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Lexical decomposition

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1 Introduction

Decompositional approaches to lexical content, which proceed by analysing meanings into smaller components, are a highly common explanatory strategy in semantics. They are found not only in overtly decompositional theories like those discussed in this chapter, but also in prototype theories (see Chapter 7), which presuppose that concepts are characterized by distinct attributes, in various computational and cognitive models (Pustejovsky 1991, 1995; Langacker 1987), which distinguish different features within semantic representations, and in neurosemantic studies of online processing, beyond the scope of this chapter (Just et al. 2010; Sudre et al. 2012). In addition, most morphosyntactic and typological theories are predicated on the idea that grammatical categories can be characterized by certain distinct properties (animacy, telicity, stativity, and agency, to name just four), which are easily conceived of as distinct features of meaning (see e.g. Corbett (2012)).

Other parts of this book illustrate many of the particular decompositional theories of meaning current in lexical semantics (see especially Chapters 22, 23, and 25). In this chapter, we address the issue of semantic decomposition more generally. We begin in section 2 by sketching various indicative decompositional strategies and outlining some of the reasons for which a decompositional approach to word meaning might be attractive. Section 3 then discusses some of the most interesting questions and problems decompositional projects pose. As we will see, the considerable heuristic utility of decompositional approaches to meaning is offset by the no less significant problems that attach to decomposition as a theory of underlying semantic structure.

2 Motivations and rationales for decomposition

In everyday metalinguistic discourse, speakers’ efforts to clarify the meaning of a definendum may take the form of a paraphrase, that is a string of several other words or phrases, presented as having the same communicative effect (for instance, we might clarify what we mean by toast with the paraphrase grilled sliced bread). Dictionary definitions, which are an elaboration of this kind of pretheoretical practice, manifest the same essentially analytical logic: the meaning of the definendum is recast in terms of several defining words which, if the definition is to be explanatorily successful, must each in some sense be simpler than the definendum or, at least, already understood by the definition’s user.
Decompositional theories of lexical semantics rest on the intuition that the analytical structure of definitional paraphrases is not simply heuristic. Meanings should be thought of in essence as complex structures of more basic components, just as the meaning of a sentence must be seen as a compositional function of the meanings of its individual words (see Chapter 24). Phenomenologically, we certainly do not experience what we call a word’s meaning as a structure which can be broken down, to use Cruse’s formulation, into “the meanings of other words” (Cruse 1986: 16). Peirce’s statement about thoughts – “two thoughts are two events separated in time, and one cannot literally be contained in the other” (Peirce 1868: 69) – applies to the experience of meaning as well. Nevertheless, decompositional reasoning is familiar from many common-sense arenas. On a decompositional approach, meanings are comparable to objects that straightforwardly consist of different parts, or of different enumerable intrinsic properties; or they are like temporally unfolding processes, recursively analysable into a series of different phases. As pointed out by Sprengel (1980: 149), a decompositional conception of meaning is implicit in the ancient definition according to which a concept can be divided into a \textit{genus proximum} and a \textit{differentia specifica}, such as “horse” and “female” for “mare”. In the modern period, the earliest decompositional theories of word meaning were consciously modelled on decompositional theories of phonology (see Geeraerts (2010) for details). Just as complex articulatory gestures could arguably be factored into a finite set of more basic underlying phonetic properties, so too word meanings were assumed to be constructed from a smaller set of inherent, perhaps primitive, semantic elements (see Lipka (1992: 100ff) for discussion).

Decompositional analysis sees meanings as constituted by different permutations of a fixed set of recurrent components. Semantic “proportions” such as that existing between \textit{beef/cow} and \textit{pork/pig}; \textit{car/garage}, \textit{plane/hangar}, and \textit{boat/shed}; and \textit{circle/sphere} and \textit{square/cube} can be described as involving the presence of identical meaning-constituting parts (“food”/“animal”; “vehicle”/“[storage] place”; “2-dimensional”/“3-dimensional”) appearing across all pairs (see Leech 1981: 91) for discussion). The explanatory benefit of this approach derives from reducing the diversity of a language’s vocabulary to permutations of a single less numerous set of elements (see Bendix (1966: 4) for discussion of economy in decompositional systems). Lipka (1992: § 3.3.2) attempts a typology of semantic components – an interesting but necessarily incomplete exercise, given that anything that can appear in a definition can be converted into a component, and that there are therefore no a priori constraints on components other than constraints on what can be expressed in a metalanguage. The following German examples (Wunderlich 1997: 43–4), which go back to Generative Semantics, give a flavour of one of the most common kinds of decompositional analysis, discussed in Chapter 22, which analyses verb meanings as compositionally assembled from underlying primitive predicates:

(1) a  
\[
\text{einschlafen “fall asleep”} \\
\text{Hans schlief ein.} \\
\text{Hans fell asleep} \\
\text{BECOME (SLEEP(x))}
\]

b  
\[
\text{wecken “wake”} \\
\text{Hans weckte Maria.} \\
\text{Hans wakened Maria} \\
\text{CAUSE (x, BECOME(\textit{NON} \textit{SLEEP(y)}))}
\]
As these analyses make clear, the units into which meanings are decomposed need not be conceived of simply as autonomous and self-standing: the components in (1) display a combinatorial structure in which each is supplied with a certain number of arguments. (See Fodor (1970) for some important objections to this kind of analysis.)

The motivations for engaging in decompositional analysis can be appreciated by discussing the two tracks by which decomposition entered semantic theory historically: a structuralist track originating in Saussure, which initially embodied a conception of meaning quite at odds with decomposition; and a cognitivist track originating in seventeenth-century philosophical rationalism and revived under the influence of the cognitive turn in linguistics in the second half of the twentieth century (see Chapter 22). The distinction between these two sources of decompositional ideas is not, of course, absolute. In the course of examining these two tracks, we will mention some important examples of decompositional theories.

2.1 Classical structuralism, lexical relations, and semantic difference

Structuralist theories in general stress that “there is no meaning apart from significant differences” (Nida 1975: 32): a word’s meaning can only be accurately characterized by considering its place in the network of related terms with which it stands in a relation of paradigmatic choice. As Trier expressed it: “[t]he value of a word is first known if one distinguishes it from the value of neighbouring and opposing words. It only has any sense as part of a whole, for meaning only exists within a field” (1931: 6, quoted by Lyons (1963: 48)). Words are selected by speakers out of a large pool of possibilities – synonyms, antonyms, hyponyms, meronyms etc. – the suitability of any one of which is a function of the message being communicated. The significance of any one word is therefore only appreciated by assessing it in contrast to possible alternatives, each of which instantiates a certain semantic relation with the word actually selected. The set of alternatives from which a word can be chosen constitutes that word’s semantic field.

Before proceeding, it is important to note that the original structuralist position, inspired by Saussure’s (1979 [1916]: 166) insistence that language embodies only differences without positive terms, denied the possibility of any decompositional analysis. For this tradition of research, semantic relations exhaust word meaning: there just is nothing more to the meaning of a word than the semantic relations it holds to other words.

This commitment to relational rather than intrinsic properties as the essence of meaning cuts strongly against the essentializing habits of mind that have become deeply embedded in contemporary linguistic theorizing. These days, we are likely to think that the only reason words can enter into semantic relations with each other at all is that they convey some minimal meaning content over which the various semantic relations are defined: open, for instance, could not stand in a relation of antonymy to shut if the two words did not contain contrasting semantic information in virtue of which they count as antonyms.

Classical, especially European, structuralists deny this presupposition: for them, “the meaning of a given linguistic unit is defined to be the set of (paradigmatic) relations that the unit in question contracts with other units of the language (in the context or contexts in which it occurs), without any attempt being made to set up ‘contents’ for these units” (Lyons 1963: 59). In a
passage that serves as a telling analogy for the structuralist position on meaning, Reichenbach (1947: 210, quoted by Lyons (1963: 58–9)) asserts the priority of relational over intrinsic qualities in the case of weight:

> What is the weight of a body? It is usually conceived as an abstract property of the body, recognizable from certain physical effects. Using Russell’s principle of abstraction we can reduce the concept weight to the relation having the same weight. The weight of a body is the class of all objects having the same weight as this body. An adept in traditional logic would object that in order to define the same weight we must first define the weight, and then proceed by addition of the different specifica to the genus. But there is no reason to insist on this impractical method. It is admissible to conceive the notion of the same weight as prior to that of weight and to define the latter in terms of the former. This corresponds to the actual procedure used in empirical ascertainment of the weight of a body. The balance is a device which indicates, not the weight, but equality of weight.

Similarly, meaning for classical structuralists needs to be seen as a wholly relational property. Dictionary definitions, which might be thought to precisely express words’ core semantic essences, actually do nothing other than state their semantic relations. For instance, the definition of open offered by the Concise Oxford – “allowing entrance or access, or passage” – can be viewed as a statement that open is synonymous with the phrase “allowing entrance or access, or passage”, and antonymous with “closed” or “blocked”. Lexical relations, not intrinsic semantic content, are therefore the bedrock of meaning.

This classical structuralist position now commands barely any adherents, even though semantic relations are an ongoing focus of research (Cruse 1986; Murphy 2003; see Chapter 14). However, an analogous denial of the existence of decompositional semantic content is occasionally still found in the hypothesis that “meaning postulates” (Carnap 1952; Katz and Nagel 1974; Fodor et al. 1975) are the bearers of semantic content. Meaning postulates are the kinds of logical relations which terms entertain with each other. Instead of saying that the three components “grilled sliced bread” constitute or are the components of the meaning toast, we might simply say that the word “toast” is linked to the phrase grilled sliced bread by a meaning postulate specifying that one entails the other, such that if something can be referred to as toast, then it can necessarily also be referred to as grilled sliced bread. On this picture, toast doesn’t have any underlying semantic decomposition: its meaning may be atomic (Fodor 1998), but its privileged relation with the phrases taken to define it arises from its participation in the relevant meaning postulate.

Not least among the disadvantages of the idea that semantic relations or meaning postulates exhaust meaning is the fact that such approaches have nothing to say about the properties in virtue of which terms can break out of the circle of their linguistic relations so as to refer to extralinguistic entities: accounting for reference, indeed, is the central motivation for postulating intrinsic semantic contents. Nevertheless, the idea that meaning has to be assessed contrastively, in the context of semantically related words, was taken up by American anthropologists and linguists, who initiated decompositional analysis in the form that became institutionalized in twentieth-century linguistics. Consideration of lexical fields like kinship terms (Goodenough 1956; Lounsbury 1956) and many others gives rise to the impression that words’ meanings are structured by minimal recurrent differences: the difference between mother and father, for example, is exactly the same as that between daughter and son, or between aunt and uncle: in each case, the first term includes the information
that the referent is female, the second that it is male. “Female” and “male” can therefore be extracted as recurrent components of the meanings of these terms. (Alternatively, and on the model of phonological analysis, we might posit only one feature – “female” – and mark it as either present or absent – [+female], [−female] – in the underlying decompositions.) Similarly, features expressing generational difference [ascending/descending generations], and directness of relation (by blood or marriage) are extracted until every non-synonymous word in the semantic field has received a unique array of features. The analysis posits only enough underlying features to distinguish every word from every other in the semantic field or contrast set (see Chapter 25).

Componential analysis of this sort has been applied beyond kinship vocabulary – for example, to terms for artefacts (Pottier 1964, 1965), to verbs of possession (Bendix 1966) and to perceptual (Baldinger 1984) and dimension vocabulary (Greimas 2002), to name only a few domains (see Nida (1975) for extensive discussion). Figure 12.1 shows a possible array of semantic features along these kinds of lines for fourteen kinds of marine “vessel”, distinguished through seven features, for which they may be unspecified (when marked by “ø”).

This is certainly not the only decompositional analysis that it might be possible to advance for this set of words: as in any other domain of empirical investigation, theories are underdetermined by the evidence for them, in the sense that the same set of data is in principle open to multiple analyses, even within the same overall explanatory framework. Some researchers, however, have worried that componential analyses like those in Figure 12.1 are particularly arbitrary (Burling 1964: 26). However this may be, as the feature grid in Figure 12.1 suggests, terms from many fields of the vocabulary are much messier in their feature decompositions than kinship vocabulary is. Exactly how far a decompositional analysis could be pursued has never been fully tested: in contrast to the exhaustive analyses of phoneme repertoires, componential analysis has never been taken far enough by

<table>
<thead>
<tr>
<th>primary transports freight</th>
<th>mainly for leisure</th>
<th>has single main form of propulsion</th>
<th>human source of propulsion</th>
<th>used in conjunction with another vessel</th>
<th>more than one hull</th>
<th>flat bottomed</th>
</tr>
</thead>
<tbody>
<tr>
<td>rowboat</td>
<td>−</td>
<td>ø</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>dinghy</td>
<td>−</td>
<td>ø</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>ferry</td>
<td>−</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>yacht</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>barge</td>
<td>+</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>cargo ship</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>catamaran</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>buoy</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>+</td>
</tr>
<tr>
<td>punt</td>
<td>−</td>
<td>+</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>+</td>
</tr>
<tr>
<td>cruise ship</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>sail-board</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>+</td>
</tr>
<tr>
<td>tug-boat</td>
<td>−</td>
<td>−</td>
<td>+</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>trawler</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>pedal-boat</td>
<td>−</td>
<td>+</td>
<td>+</td>
<td>−</td>
<td>ø</td>
<td>ø</td>
</tr>
</tbody>
</table>

Figure 12.1 Componential analysis of some English words for marine vessels
researchers to provide anything like a representation of the meanings of the entire vocabulary, or even of a representative part of it.

Notice also that the seven features required to distinguish the terms in Figure 12.1 do not always coincide either with the information that would be represented in a dictionary entry, or with the information we would intuitively seize on to describe the meaning of the words: singularity of the form of propulsion, for instance, isn’t an obvious part of the meaning of cargo ship. This is characteristic of componential analysis grounded in semantic fields: since the point of the decomposition is to minimally distinguish each member of the field from the others, the analysis will often be couched in terms of criteria that appear peripheral from a definitional point of view, but which pick out minimal differences of exactly the kind needed. Furthermore, none of the features conveys the fact that the “vessels” are used on water. Since all of the vessels have this feature, it isn’t required to distinguish any of these words from the others. However, such a feature would be used to distinguish words for vessels with words for land or air vehicles. Feature arrays like those in Figure 12.1 are thus only ever a partial representation of the semantic components necessary to fully specify the contrastive relations within the whole of the lexicon.

2.2 Decomposition and the cognitive turn

As componential analysis drew further away from its structuralist origins, a second rationale for undertaking it loomed larger: the desire to ground meaning analysis in a level of semantic primitives, i.e. a set of indefinable, elementary concepts presumed to form the basis of the conceptual, and hence semantic, system. Semantic primitives were thought necessary as a response to the problem of definitional circularity – the fact that, since definitions are couched in other words, it is impossible to give fresh definitions of every word in a language, because sooner or later the same terms end up being both used as definienda and in the definitions themselves. Seventeenth-century philosophical rationalism had been alive to this kind of problem (see Maat (2004)):

we should not try to define all words, because this would often be useless. It would even be impossible . . . . For in order to define a word it is necessary to use other words designating the idea that we want to connect to the word being defined. And if we then wished to define the words used to explain that word, we would need still others, and so on to infinity. Consequently, we necessarily have to stop at primitive terms which are undefined. It would be as great a mistake to try to define too many words as not to define enough, because in both cases we would fall into the confusion which we are claiming to avoid.

(Arnauld and Nicole 1996 [1683]: 64)

The new cognitive sciences (Boden 2006) interpreted linguistic ability, like many other cognitive capacities, as the manifestation of an underlying mental rule-system. Language production and understanding were the product of the rule-governed, formal manipulation of a finite repertoire of mental symbols. Katz and Fodor (1963) represent an early attempt to characterize the semantic component of such a rule-system in a decompositional manner. (Note that Fodor has subsequently abandoned this commitment to semantic decomposition, now arguing that word meanings are atomic, and to be explained externalistically: Fodor (2008); see Chapter 1.) Katz and Fodor’s account differentiates between semantic markers and semantic distinguishers. The markers, such as “male”, “human”, and “animal”, are semantic components which “reflect
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whatever systematic relations hold between that item and the rest of the vocabulary of the language” (Katz and Fodor 1963: 187). As we have already seen, many words participate in sex-antonymy contrasts like that between bachelor and spinster: “male” therefore marks one term within a systematic semantic opposition. By contrast, the distinguishers do not participate in any regular contrasts: they are idiosyncratic aspects of meaning (such as the fact that bachelor can refer to someone who holds the lowest university degree) for which the semantic theory offers no general account. This contrast represents a move away from the tight relation between decomposition and lexical relations that motivated the earliest versions of decompositional theory. (See Bolinger (1965) for a criticism of the marker/distinguisher split, and of a number of other aspects of Katz and Fodor’s analysis.)

Katz and Fodor’s theory was specifically intended to integrate with generative grammar. Subsequent important attempts to pursue formal decompositional analyses broadly compatible with generative linguistics can be found in Pustejovsky (1991) and Jackendoff (1989; 1991). These decompositional theories, like all those discussed so far, do not necessarily presuppose that the semantic components into which meanings are analysed are themselves lexicalized in individual words. This is particularly the case for Jackendoff’s decompositional system, Conceptual Semantics, on which Jackendoff has been working, largely independently, since the 1970s (Jackendoff 1983; see Chapter 3). Conceptual semantics involves highly abstract primitives, arrived at in pursuit of an avowedly internalist (see Chapter 2) decompositional logic aspiring to reveal elementary universal cognitive operations within what he calls “conceptual structure” (see especially Jackendoff (1989); Jackendoff’s theory is discussed in Riemer (2010: 262–70); its mentalist assumptions are critically examined by Gross (2005); Taylor et al. (2011) provide a cognitive model broadly compatible with Jackendovian and with other feature systems). Conceptual Semantics primitives display a complex combinatorial structure, possessing arguments in a way that allows them to map on to syntactic structure (Jackendoff 1987). John opened the door, for instance, is attributed the following structure, paraphrased as “John caused [CAUSE] the coming into being [INCH] of a state [BE] where the door has the property of being open” (see Chapter 22 for more details):

\[[\text{Event CAUSE} ([\text{Thing JOHN}], \text{Event INCH} ([\text{State BE} ([\text{Thing DOOR}, \text{Property OPEN}]))]))]\]

Jackendoff is not committed to the idea that the particular components involved in analyses like this one are absolutely primitive, i.e. not open to further decomposition. Further investigation may reveal ways of breaking down the existing components further.

Unlike conceptual semantics, the Natural Semantic Metalanguage theory (NSM; Wierzbicka 1996; Goddard and Wierzbicka 2002; see Chapter 25) does precisely assume that the primitive components at the root of the semantic system are individually lexicalized. NSM takes seriously the problem of definitional circularity discussed above, postulating the existence of a corpus of undefined – and indefinable – primitive concepts, out of which other lexical meanings are constructed. The novelty of the theory is the postulation that semantic primitives are universally given phonological expression: in other words, that every language has an “exponent” of every primitive meaning, i.e. some morpheme by which that meaning is expressed. This means that the vocabulary of every natural language contains words or other morphemes expressing the 60-odd primitive concepts that NSM sees as constituting the root of all other meanings. (A consequence of this is that there is no decompositional analysis that can be advanced of these 60 words in the terms of the theory.)
Decomposition in the NSM framework involves prose paraphrases of meanings: here, for instance, is the decomposition of *break*:

_Someone X broke Something Y:_
Someone X did something to Something Y,
because of this, something happened to Y at the same time
it happened in one moment
because of this, after this Y was not one thing anymore
people can think about it like this: “it can’t be one thing anymore”

*(Goddard 2010: 465)*

All the words used in this definition are primitives. The claim of naturalness embodied in NSM rests on the assertion that paraphrases like this can be translated perfectly into any natural language. This claim has been contested, as have most other aspects of the NSM programme (see Riemer (2006) and Geeraerts (2010) for some discussion), but NSM’s heuristic utility as a tool for the exploration of meaning is beyond doubt.

The more cognitively oriented a theory, the less likely it is to explicitly ground decomposition in the analysis of lexical fields. Instead, the focus will be on capturing lexical items’ intrinsic semantic content, understood as the minimal information always conveyed by a word in every context in which it occurs. The fact that most words cannot be characterized as having any unique informational content that is invariant across all contexts is the rationale for seeing them as polysemous (see Chapter 13). The invariant informational content conveyed by a term can be captured by considering the *entailments* of propositions expressed using the term in question. Entailment can be defined as a *necessary* inferential connection between two propositions. A proposition \( p \) entails another proposition \( q \) if whenever \( p \) is true \( q \) must also be true: “this is a potato” entails “this is a vegetable” because there is no way the first can be true and the second false. Considering entailments gives us a way of identifying semantic components: given the relation between potato and vegetable, we are justified in concluding that part of the meaning of *potato* is “vegetable”, and that “vegetable” is, as a result, a semantic component of *potato* (see Cruse (1986: 14–15) for discussion of entailment). Entailment relations, and hence decompositional structure, can be inferred from diagnostic frames as in (2):

\[
\begin{align*}
(2) \quad \text{a} & \quad \text{It’s a potato, but it’s not a vegetable.} \\
\text{b} & \quad \text{It’s a potato, but it’s a vegetable.} \\
\text{c} & \quad \text{It’s a potato, so it’s a vegetable.}
\end{align*}
\]

(2a) is a contradiction; (2b) contains in *but* an implication of contrast inconsistent with the compatibility of *potato* and *vegetable*; (2c) concludes vegetablehood from potatohood. These facts are explained if we conclude that “*x* is a vegetable” is *inherently* conveyed by the phrase “*x* is a potato” – if, in other words, “vegetable” is a component of *potato* (see Lipka (1992: 116) for discussion). For verbs, equivalent tests might be as follows, establishing “move” as a component of *run*:

\[
\begin{align*}
(3) \quad \text{a} & \quad \text{They’re running but they’re not moving/without moving.} \\
\text{b} & \quad \text{They’re running but they’re moving.} \\
\text{c} & \quad \text{They’re running so they’re moving.}
\end{align*}
\]

See Lipka (1992) and Cruse (1986) for exploration of these tests.
2.3 A typology of decompositional theories

The preceding sketch allows us to advance some criteria for a typology of decompositional semantic theories. First, we can ask whether a decompositional theory necessarily grounds its decomposition in a semantic field, or whether it analyses meanings on an individual basis. Burling (1964: 20) exemplifies the first trend: for him:

Componental analysis is applied to a set of terms which form a culturally relevant domain and proceeds by recognizing semantic distinctions (components) which apportion the terms of the set into contrasting sub-sets, such that every item is distinguished from every other item by at least one component.

Bendix (1966: 4), on the other hand, rejected “strict delimitation of a lexical domain” as an “essential first step in any semantic investigation”, feeling “that entry into the continuous semantic system can be gained at any arbitrary point”.

Second is the question of whether the theory is committed to asserting the primitive status of the components into which meanings are factored, or whether the meaning components postulated as underlying a particular meaning or semantic field might prove to be susceptible to further analysis. We can then distinguish between theories – usually the older ones – whose components do not come supplied with any formalized combinatorial structure and those – Jackendoff’s Conceptual Semantics, NSM, event structure theories (see Chapter 22) – where they do. A fourth criterion is supplied by whether the components are assumed to be universal (in the sense of valid for the semantic analysis of every language), and a fifth by whether they are necessarily able to be lexicalized in every language (as they are for NSM but not for any others). Finally, a sixth criterion specifies whether componental analysis is uniquely targeted at putatively necessary and sufficient elements of meaning, or whether features discerned in a word’s semantic makeup may be present to varying extents, or only be optionally present. This latter possibility is not the case in any of the theories we have exemplified so far, but is found in prototype theory (see Chapter 7), and in the approach developed by Cruse (1986), where semantic components (“traits”) are defined as showing varying degrees of necessity – “criterial, expected, possible, unexpected and excluded” (1986: 16).

3 Questions and problems

Despite the precedents for decompositional strategies that have sometimes been claimed in other domains of cognitive explanation (see Tversky (1977: 329)), it is not self-evident that meanings are the kinds of things which can be broken down in this way. As we have already observed, decompositional structuring is not a feature of our experience of meaning (see e.g. chapter 6 of Merleau-Ponty (1945)). Even among its proponents, disclaimers about the limits of decompositional analysis are not infrequent (see e.g. Bendix (1966: 3)). There are, in particular, numerous areas of the vocabulary which seem ill-suited to a decompositional approach. For instance, it is hard to imagine how one might identify features involved in words for colours, smells, and sounds. Jackendoff responds to this problem by postulating that some meaning-constituting components might be what we could call direct “plug-ins” from the perceptual system (Jackendoff 1989; 2002). As Nida points out, there are also words which seem to differ purely in degree or intensity, and which do not therefore lend themselves very easily to decompositional treatment. Nida mentions toss and hurl. “Both”, he says, “may be regarded as types of throwing, but the major difference is one of intensity,
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and accordingly one must reckon with a continuum on which there is no fixed boundary between the two” (Nida 1975: 63). Nevertheless, the main challenges to decompositional analysis do not arise from obstacles encountered while trying to apply it to the explanation of particular kinds of meaning, but from doubts about quite general conditions of its applicability. We will explore these under three main headings, concentrating on the issues of analyticity, the definability of metasemantic terms, and the question of compositionality and Gestalts.

The most acute attacks on decompositional semantics have found fault with a presupposition that is foundational for many more semantic theories than just decompositional ones: the very contention that word meaning consists in descriptions (cf. Russell (1910–11)), in other words in complex informational representations quite generally. Since any semantic decomposition can be restated as a definition or as a meaning postulate, this objection targets accounts of semantics based on decomposition, meaning postulates and definitions indifferently. In what follows, we will follow conventional practice in these discussions and often use “definition” to cover all three kinds of description.

3.1 Components and analyticity

A general challenge to the view of meaning as consisting in descriptions capturable by definitions is derived from the philosopher W.V.O Quine’s well-known critique of the existence of analyticity (Quine 1951). Analyticity is a central notion for semantics, analytic truths being those that follow from the meanings of the terms in which they are expressed. Analyticity requires that some propositions be entailments – “analytic inferences” – of others: “x is a vegetable”, for instance, analytically follows from “x is a potato”. Another way of putting this is to say that, if analytic inferences really exist, then it just has to be the case that “vegetable” is part of the meaning of potato – it’s impossible to imagine a way of revising the meaning of potato in a way that would eliminate “vegetable”. Analyticity is the root of semantics, so if it can be shown that there are no analytic truths, then semantics as traditionally conceived is unceremoniously put out of business. Quine’s argument is precisely that there are no analytic inferences: no part of meaning, even the part we think of as most essential to a word’s semantics, is absolutely immune from revision.

Quine is led to this conclusion for the following reasons. All our beliefs – that is, the propositions we think are true – are linked to each other in a seamless web, and it’s possible to revise even fundamental beliefs as long as we make substantial enough alterations to other beliefs elsewhere in the system. For example, given radical enough alterations to our theories of plant matter, it might turn out that potatoes aren’t actually vegetables – just as it has recently become false that Pluto is a planet, thanks to a reclassification by the International Astronomical Union. No matter how unlikely, it’s at least conceivable that as a result of a revolution in our understanding of plants, potatoes might turn out to belong to some entirely new, distinct biological category. In that case, we would not want to say that the literal meaning of potato had changed, particularly since the word’s extension – the actual objects to which it refers – would obviously still be the same. But we would no longer draw the analytic inference “x is a vegetable” from “x is a potato”, and would have to discard “vegetable” from our analysis of potato’s meaning. Examples like this suggest that there is, in fact, no information which is necessarily entailed by a word: even though some beliefs seem very hard to revise, the holistic (interconnected) nature of our belief system means that any information putatively analytically entailed by a word is, like “vegetable” for potato, actually dispensable, given radical enough alterations to other beliefs. To adopt terminology
more familiar in linguistics, this critique of analyticity amounts to a complete rejection of the dictionary-encyclopaedia distinction (Haiman 1980; see Chapter 10), and to a defence of the view that everything in language is pragmatic (encyclopaedic).

Quinean arguments have been particularly directed by Fodor against various proposals for decompositional analyses in lexical semantics. After an earlier period in which, as we have seen, Fodor participated in decompositional projects, he now accepts the case against analytical inference. As a result, he defends an atomic view of semantic content. There is no such thing as semantic information per se; all the apparently analytic inferences we draw, such as the inference that if x walked, then x moved, are in fact simply facts about the way the world seems to be, not about language (see Horsey (2000) for discussion). Fodor and Lepore (1998) point out, however, that not all of the entailments of a word are meaning-constituting: two entails “prime”, since two is necessarily a prime number, but it is simply implausible that “prime” is part of the meaning of two. Similar remarks apply to the inference from square to “not circular”. An account of meaning that depends on analytical inference is therefore obliged to state what it is that determines which entailments are meaning-constituting and which are not. This has never, however, been done.

3.2 The failure of definitions

A second argument against decomposition points to the signal failure of any satisfactory definitional (decompositional, meaning postulate) account of meaning. Despite centuries of effort, there has not yet been any successful definition offered of even a single word, in the sense of a description or set of descriptions which show complete substitutivity for the definiendum in every literal context. Consider, for instance, the meaning of the adjective tired. A natural first inclination would be to define this as “wanting or needing to sleep” – but this soon falters when we realize that one can easily be tired but not want or need to sleep. Nor can tired mean “feel as though one would sleep if the conditions were right”, because it is perfectly possible (i.e. non-contradictory) to say I’m tired, but I feel as though I still wouldn’t sleep if the conditions were right; nor, for similar reasons, can it be analysed as “being about to sleep”. It proves, indeed, notoriously difficult to advance definitions for vocabulary which do capture exactly the same meaning as the definiendum. As Fodor et al. (1975: 530) speculate, “[p]erhaps the reason that semantic representations have proved to be so elusive is simply that, after all, there aren’t any”.

Two main kinds of response have been made to this criticism. The first, offered for example by Jackendoff (1989), consists in denying that the way in which components are composed into single lexical meanings is the same as the way in which whole words are composed into definitions: this means that “it will often be impossible to build up an expression of conceptual structure phrasally that completely duplicates a lexical concept” (Jackendoff 1989: 96). In other words, definitions aren’t even all meant to work, since they put concepts together in an entirely different way from how these are combined within single word meanings. Accepting this vindicates definitional semantics, since discrepancies between definitions and meanings are to be expected (see Bierwisch and Schreuder (1992) for some further discussion). In reply to Jackendoff, a critic of definitions will say that allowing discrepancies between definitions and meaning renders the definitional hypothesis unfalsifiable and therefore useless.

3.3 The definition of metasemantic terms

The second response to the failure of definitions would be to claim that definitions, like any other generalization about the lexicon, “are statistically significant regularities, so individual
counterexamples to them don’t necessarily undermine them” (Johnson 2004: 342). Once again, this would have the effect of defusing cases of apparent definitional failure, since it requires that definitions as stated must accurately capture meaning most of the time, i.e. in a statistically significant set of cases. However, this response runs into an objection that goes to the heart of semantic analysis: the fact that there is no objective way to determine when a metalinguistic analysis does actually fit the definiendum (see Fodor and Lepore (2005: 353)). We explore this problem in the present section.

Take for example “stativity”, a semantic feature frequently appealed to in linguistic analysis, particularly in studies of lexical aspect (see Chapter 19). This feature is important because it figures in generalizations about morphosyntax – specifically, the proposal that predicates whose decomposition includes the feature “state” resist progressive markers. The nub of Fodor and others’ criticism of definitional accounts of semantic content can be captured by observing that the decision to attribute or withhold the feature “state” from the decomposition of a predicate is not subject to any objective constraints (Fodor and Lepore 1998: 277) and cannot therefore form part of any serious empirical venture. If it is simply in the investigator’s gift whether a particular definition should be considered to apply to a particular definiendum, and if disagreements between different researchers are not open to objective settling, but are essentially a matter of individual intuition, we would seem to be dealing with a significantly different kind of theoretical enterprise from the one that most linguists presuppose.

An important factor in this problematic is the **autoexemplificational** character of semantic analysis (McGilvray 1998: 255). Autoexemplificationality is the fact that definitions and decompositions both use language itself as its own medium of analysis: we analyse a definiendum using **other** words of the same or a different language, with appropriate typographical notice, such as when we define **dog** as **domestic canine**, or [+ canine] [+ domestic], etc.

The autoexemplificational character of semantic analysis introduces a significant paradox. As we have seen, one basic aim of semantics in general, and of decompositional theories in particular, is to reveal the underlying mechanisms that enable the designative relationship between expressions and aspects of the environment. We want to understand what it is about the word **coat**, for instance, that enables it to refer to actual coats. (This is not, of course, the only phenomenon of interest to semantics. We also want an account of the mechanisms that license the inferential relationships that expressions contract among themselves, such as the inference from **coat** to **clothing**.) As native speakers, we are typically – though not, of course, invariably – confident in the lexical choices we make to accomplish acts of reference. On the whole, these choices command a high degree of intersubjective agreement: more often than not, we will agree whether a particular article of clothing can be referred to as a **coat**, and this is also true of many other objects, events, properties, or relations, which are just as likely to receive an identical linguistic categorization by different speakers. If this were not the case, indeed, language could not serve as an effective medium of coordinated action in the world (Riemer 2013a).

However, the picture changes substantially when we try to analyse the underlying cognitive operations which explain this referential uniformity – when, for instance, we try to decompose the meanings of ordinary expressions in search of primitive elements of which they may be composed. This project involves establishing a second designative relationship to explain the first. To explain why the word **coat** designates actual coats, we hypothesize that its meaning can be analysed as a configuration of more primitive components – in illustrative componential terms, [+ clothing], [+ for upper body], [– underwear], and so on – each of which instantiates some primitive (or, at least, more basic) element of mental content. To refer to these primitive elements of content, we adopt some special notational convention,
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such as the square brackets used in componential analysis, small capitals, etc. This establishes a second designative relationship: just as coat designates actual coats, a semantic primitive like [+clothing] or [state] designates an item of internal mental content – whatever facet of mental architecture it is that is activated in the linguistically relevant circumstances. Let’s refer to these two designative relationships as the relationship of referential designation for the relationship between the word coat and the actual objects it denotes, and metalinguistic designation for the relationship between a semantic component like [clothing] or [state] and the relevant aspect of mental architecture that it names.

Importantly, the metalinguistic designation relationship must, of necessity, be situated at a “lower” explanatory level, and be different in kind, from the referential designation relationship. We cannot, in other words, allow our explanatory theoretical terms like [state] to have identical designative conditions to the ones that obtain for their referential designation equivalents. If we don’t respect this condition, we will find ourselves in a purely circular venture which wouldn’t offer any explanatory advantage: our use of the “[state]” operator to explain meanings on the level of metalinguistic designation would simply mirror the way we use the noun “state” on the referential-designative level. Clearly, such a situation wouldn’t be explanatory: we’re trying to explain the designative capacities of the vocabulary, not to simply mirror those capacities on a lower level.

The insistence that metalinguistic designation must generally be separate from referential designation leaves decompositional semantic analysis in a delicate position. As we have just seen, this separation is a precondition of the explanatory utility of semantic decomposition. But the consequence of this is that it leaves us with no criteria by which to decide when one of the primitive terms is appropriately seen as present. The primitive terms on the level of metalinguistic designation have no criteria of application: only our basic-level linguistic practices on the referential-designative level themselves do. Hence the paradox: we can only apply primitive metalinguistic terms objectively (or, at least, in a manner that commands intersubjective agreement) by identifying them with object-language terms, whose use conditions are uncontroversial. But, of course, it is these very object-language terms whose meaning we want an account of – and we do not get one simply by reinstating these very object-language terms in the metalanguage, even if we dress them up in small capitals, surround them with brackets, or employ other kinds of typographical signal to designate them as metalanguage terms.

Another way of capturing the paradoxical character of semantic decomposition would be to observe that it is only our ordinary linguistic practices that are characterized by the intersubjectivity required for scientific analysis – but it is exactly these practices that we want to clarify. (A point very similar to this emerges from the later Wittgenstein (1953): there is no more primitive level of explanation than that of our everyday linguistic practices; as a result, it is futile to try to break these down into more primitive constituents, since in doing so we deprive ourselves of the only designative relationship on which consensus exists: the referential-designative one between words and objects of the environment.) These considerations have the effect of undermining the viability of decomposition even further: if the application of the metasemantic terms in which decompositional analyses are couched is essentially unconstrained, then we have even less reason for confidence in them.

3.4 Decomposition, context and Gestalts

The motivating assumption of decompositional approaches is the idea that the component parts or features which constitute a meaning are psychologically less complex than the meaning as a whole, and are therefore prior, temporally or logically, to the whole semantic
representations which they jointly form. Another challenge to decomposition arises from the observation that Gestalt phenomena, which reverse this dependence of wholes on parts, appear to be widespread psychologically. Gestalt effects are observed in the frequent – perhaps the most frequent – cases in which our perception of an object is not brought about bottom up, by first perceiving a set of independent parts which are subsequently assembled into a single whole, but rather in the opposite direction, first perceiving the whole before any analysis into parts is possible (see Hergenhahn (1992: chapter 14) for details). Many psychologists and philosophers, mostly working outside linguistics itself, have thought that word meaning is a Gestalt phenomenon (Merleau-Ponty 1945). One observation that is consistent with this is that in many, if not most instances, the interpretation of a semantic component appears to depend on prior identification of the whole meaning to which it belongs. Take the component [for sitting], which plausibly enters into the decomposition of many words for furniture, distinguishing chairs, stools, and sofas from beds and cupboards. How can we tell whether the component [for sitting] matches a particular referent? What is it, for instance, that makes [for sitting] present in the case of a stool, and absent in the case of a bed, even though, as a matter of fact, beds are in many ways much better for sitting on than stools are? The answer, it would seem, is that the appropriateness of the component is a function of whether the referent as a whole counts as a chair, stool, sofa, or other piece of furniture intended for sitting, or not. In other words, identification of the component seems to depend on prior identification of the whole concept: in François Rastier’s terms (see Chapter 28), the global determines the local, and not the other way round. But this is exactly the opposite of the direction required by a decompositional approach. (Bierwisch and Schreuder 1992 draw an interesting parallel with the way that phonological features are interpreted differently phonetically in different environments.)

3.5 Decomposition and discourse context

Decompositional analysis, like most other kinds of semantic investigation, presupposes that there is a unique analysis of meaning which is always invoked on every occasion of a word’s use. However, this assumption ignores the fact that every other dimension of linguistic structure consists of “a range of unselfconscious and more self-conscious varieties” (Schilling-Estes 2007: 174). The amount of attention a speaker pays to their speech – their self-consciousness while speaking – has been recognized as an influence on output since at least Labov (1972) and psycholinguists have recently started to hypothesize that semantics is also influenced by this parameter. According to Sanford (2002: 189): “those things that are attended to receive deeper, more extensive [semantic] processing” – as he notes, “a common enough idea in the psychology of attention”.

To think about the influence of attention on semantics, we can distinguish two different modalities of language use: planned and free. (This distinction is related, but not identical to, a number of well-known distinctions basic to the study of linguistic variation (Labov 1972; Eckert 2000; Coupland 2001; Schilling-Estes 2007).) Planned language use occurs in those contexts in which speakers are consciously paying attention to the communicative effectiveness of their words and where, as a result, they are more consciously aware of the normative constraints to which their language is subject (Verschueren 1999). Conversely, in free or unplanned contexts, participants are not paying any particular attention to these factors: they are speaking spontaneously and without special care.

The interest of the free/planned distinction lies in the following claim: decompositional analyses of descriptive meaning like those standardly advanced in semantics are most
psychologically real for planned language use. In planned contexts, speakers are consciously aware of the factual and communicative constraints to which their words are subject, and deliberately strive to satisfy them; in so far as definition-like structures capture these constraints, the decompositional analyses theorists advance of words’ meanings can have some relation to the actual structures speakers consciously draw on to plan and regulate their utterances. In free contexts, by contrast, speakers are unlikely to be deliberately subjecting their language to these constraints; as a result, the psychological reality of consolidated, decompositional analyses of meanings is diminished.

In some contexts, then – planned ones – speakers and hearers probably do use definitions and similar representations to plan and regulate their language use. As the speaker’s desire to guarantee the effectiveness of their words increases, the amount of planning they devote to their linguistic expression increases. Frequently, this planning will not be conscious: the speaker will simply be aware of speaking slowly or deliberately, but they won’t be aware of the decisions occurring subconsciously in the lead-up to their utterance. Occasionally, however, the speaker may bring the planning process to the level of consciousness by making it deliberately verbal: the speaker may think through their words “in language”, bringing explicit verbal paraphrases to mind, with which they refer to the various aspects of meaning they wish to convey (see Prinz (2002: 150) for discussion). The calling to mind of the definition constitutes a kind of “rehearsal” by which the speaker can simulate the probable effects of different word choices. Similarly, if the hearer doesn’t seem to understand, the speaker can verbalize a definition as part of a semantic repair strategy. In these cases, speakers arguably do invoke definitional structures consciously in planned language use.

These considerations allow us to clarify the influence of context on the psychological status of decompositional analyses of meaning like those traditionally advanced in semantics. On the suggestion we have been entertaining here, such analyses become psychologically real in two kinds of planned contexts. First, language users consciously bring minimal verbal definitions to mind to help them plan their utterances. Second, speakers can explicitly verbalize these definitions to the hearer, as part of a process of semantic repair.

Planned contexts, then, confer a certain degree of psychological reality on the decompositional representations traditionally offered in semantics. As the degree of planning decreases, two things happen. First, the diminishing necessity of explicit attention means that the speaker does not need a highly specific representation of the referent. The further away we get from planned discourse the more minimal, holistic and preprogrammed the representations underlying speech can be. Entrenchment, Gestalt effects, routinization, and other factors all diminish the extent to which consolidated, elaborated structures sub tend speech (cf. Langacker (1987); Givón (1995); Verschueren (1999); Bybee (2010)).

Second, as the context becomes less planned and more free, connotational, emotional, or “expressive” content comes to the fore (Potts 2007). As the speaker’s attention to explicit normative constraints is relaxed, the affective/emotional dimension of meaning becomes more determinative of the discourse sequences in which words figure and, to a lesser extent, of reference. The less attention I am paying to normative considerations, the freer the inferences and other connections I will make.

I have suggested, then, that a kind of “internal context”, namely the degree of planning brought to the utterance, affects the kinds of meanings communicated and, in particular, the extent to which decompositional analyses of these meanings are apt. If true, this removes the surprising immunity of semantics to the influence of contextual variables known to affect other levels of linguistic structure. If other dimensions of language are affected by the amount of conscious attention the speaker brings to their utterance, it is not surprising that
semantic differences are also found. See Binder and Desai (2011) for broadly compatible suggestions, and Riemer (2013b) for more detailed discussion.

4 Conclusion

We will conclude with some remarks on the explanatory effectiveness of decompositional analysis by invoking some general considerations about the explanation of cognitive phenomena.

For Cummins (2000: 126), the extent to which a proposed explanation of a cognitive phenomenon like meaning is actually explanatory can be assessed against three criteria: how far the explanation (a) involves less sophisticated elements than the explanandum, (b) is different in kind from the explanandum, and (c) doesn’t tacitly push back a lot of explanatory jobs to other parts of the organism. How does a standard decompositional analysis fare on these measures? Let’s examine a classic decompositional conceptual analysis, such as the proposal that the meaning “wake” is a mental representation consisting of four conceptual elements, a “cause” operator, a “become” operator, a negative operator, and an “asleep” operator, such that “wake” corresponds to the complex concept “cause to become not asleep”.

The first requirement – that the analysis be less sophisticated than the analysandum – is easy to apply in many cases outside language. For example, the cognitive theory of vision (Marr 1982) sets out to explain our ability to detect edges and other features of the observed environment from certain mathematically primitive operations. This is a clear case of a highly sophisticated human capacity being explained through an ensemble of much more elementary operations. In this light, are “cause”, “become”, and “not asleep” “less sophisticated” than “wake”, taking “sophisticated” to mean something like “more easily represented and/or computed”? Unfortunately, we simply have no idea how to measure differences in ease of representation or computation of this kind: in the absence of any robust theory of cognitive processes, the question is entirely open.

Before addressing Cummins’ second criterion, we can observe that this highlights another problem Cummins mentions: the fact that we have no independent way to describe psychological capacities other than by the analyses we offer of them. The only way we have to capture what it is to understand the meaning “wake” is to offer some kind of intentional description of that meaning in other terms, such as, precisely, “cause to become not asleep”. But if we then go on to claim that “cause to become not asleep” actually represents the underlying conceptual structure concerned, we have advanced an extra claim for which other evidence is needed.

On Cummins’ second criterion – difference in kind from the explanandum – it is equally unclear whether we have achieved any explanation. “Asleep”, “become”, and “cause”, like “wake” itself, are all meanings and, on the face of it, meanings of a similar order of complexity. It may be true that we can often (or at least sometimes) use the expression “cause to become not asleep” as an alternative to the expression “wake”, but this does not show that the former is the analysis of the latter.

On the third criterion, too, we are not much better off: we are presupposing an ability to correctly apply the concepts “cause”, “become”, and “not asleep”, but without an account of what this ability consists in. In particular, there is a pressing question about how the cognitive system determines when the conditions for applying a concept are satisfied (see Chapter 2). Most words in natural language are vague, in that whether they can be accurately predicated of a particular referent is not a simple yes/no matter, but admits of degrees.
On Cummins’ criteria at least, it would seem that decompositional strategies in semantics are of dubious explanatory utility. Nevertheless, there seems to be no currently available alternative within the ambit of traditional linguistics. Non-decompositional computational models like Landauer and Dumais (1997), which model likelihood of occurrence statistically, abandon the hypothesis of lexical content and therefore fall outside the scope of semantics as normally conceived. As long as one approaches semantic analysis with the aim of distinguishing a variety of semantic properties within a lexeme, some form of decomposition is the most likely theoretical model, even if it is presently unclear how far it meets some reasonable criteria of explanatory utility. An alternative response would be to reconceive the epistemological framework in which semantic analysis is undertaken: rather than holding it to the same criteria as the natural sciences – the ultimate source of Cummins’ criteria – we might choose to see it instead as a fundamentally hermeneutic exercise closer to the interpretative textual disciplines (see Chapter 28 and Riemer (2005: chapter 7)). Such a reorientation would have the advantage of not holding the existing explanatory strategies of semantics to a standard they are manifestly unable to uphold, while at the same time offering a way to conceive of them which accounts for the intuition of explanatory progress that many investigators feel while pursuing them. See the Introduction to this volume for more suggestions in this spirit.

Further reading


References

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Lexical decomposition


**Related topics**

Chapter 2, Internalist semantics; Chapter 5, Cognitive semantics; Chapter 7, Categories, prototypes and exemplars; Chapter 14, Sense relations; Chapter 22, Event semantics; Chapter 25, The semantics of lexical typology; Chapter 28, Interpretative semantics, Chapter 29, Semantic processing.