designate, including location, use, part-whole, and contents. Most people would probably interpret \textit{grape pie} to mean a pie containing (or made from) grapes. The question is how they arrive at this interpretation. One possibility would be to figure out the meaning on the basis of what seems most likely. It is very unlikely, for example, that a pie is meant to be seen as a part of a grape (as in \textit{rabbit foot}), that a pie is being used for a grape (as in \textit{bread flour}), or that a pie is located at or near a grape (as in \textit{lake fish}).

As discussed in the last chapter in the context of ambiguity, Hearers almost certainly use knowledge of this sort about the world in interpreting noun + noun phrases. But there is a further kind of knowledge that they could use. Consider other familiar noun + noun phrases that overlap with \textit{grape pie}. There are some familiar noun + noun phrases with \textit{grape} as the first word and a word designating a food or drink as the second: \textit{grape soda}, \textit{grape jello}, \textit{grape jelly}. There are also familiar noun + noun phrases with \textit{pie} as the second word and a word designating a fruit as the first: \textit{apple pie}, \textit{cherry pie}, \textit{blueberry pie}. In all of these cases, the relevant conceptual relation is basically the same: a member of the category designated by the second noun contains or is made from members of the category designated by the first noun.

An Unfamiliar Phrase May be Understood by Analogy with Overlapping Familiar Phrases

If a Hearer had at least some of these more common phrases in long-term memory, they could be used to help interpret the new phrase, \textit{grape pie}. That is, in attempting to match the new phrase against the other familiar phrases in memory, the Hearer would discover a number of partial matches, and they would lend weight to the interpretation in which the grapes are part of the contents of the pie. The new phrase is understood by analogy with familiar phrases. Note that this is no longer a case of pure compositionality because the phrase is not being understood purely in terms of the context-free meanings of the individual words. Additional knowledge about what other similar phrases mean is being used.

This possible use of analogy in interpreting phrases — "possible" because the idea that people actually do it this way is still somewhat controversial — has implications for what is in the lexicon. If a Hearer is to use more familiar phrases in interpreting new phrases, then those more familiar phrases have be stored somewhere. So the assumption behind this idea is that the lexicon consists not only of words (that is, their forms and meanings), but also of common phrases (that is, their forms and meanings). It turns out that this isn't a big leap, since, as we'll see below, the lexicon will have to contain some phrases anyway. And storing frequent phrases in the lexicon can speed up comprehension. That is, rather than going to the trouble of combining the meanings of the component words, a Hearer could access the meaning directly from the combination. So, presented with a phrase like \textit{student visa} for the first time, you could easily figure out what it means. But it would be even easier if you could just look up the meaning directly from the words. Something like this may be possible after you hear the phrase a few times.

So let's summarize the possible sources of information that a Hearer could use in interpreting a phrase. In the ideal, purely compositional case, the Hearer can get by with the meanings of the individual words in the phrase, that is, lexical conventions, and the grammatical rule appropriate for the particular grammatical relation about how to combine the meanings, that is, a grammatical convention. But the Hearer may also supplement pure compositionality with knowledge of the context and what is possible or likely in the world. Finally, the Hearer may rely on further lexical conventions, knowledge of other similar phrases and what they mean, by a process of analogy.
Idiomaticity

Exercise \(\PageIndex{2}\)

What knowledge would a Hearer need to have to interpret the phrase *couch potato*, as in the sentence, *he never gets anything done; he's nothing but a couch potato*?

Expressions Differ in Terms of How Much of their Meaning Can be Derived from the Meanings of their Parts

Now consider an example that deviates even more from pure compositionality, *blackboard*. Note that even though this is written as one word, it clearly consists of the meaningful parts *black* and *board*. The question is: how much of a relationship is there between the meaning of *blackboard* and the meaning of its component parts? Certainly a blackboard is a sort of board, and it is normally black, though we might refer to a green board that you write on with chalk as a "blackboard" as well. But a blackboard is more than just a board that's usually black; it's a board that's usually black but also has the special function of providing a surface where writing or drawing in chalk can be done. The point is that even though the word *blackboard* consists of meaningful parts *black* and *board*, you wouldn't be able to figure out the full meaning of the word from those parts. This word goes beyond pure compositionality and must be stored in the lexicon so that Speakers will be able to produce it in appropriate situations and Hearers will be able to understand it when they hear or read it.

Contrast this with *black board*, written as two words. This is a relatively infrequent combination, one you may never have heard, in fact, so it is not likely to be stored in the mental lexicon. To understand *black board*, a Hearer could apply strict compositionality, looking up the meanings of *black* and *board* and combining them according to the rule for attribution.

In the case of *blackboard*, there are aspects of the meaning that cannot be predicted from the parts and the grammatical combination rule. Such a word is at least partly idiomatic. Idiomaticity is the tendency of phrases to take on meanings that go beyond the meanings of their parts. That is, idiomaticity is in opposition to compositionality. As we'll see below when we consider more extreme examples, idiomaticity is a matter of degree. But in all cases, the aspects of meaning that are not derivable from the parts of the phrase and that Speakers and Hearers are expected to know must be stored in the lexicon. That is, they are linguistic conventions. The extent to which languages are idiomatic, that is, the extent to which they deviate from pure compositionality, is a matter of considerable controversy. I'll focus on clearly idiomatic examples, but some researchers believe that extra meaning is inherent in a great number of frequent phrases and that the lexicon stores far more information about meaning than it would if language were more purely compositional.

Note that English actually distinguishes the compositional phrase *black board* from the idiomatic word *blackboard*. Not only is the idiom written as one word (a relatively trivial writing convention); it is stressed on the first element rather than the second, as would be normal for non-idiomatic adjective + noun phrases. This is also true for other similar examples: *greenhouse* vs. *green house*, *bluebird* vs. *blue bird*, *softball* vs. *soft ball*. But English is not completely consistent with this pattern. *Slow motion* has an idiomatic component; it refers not just to motion that is slow but to normal motion which is displayed in a slowed-down fashion. However, the stress is on *motion* rather than *slow*, and we write the expression as two words.

Are expressions like *blackboard*, *softball*, and *slow motion* words? We could choose to decide whether an English
expression is a word on the basis of whether it is written as one word, that is, without spaces within it. But the writing conventions are not very consistent, and in any case they are a reflection of whatever it is that makes something a word rather than the basis for calling it a word. Besides, using the conventions regarding placement of spaces would not help at all with languages such as Japanese that have writing systems that do not use spaces to separate words or with the many languages that are not written at all.

One Way to Create New Words in English is By Combining Existing Words into Compounds

Clearly expressions such as blackboard and slow motion are like words such as board and motion in that there is something arbitrary about their form-meaning relationship that must be spelled out in the lexicon. Those that are stressed on the first element are also wordlike in another sense; English has a strong tendency to stress the first syllables of words, especially nouns. But these expressions differ from words like board and motion in that they have subparts which have something to do with their meanings. That is, they are considerably less arbitrary than words like board and motion. So are they words? The best answer seems to be "sort of". That is, like many other linguistic concepts, wordhood (whether or not something is a word) is a matter of degree. Just as there are "good" and not so good members of the category apple (a Red Delicious vs. a crabapple) and good and not so good consonants ([t] vs. [w]), there are good and not so good words (motion vs. slow motion). Wordlike expressions such as blackboard that are made up of words are called compounds. Compound nouns in English include not only expressions with adjective and noun components but also expressions that started out as noun + noun phrases, for example, coffee pot, tape recorder, headline, and surfboard.

Sour Grapes, Cold Turkey, and Couch Potatoes May Not Be Food at All

Now let's consider expressions whose meanings deviate even more from what we would predict from their parts. The phrase live wire can be used to refer to a wire that is connected to an electric power source; in this sense the phrase is close to purely compositional. But it can also be used to refer to a very alert or active person. Of course there is no way this second meaning could be predicted from the meanings of the words live and wire. In fact in a sense the phrase used with this meaning breaks the attribution rule, the rule that the phrase designates a subcategory of the meaning of the head noun, wire in this case. The phrase doesn't designate a subcategory of wire at all; it designates a subcategory of person.

So live wire is even more idiomatic than blackboard or greenhouse. Other examples of adjective + noun combinations of this sort are sweet tooth, sour grapes, and cold turkey. Hopefully you recognize the idiomatic uses of these expressions as examples of the sorts of semantic extension that you learned about in Chapter 2. In each case there is an original meaning derived directly from the meanings of the individual words, and this provides the basis for an extended meaning. For live wire, the extension is metaphorical since it is based on the similarity between a kind of wire and a person. For sweet tooth, the extension is metonymic since it is based on the part-whole relationship between a certain kind of tooth and a person with a craving for sweets.

English also has a number of highly idiomatic noun + noun phrases. A couch potato is not a potato at all but a person who spends a lot time on the couch. A bookworm is not a worm but a person who loves books. Both of these are examples of metaphoric extensions. Some insults are noun + noun phrases involving both metaphor and metonymy. A
**chowder head**, for example, is a person whose head seems as if it is full of soup. This is metaphoric in the sense that the person's brains are similar to chowder and metonymic in the sense that the person is referred to through a body part.

Though expressions such as *live wire* and *couch potato*, like *blackboard*, are wordlike in the sense that their meanings have to be stored in the lexicon, many of them seem less like words than compounds such as *blackboard* do. For the adjective + noun expressions in this category, English does not usually put the stress on the adjective as it does for compounds such as *blackboard*. Perhaps having these idiomatic phrases sound like ordinary compositional phrases rather than like words makes them more colorful; hearers are reminded of their original meanings as compositional phrases. In any case, we have been thinking of the lexicon as a place to store *words*. Now it is clear that some whole phrases need to be there as well. We need a new, more general term to refer to units stored in the lexicon; the usual term for this is *lexical items*. Lexical items include words such as *board* and *apple*, compounds such as *blackboard* and *softball*, and idiomatic phrases such as *live wire* and *cold turkey*. As noted above, they may also include phrases that are compositional but appear frequently, phrases such as *apple pie* and *green apple*.

Let's sum up what we've learned about how the meaning of a phrase depends on the meanings of its parts. For at least some phrases, language appears to be completely compositional: a Hearer can arrive at a meaning for the phrase based on stored meanings for the parts and a grammatical combination rule, supplemented, if necessary, by knowledge of the world and of the context where the phrase occurs. But this purely compositional picture breaks down in three sorts of situations. First, even if the meaning of a phrase *could* be derived from its parts, it may be more efficient to store it in the lexicon as a unit if it is frequent (e.g., *pretty face*, *rough road*, *apple pie*, *course grade*). Second, the Hearer may interpret the expression in part by analogy with other phrases that are stored in the lexicon. For example, *lip ring* might be understood by analogy with *earring* and *nose ring*. Finally, phrases may have a more or less idiomatic meaning, an aspect of their meaning which is not predictable from the parts of the phrase. Because there is no way to know these aspects of meaning, idiomatic expressions must be stored in the lexicon. They include words or phrases with a relatively limited degree of idiomaticity such as *bluebird* and phrases that are highly idiomatic such as *cold turkey*. For this last group, many people may not even be aware of the connection between the original meaning and the idiomatic meaning.