7.4: Componential analysis

Many different theories have been proposed for representing components of lexical meaning. All of them aim to develop a formal representation of meaning components which will allow us to account for semantic properties of words, such as their sense relations, and perhaps some syntactic properties as well.

One very influential approach during the middle of the 20th century was to treat word meanings as bundles of distinctive semantic features, in much the same way that phonemes are defined in terms of distinctive phonetic/phonological features. This approach is sometimes referred to as componential analysis of meaning. Some of the motivation for this approach can be seen in the following famous example from Hjelmslev (1953[1943]). The example makes it clear that the feature of gender is an aspect of meaning that distinguishes many pairs of lexical items within certain semantic domains. If we were to ignore this fact and just treat each word’s meaning as an atom (i.e., an unanalyzable unit), we would be missing a significant generalization.

(16)

<table>
<thead>
<tr>
<th></th>
<th>horse</th>
<th>human</th>
<th>child</th>
<th>sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>“he”</td>
<td>stallion</td>
<td>man</td>
<td>boy</td>
<td>ram</td>
</tr>
<tr>
<td>“she”</td>
<td>mare</td>
<td>woman</td>
<td>girl</td>
<td>ewe</td>
</tr>
</tbody>
</table>

Features like gender and adulthood are binary, and so lend themselves to representation in either tree or matrix format, as illustrated in (17). Notice that in addition to the values + and −, features may be unspecified (represented by ⌀ in the matrix). For example, the word foal is unspecified for gender, and the word horse is unspecified for both age and gender.
Componential analysis provides neat explanations for some sense relations. Synonymous senses can be represented as pairs that share all the same components of meaning. Complementary pairs are perfectly modeled by binary features: the two elements differ only in the polarity for one feature, e.g. [+/- alive], [+/- awake], [+/- possible], [+/- legal], etc. The semantic components of a hyperonym (e.g. child [+human, –adult]) are a proper subset of the semantic components of its hyponyms (e.g. boy [+human, –adult, +male]; girl [+human, –adult, –male])). In other words, each hyponym contains all the semantic components of the hyperonym plus at least one more; and these “extra” components are the ones that distinguish the meanings of taxonomic sisters. Reverse pairs might be treated in a way somewhat similar to complementary pairs; they differ in precisely one component of meaning, typically a direction, with the dimension and manner of motion and the reference point held steady.

On the other hand, it is not so easy to define gradable antonyms, converse pairs, or meronyms in this way. Moreover, while many of the benefits of this kind of componential analysis are shared by other approaches, a number of problems have been pointed out which are specific to the binary feature approach. First, there are many lexical distinctions which do not seem to be easily expressible in terms of binary features, at least not in any plausible way. Species names, for example, are a well-known challenge to this approach. What features distinguish members of the cat family (lion, tiger, leopard, jaguar, cougar, wildcat, lynx, cheetah, etc.) from each other? Similar issues arise with color terms, types of metal, etc. In order to deal with such cases, it seems that the number of features would need to be almost as great as the number of lexical items.

Second, it is not clear how to use simple binary features to represent the meanings of two-place predicates, such as recognize, offend, mother (of), etc. The word recognize entails a change of state in the first argument, while the word...
offend entails a change of state in the second argument. A simple feature matrix like those above cannot specify which argument a particular feature applies to.

Third, some word meanings cannot be adequately represented as an unordered bundle of features, whether binary or not. For example, many studies have been done concerning the semantic components of kinship terms in various languages. This is one domain in which the components need to be ordered or structured in some way; ‘mother’s brother’s spouse’ (one sense of aunt in English) would probably not, in most languages, be called by the same term as ‘spouse’s mother’s brother’ (no English term available). Verb meanings also seem to require structured components. For example, ‘want to cause to die’ (part of the meaning of murderous) is quite different from ‘cause to want to die’ (similar to one sense of mortify).

Fourth, we need to ask how many features would be needed to describe the entire lexicon of a single language? Binary feature analysis can be very efficient within certain restricted semantic domains, but when we try to compare a wider range of words, it is not clear that the inventory of features could be much smaller than the lexicon itself.

9 One early example of this approach is found in Nida (1951).

10 The following discussion is based on Engelberg (2011: 129–130); Lyons (1977: 317ff.).