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Semantics
The meaning of words and sentences

John Saeed

10.1 Introduction
Semantics is the study of meaning communicated through language. Viewed through the lens of contemporary academic disciplines it is an important focus of enquiry in linguistics, philosophy, psychology, anthropology and computer science, to name just the most evident. The aim of this chapter is to briefly outline some important current approaches within linguistics. It will emerge how researchers in linguistics are fundamentally influenced by ideas in these other disciplines, while seeking to maintain the goal of linguistics: to characterize the full spectrum of human languages. The discussion begins by briefly considering semantics as part of descriptive linguistics, the basic activity of documenting individual languages. The endeavour to document languages has become a focus of greater urgency as public realization has grown about the large number of languages threatened with extinction. We go on to identify a broad division between two successful theoretical research paradigms. The first is essentially philosophical in its genesis and proposes that notions of truth and compositionality are crucial in meaning. The second is psychological in orientation and is concerned with the cognitive status of processes and representations employed by speakers in communication. Each encompasses a broad spectrum and naturally there are significant areas of overlap. The first, often somewhat confusingly termed formal semantics, has its roots in Tarski’s (1956) truth definitions and is represented today in a large and heterogeneous field of enquiry, amongst which we focus on dynamic approaches such as Discourse Representation Theory. The second approach is equally broad, and here we concentrate on the recent growth of interest in lexical semantics, for example in the approach known simply as cognitive semantics. Both approaches find themselves seeking to accommodate recent advances within pragmatics.

10.2 Semantics in descriptive and typological linguistics
We can apply the term descriptive linguistics, for the purposes of the present discussion, to the activities of linguists who write grammar of languages, and in particular attempt comprehensive coverage of a single language. Such linguists typically eschew formalism
and instead use a toolbox of ideas and procedures that has developed over time from structural linguistics and that is increasingly called ‘basic linguistic theory’ (Dixon 2010). Such grammars generally embody André Martinet’s (1960) concept of double articulation, which identifies as a characteristic of language that meaningless form, at different levels, is mapped to meaningful elements. As a result semantics is distributed across the grammar and lexicon in a series of form – meaning correlations. In grammar this leads to the identifications of systems, for example where morphological forms might be mapped to meaningful distinctions of tense, aspect, mood, evidentiality and negation.

We can take the example of the semantic system of aspect, which allows different views of how a situation is distributed over time. This is in principle a distinct system from tense, which allows the positioning of situations in time relative to some reference point, though in many languages the two systems are marked on verbs in similar ways. Aspect allows speakers to view an event in various ways, for example as complete, or incomplete, or as something repeated over a period. This particular three-way distinction is mapped in some languages to grammatical distinctions between perfective, imperfective and habitual forms. These might be marked morphologically on the verb, as with the Somali past tense perfective/imperfective distinction in the examples below:

(1) Warqad buu akhrinayaa
letter FOCUS.he was.reading
‘He was reading a newspaper.’

(2) Warqad buu akhriyey
letter FOCUS.he read
‘He read a newspaper.’

In Hausa, however, such distinctions are marked by preverbal clusters of particles, as below:

(3) Yàara sun tà fi tashàa. (Perfective)
children 3PL.PFV go station
The children went/will have gone to the station.

(4) Yàara sun-nàà táfìyàà tashàa (Imperfective)
children 3PL-IMPF go station
The children go/will go/are going to the station.

(5) Yàara su-kàn tà fi tashàa (Habitual)
children 3PL-HAB go station
The children usually go to the station. (Mahamane 2008)

Example (4) shows us that aspect is distinct from tense since the same aspect is compatible with various positions in time. In other languages, these semantic distinctions might be marked by auxiliary verbs occurring in syntactic constructions with the main verb, as in the English habitual She used to sleep late. In descriptive approaches the semantics of aspect is described in relation to its formal realization and the place of that realization in the grammatical description. The account of other semantic systems will be aligned with their grammatical mapping, providing a dispersed account of grammatical semantics.
In this approach a level of generality is realized through typology, the study of linguistic systems found cross-linguistically, where particular semantic systems are factored out of grammars and compared across samples of languages. One example is modality, which allows the speaker to communicate judgements of the potentiality of a state of affairs. Typically this operates on several interrelated planes. Thus epistemic modality allows the speaker to signal stronger and weaker commitment to the factuality of statements, as in *It might be raining* versus *It is raining*. Deontic modality allows the speaker to communicate attitudes to social factors of obligation, responsibility and permission, as in *You might let them know the truth* versus *You must let them know the truth*. In English the same modal auxiliary verbs may fulfil both roles, so that *Alexander may leave early* can communicate either a judgement of possibility (epistemic modality) or permission (deontic modality). Such modal verbs are just part of a more general resource allowing speakers to modulate commitment to real and hypothetical situations. Typological studies such as Palmer (2001) investigate the semantic distinctions available and their mode of realization in languages. The investigation may develop further classifications, for example the introduction of terms such as abilitive modality for possibility based on the speaker’s view of a subject’s nature (*Harry can play hockey; This floor can support their weight*), and teleological or bouletic modality, based on the speaker’s view of a subject’s goals and desires (*He has to improve his Irish*). Such inquiry will also investigate whether modality is a single semantic category or a grouping of related categories. An issue here is the relationship of modality to evidentiality, which is a system that allows, or in some languages commits, speakers to communicate sources of information or knowledge that support assertions, as in the examples below cited in Aikhenvald (2004: 2–3) from Tariana, an Arawak language spoken in northern Amazonia:

(6) a. Juse iɾida di-manika-ka
José football 3sgnf-play-REC.P.VISUAL
‘José has played football (we saw it)’

b. Juse iɾida di-manika-mahka
José football 3sgnf-play-REC.P.NONVISUAL
‘José has played football (we heard it)’

c. Juse iɾida di-manika-nihka
José football 3sgnf-play-REC.P.INFERRED
‘José has played football (we infer it from visual evidence)’

d. Juse iɾida di-manika-sika
José football 3sgnf-play-REC.P.ASSUMED
‘José has played football (we assume this on the basis of what we already know)’

e. Juse iɾida di-manika-pidaka
José football 3sgnf-play-REC.P.REPORTED
‘José has played football (we were told)’

Here the morphological marking (in bold) on the verb commits the speaker to select from a five-fold evidential distinction between these reports of a recent past event. We can see the similarity with modality in English modal verbs where *must* can communicate a speaker’s inference made from evidence, as in *These fossil footprints must have been left by an Australopithecus*. The question of how modality and evidentiality are related, for example as two members of a larger semantic grouping, is an open question.
The other main semantic task in this approach is to account for word meaning by the creation of a dictionary or lexicon for each language. This is interdependent with grammar writing because the structure of the lexicon will reflect analyses of the phonology and morphology of the language. The lexicon is always a structured network of the identified meaningful elements in the language but key issues such as the entry forms, how to deal with derived forms and how much idiosyncratic behaviour is included are matters of analysis and argument. In this balance between grammar and lexicon we can see a modern reflection of Franz Boas’ (1911) anthropological linguistics system of grammatical description, word list and texts. Field lexicographers involved in language documentation face the same theoretical issues as in all lexical semantics, including discriminating between homonymy and polysemy; representing lexical relations like synonymy, antonymy, hyponymy; and accounting for the role of context (Frawley et al. 2002). Homonyms are words which are identical in form but which have different meanings and are thus given independent entries in the lexicon. Polysemy describes cases where distinct senses are analysed as being related, either in speakers’ minds or historically. These are traditionally assigned subsections of the same entry in the lexicon. However when the linguist comes across distinct senses of a word the decision to identify homonymy or polysemy is sometimes hard to make. So in English it might seem likely that bark ‘outer layer of tree’ and bark ‘sound made by a dog’ are good candidates for homonyms, i.e. are unrelated, but speakers might be less sure about another common word pool whose meanings include ‘a body of water’, ‘a game played on a billiards table’ and ‘a group of people available for some purpose (e.g. press pool, typing pool)’. Polysemy itself raises difficult theoretical and practical questions since all words have a certain plasticity that allows them to be used in different contexts. So in English fresh is interpreted somewhat differently when applied to water, air, produce and sheets. The question is the extent to which for specific words this variation should be identified, at one extreme, as distinct senses, or at the other as a single underspecified meaning that is filled in or enriched by contextual information. We shall discuss some proposal for representing polysemy later in the chapter. For descriptive semantics these issues are more or less acute depending on the access to speakers and the richness of available materials and earlier linguistic accounts.

What distinguishes this descriptive approach from other contemporary approaches is its emphasis on embedding semantics as part of the grammar and lexicon production process and its avoidance of general overarching theories of semantics. The next approaches we consider differ in this regard.

10.3 The philosophical turn

While philosophers have since ancient times been concerned with the nature of language, the early twentieth century saw a philosophical concentration on language that had a profound impact on the study of meaning in linguistics. In the writings of Frege, Russell, the early Wittgenstein, and Carnap there is evidenced what has been retrospectively called a linguistic turn (Dummett 1994). This term reflects analytical philosophy’s focus on the relationship between language, knowledge, logic and mathematics. Despite a continuing rift between philosophers interested in ordinary language and those determined to purify language to an ideal, there arose the view that the best way to understand thought is to vigorously analyse language. The philosophical study of how elements of language work, such as names, nouns, subjects, predicates, negation and sentence connectors, proved influential and attractive to linguists; as did discussion of more general notions such as
reference, truth, and intersubjectivity. One influential proposal was that the necessary rigour for this enterprise could be gained from applying the methods used in the development of the theory of logic. The growing adoption of these notions by linguists can be described as a philosophical turn.

There are three somewhat related ideas from the philosophy of language that have been important in linguistic semantics. The first is that the semantic content of statement can be characterized as a proposition. The second is the proposal that a speaker’s ability to understand the meaning of a statement in their language might be relatable to their ability to evaluate the truth of the associated proposition. The third is that a useful way to express propositions is by means of a formal, essentially logical notation.

Much debate in this literature centres on the idea that the meaning of a sentence is a proposition. Sentences themselves are of course abstractions from utterances, for example from concrete instances of speaking. Propositions are a further abstraction from sentences and this abstraction is made to identify a level of meaning or thought shared by several sentences. In this view the sentences below share the same proposition, the idea that Marconi invented radio, which can be expressed by these various sentences:

(7) Marconi invented radio.
(8) Radio was invented by Marconi.
(9) It was radio that was invented by Marconi.
(10) What Marconi invented was radio.

These sentences express the same proposition, which depending on the facts of the world may be true or false. One proposal is that this truth-evaluable proposition is the essential part of the meaning of these sentences and therefore the object of study in semantics. The differences between them arise from speakers’ judgements of how to fit the proposition into the structure of a conversation, which as a feature of the speaker’s use of the sentence is held to be the subject of pragmatics. So in short, this is a proposal that the semantic value of a sentence is the truth-bearing proposition it expresses. Of course only declarative sentences used to make assertions can be true or false of a situation. A question like Did Marconi invent radio? cannot be true or false since it makes no claim, but it clearly has something to do with the same proposition. This approach has to find some way of associating propositions with questions, orders and other types of speech act.

Using the notion of truth involves a focus on the denotational function of language: the way language allows us to talk about the world around us. We can use names like Melbourne and expressions like the President of Ireland to refer to specific entities in specific situations. Propositions allow us to assign properties to such entities or link them in various ways, such as if we state The President of Ireland visited Melbourne. A truth-based approach focuses on this external aspect of language and assumes that a sentence, or more accurately the proposition it expresses, is true or false depending on its fit to the state of affairs that obtain in the world. One version of this approach, truth-conditional semantics, proposes that the meaning of the proposition (and indirectly the sentence) is its truth conditions. Speakers who understand the sentence cannot necessarily tell whether it is true or false but they can tell what the world would have to be like in order for it to be true. To be able to do this, the proposal goes, they have to have understood the meaning of the sentence and the concept of ‘truth’.

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In this view, knowledge about truth conditions underlies some forms of everyday reasoning. So if the sentence in (11) is uttered, an English speaker will know that if it is true she must accept the conclusion in (12), provided the same entities are referred to.

11) The Mayor was bitten by a dog.
12) The Mayor was bitten by an animal.

This relationship is called entailment and in this case results from the meaning relationship between animal and dog of inclusion (or technically, hyponymy). Entailment can be characterized as a truth relation between sentences:

**ENTAILMENT AS A TRUTH RELATION.** A sentence P entails a sentence Q when the truth of the first (P) guarantees the truth of the second (Q), and the falsity of the second (Q) guarantees the falsity of the first (P).

Entailment, defined like this in terms of truth, can be used to characterize other semantic relations. Sentence synonymy, for example, can be defined as mutual entailment. So the two sentences below, which do entail one another, are synonymous:

13) The Harland and Wolff shipyard in Belfast built the Titanic.
14) The Titanic was built by the Harland and Wolff shipyard in Belfast.

Other sentence relations can be characterized in the same way. For example, two sentences are contradictory if the truth of one necessarily entails that the other is false.

If propositions, or their truth conditions, are candidates for sentence meaning an interesting question is what these propositions should look like. One answer, provided in different ways by philosophers Donald Davidson (1967) and Richard Montague (1974) is that sentences should be associated with expressions in a formal logic, which has the benefit of clear rules of composition and procedures for evaluating truth. In this view mapping from grammatical form to logical form facilitates semantic description. Employing the set-theoretic structures of model theory from the study of formal languages enables, first, the establishment of a mathematical model of the situations that the language describes and, second, a set of procedures for checking the mapping between the expressions in the logical language and the modelled situations. This process of interpretation aims to throw light on the semantic capabilities of natural languages.

Beginning with a parallel between logical connectives and natural language expressions like the English words *and*, *or* etc. in (15), this approach seeks to show the contribution of natural language expressions to the truth conditions of the containing sentences.

15) Connectives in logic and possible English counterparts

<table>
<thead>
<tr>
<th>Connective</th>
<th>Syntax</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>¬</td>
<td>¬p</td>
<td>it is not the case that p</td>
</tr>
<tr>
<td>∧</td>
<td>p ∧ q</td>
<td>p and q</td>
</tr>
<tr>
<td>∨</td>
<td>p ∨ q</td>
<td>p and/or q</td>
</tr>
</tbody>
</table>
### Connective Syntax English

<table>
<thead>
<tr>
<th>Connective</th>
<th>Syntax</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\lor$</td>
<td>$p \lor q$</td>
<td>$p$ or $q$ but not both</td>
</tr>
<tr>
<td>$\rightarrow$</td>
<td>$p \rightarrow q$</td>
<td>if $p$, then $q$</td>
</tr>
<tr>
<td>$\equiv$</td>
<td>$p \equiv q$</td>
<td>$p$ if and only if $q$</td>
</tr>
</tbody>
</table>

In the parallel drawn here the English word *and* is seen as sharing the truth-conditional behaviour of the logical connective $\land$. The behaviour of $\land$ can be captured in the truth-table in (16), which basically says that both logical expressions joined by $\land$ have to be true (T) for the complex expression to be true:

\[(16)\]

<table>
<thead>
<tr>
<th>$p$</th>
<th>$q$</th>
<th>$p \land q$</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
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<tr>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
</tbody>
</table>

The claim is that this is also true for compound sentences involving *and* as in (17).

\[(17)\] Joan has bought a car and John doesn’t know about it.

In this approach the truth properties of other grammatical categories like quantifiers can be investigated by using sets and functions. Thus English *all*, *some* and *no* can be defined as in (18), (where paraphrases are given to explain the conventional use of 1 for true, 0 for false and iff for ‘if and only if’):

\[(18)\] All $(A, B) = 1$ iff $A \subseteq B$

All A are B is true if and only if set A is a subset of set B

\[(19)\] Some $(A, B) = 1$ iff $A \cap B \neq \emptyset$

Some A are B is true if and only if the set of things which are members of both A and B is not empty

\[(20)\] No $(A, B) = 1$ iff $A \cap B = \emptyset$

No A are B is true if and only if the set of things which are members of both A and B is empty

Syntactic categories such as nouns, adjectives, intransitive and transitive verbs can also be given set-theoretic representations that allows their denotational properties to contribute in a consistent way to the denotational behaviour of their containing sentence in the model. So a sentence like *Zoli is Hungarian* will be translated into a semantic formula which will be true only if the entity denoted by the name *Zoli* is a member of the set of things denoted by the predicate *is Hungarian* in the relevant context. The aim is to see how much the compositionality and transparency of the formal notation can reflect the properties of the natural language under study.
Even at its most successful this approach suffers from the disadvantage that it tends to view sentences as static independent constructs that are mapped to semantic forms. Much of language structure however reveals that sentences naturally form part of larger structures that emerge as part of an interactive process amongst speakers. Speakers use pronouns, for example, to link references to entities between sentences and between sentences and the context. These links shift as the conversation progresses and new entities are talked about. Similarly, speakers may use elliptical or partial forms, relying on their hearers’ ability to supply the missing elements. A number of formal approaches have been developed to capture the dynamic nature of language. One such approach is Discourse Representation Theory (DRT, Kamp and Reyle 1993), which formalizes a dynamic updating level of discourse structure and in which discourse referents are tracked across successive sentences. The discourse referents form an intermediate level between the nominals used in the sentences and the real individuals in the situation described. The main form of representation is a Discourse Representation Structure (DRS), usually presented in a box format, as shown below. These DRSs are built up by construction rules from the linguistic input, sentence by sentence. We can take the sentences in (21) as uttered in sequence and assume that the pronoun *it* in the second refers to the monster identified in the first. We mark this relationship, traditionally called anaphora, by using the shared subscript *i*.

(21) a. Frankenstein created a monster *i*.
   b. It *i* woke up.

In DRT the utterance of the first sentence will trigger the construction of the DRS below:

(22) \[
\begin{array}{c}
  \text{x} \\
  \text{Frankenstein (x)} \\
  \text{monster (y)} \\
  \text{created (x, y)}
\end{array}
\]

The discourse referents are given in the top line of the DRS, called the universe of the DRS, and below them are conditions giving the properties of the discourse referents. These conditions govern whether the DRS can be embedded into the model of the current state of the discourse. A DRS is true if all of the discourse referents can be mapped to individuals in the situation described in such a way that the conditions are met. A name like *Frankenstein* in (22) denotes an individual, while an indefinite NP like *a monster* will be satisfied by any individual meeting the property of being a monster. The third condition is the relation *created (x, y)*. We can see that the truth conditions for sentence (21a) are given here by a combination of the discourse referents and the conditions. The sentence will be true of a situation if it contains two individuals; one named Frankenstein, the other a monster, and if the first created the second. An important point is that in an example like this the introduction of a discourse referent into a DRS carries an existential commitment by the speaker. Thus the indefinite NP *a monster* is treated as having existential force, though there are other ways of introducing indefinite nominals which do not have this existential commitment, as we shall see below. The initial DRS is labelled $K_0$, the next $K_1$ and so on. The latest $K$ acts as the context against which a new sentence in the discourse is interpreted.
The second sentence in (21) updates the discourse and adds another discourse referent, it. The embedding rule for pronouns will say that unlike names we must find an accessible antecedent for it. In this case gender is a factor since it must find a non-human antecedent. If the correct antecedent for the pronoun is identified, the result is the extended version below of the original DRS with a new reference marker and a new condition (23).

\[
\begin{array}{c}
\text{Frankenstein} (x) \\
\text{monster} (y) \\
\text{created} (x, y) \\
u = y \\
\text{woke up} (u)
\end{array}
\]

A negative sentence like (24) will be assigned the DRS in (25):

(24) Count Dracula does not own a sunlamp.

(25) Here the DRS contains one discourse referent and two conditions: the first is the usual naming relation, Count Dracula (x); and the second is a second DRS embedded in the first and marked by the logical negation sign \(-\). The satisfaction of this second condition is that there is not a sunlamp such that Count Dracula owns it. This contained DRS is said to be subordinate to the containing DRS and is triggered by the construction rules for negation. This subordination helps provide a formal reflection of cases where antecedents may not be accessible to subsequent pronouns. Here the conditioning factor is negation, where as suggested by our characterization of how the condition in (25) is satisfied, there is no existential commitment associated with the indefinite NP \textit{a sunlamp} in this sentence, unlike \textit{a monster} in (22).

The effect of this is that discourse referents introduced within a subordinate DRS under the scope of negation are inaccessible to pronouns in subsequent stages of the DRS, as shown by the oddness of the sequence below:

(26) a. Count Dracula doesn’t own a sunlamp.
    b. He hides it.

This sequence would produce the DRS in (27).
The pronoun *he* in the second sentence is successfully interpreted as anaphoric with *Count Dracula* in the first sentence, and hence \( z = x \) in the DRS conditions. However the question mark in the identification of an antecedent for *u* (i.e. *it*) is because the only possible antecedent for *y* (*a sunlamp*) is not accessible since it occurs in the subordinate DRS box under negation. This explains the semantic oddity of (26b) above and so provides a formalization of one aspect of the relation of anaphora or pronoun coreference.

Even this briefest of sketches helps show that DRT seeks to provide a framework to explain the dynamic process by which discourse referents are introduced and maybe subsequently accessed by pronouns. A number of other approaches have like DRT sought to formalize a process of updating information states, for example file-change semantics (Heim 1983), dynamic predicate logic (Groenendijk and Stokhof 1991) and update semantics (Veltman 1996). Dynamic predicate logic, as the name suggests, modifies predicate logic by adding information states as a condition on the interpretation of reference. Noun phrases introduce variables into discourse and the information state configuration determines what interpretation they can have. Truth is still calculated relative to a model but is dependent on the successful resolution of the reference of discourse entities. Update semantics is a dynamic version of propositional logic, which uses the philosophical notion of possible worlds, that is, alternative ways things might have been. Information states are viewed as subsets of the set of possible worlds. In this approach a sentence updates an information state by eliminating worlds in the model that are inconsistent with the new sentence. In other words, updating is a process of eliminating possibilities. In addition to the tracking of referents through a discourse other dynamic approaches have investigated other areas, for example how presuppositions and tense relations are updated during a discourse.

These formal approaches have joined naturally with work on sentence meaning in computational linguistics and artificial intelligence (AI). Segmented Discourse Representation Theory (SDRT; Asher and Lascarides 2005) for example, combines ideas from dynamic semantics with rhetorical structure theory to account for discourse coherence. SDRT views a discourse as being segmented into constituents related to each other by rhetorical relations. These are organizational devices used by the speaker and include notions such as narration, elaboration, explanation and correction. The claim is that this rhetorical structure affects the updating of reference, tense and other semantic relations. For example the expected availability of anaphoric relations maybe blocked by rhetorical structure. Asher and Lascarides (2005: 60) give the example in (28).
(28) (a) John had a great evening last night.
(b) He had a great meal.
(c) He ate salmon.
(d) He devoured lots of cheese.
(e) He won a dancing competition.
(f) It was a beautiful pink.

In the absence of operators like negation nothing in standard DRT would prevent the pronoun it in (f) being interpreted as coreferential with salmon in (c). The unnaturalness of this, in the SDRT view, comes from the rhetorical structure, which sees the sequence (b–e) as an elaboration of (a), which thus forms a discourse subordination structure, a kind of descent or digression into greater detail. When the narration resumes at a more general level the nominals are in some sense blocked off from subsequent anaphoric relations.

In other cases the rhetorical structure allows anaphora where strictly grammatical accounts would not predict it, as with the pronoun it in (29).

(29) The room was cold.
The wine was poor.
The turkey was overcooked.
It was a disaster.

Here there is a kind of summing up or topic anaphora, which allows anaphoric reference to something like the dinner that is not explicitly expressed rather than any of the expressed and available nominal candidates. The move within formal approaches towards dynamic accounts and modelling information states marks a shift in orientation from a denotational to a representational approach, as attention moves to the speaker’s and hearer’s mental models of the ongoing discourse. The further step to discourse management structures can also be seen as a move to integration with pragmatics, given that information packaging is a context dependent activity.

10.4 Cognitive semantics

Cognitive semantics is part of a wider approach known as cognitive linguistics (Chapter 29). Scholars in this approach sought to counter what they saw as the overly philosophical orientation of mainstream twentieth century semantics. These linguists (e.g. Lakoff 1987; Langacker 2008) disagree fundamentally with formal approaches by rejecting what they term objectivism: the idea that language directly models or maps reality. In its place they assert that meaning relies on conceptualization, which underlines how a speaker construes a situation. It follows from this that semantic structures are based on, indeed are themselves, conceptual structures. This approach seeks to reflect research on concepts and conceptual categories in the cognitive psychology literature and, in particular, incorporates embodiment theory (Johnson 1987; Gibbs 2006). This is the view that many of the conceptual structures and processes that we find in language derive from bodily experience, including vision; kinaesthesia, the bodily experience of muscular effort or motion; and somaesthesia, the bodily experience of sensations such as pressure.

Cognitive semantics generates a particular approach to word meaning. In a simple denotational approach words like names and nouns are in a direct relationship to the world. The things speakers can refer to (i.e. identify) by an expression may be called its extension.
and different types of linguistic expression are seen as having different types of extension. Proper nouns, or names, would have entities as their extensions and common nouns would have sets of things. So the name *Mogadishu* would have the city as its extension, while the noun *camel* would have as its extension the set of camels. It is possible to extend this to other types of words, so that the verb *live* would have as its extension the set of things that live and the adjective *green* would have as its extension the set of green things. In cognitive semantics however words are associated with conceptual categories and this raises the question of how these are structured. Cognitive semanticists have been influenced by experimental evidence from the psychologist Eleanor Rosch’s (1973, 1975) work in particular that categories naming natural objects have a structure of prototypicality, where they lack sharply defined boundaries, and have focal points represented by prototypical members of the category. The qualities of the prototypical members are most salient for the category. An example for English speakers is the category of the word *fruit*. Experiments show that speakers judge some types of fruit, such as apples and oranges as more typical and others, like pomegranates and watermelons, more peripheral. There are also cases like olives and tomatoes that are doubtful for some people.

Influenced by these results cognitive semanticists have proposed that lexical categories are formed of radial networks of senses, where the prototypical sense is related to other senses by cognitive processes, including generalization, specialization, and extension by metaphor and metonymy. Dirven and Verspoor (2004) analyse the word *school* as a radial category, where as shown in (30) the central prototypical sense of a learning institution is extended to other senses by such processes.

(30) Radial category *school*
   Central: learning institution
   Metonymy: the building housing it (as in *The school burnt down*)
   Metonymy: teaching staff and/or pupils associated with it
   Generalization: group of artists sharing a style
   Generalization: school of thought
   Specialization: university faculty
   Metaphor: school of fish

In this view the sense relations are conventionalized rather than generated in context by individual speakers and word meanings are thus seen as semantic networks stored in memory.

Cognitive semanticists have investigated the particular problem of polysemy in prepositions, which are of special interest to this perspective because they are grounded in spatial experience. Spatial concepts in this approach are grounded on more fundamental kinaesthetic concepts called, in one version, image schemas. One such schema is a path, diagrammatically represented as in Figure 10.1:

![Figure 10.1 Path schema (adapted from Johnson 1987)](image.png)
Associated with this schema are a number of associated implications, which guide the integration of this schema into lexical concepts, as in (31).

(31)  
(a) Since A and B are connected by a series of contiguous locations, getting from A to B implies passing through the intermediate points;  
(b) Paths tend to be associated with directional movement along them, say from A to B;  
(c) There is an association with time. Since a person traversing a path takes time to do so, points on the path are readily associated with temporal sequence. Thus an implication is that the further along the path an entity is, the more time has elapsed.

Image schemas are incorporated into spatial concepts that are involved in prepositions. Polysemy is characteristic of prepositions so that for English over, for example, we find a range of senses which we can paraphrase roughly as ‘above’ (The plane flew over the tornado zone), ‘across’ (The cafe is over the road), ‘covering’ (They plastered over the frescoes), and related non-prepositional uses like ‘again’ (He kept saying it over and over), and ‘finished’ (The interview was over after a few questions). The cognitive semantics literature provides image topological models of these, for example the composite image schema in Figure 10.2 for over in The plane flew over the tornado zone, which is in the style of Lakoff (1987).

![Figure 10.2](image.png)

In the schema in Figure 10.2 the moving entity is termed TR ‘trajector’ and the background against which the movement occurs is the LM ‘landmark’. In Lakoff’s account this schema is the central one and is extended to other senses in the semantic network of over as in (32).

(32)  
(a) TR is in contact with LM: The car drove over the bridge.  
(b) TR is stationary over LM: The painting is over the mantelpiece.  
(c) TR covers LM: The city clouded over.  
(d) Endpoint of TR path as location: The hotel is over the river.

Other senses include transfer as in They handed over their weapons and metaphorical extensions, as in She has a strange power over him where physical elevation is associated with power. In other cases abstract concepts are conceptualized as physical entities as in He’s never got over the divorce, She’s over eighteen and He was breathalysed and was over the limit.

Cognitive semanticists have sought to distinguish and relate senses within a semantic network and have represented these in a number of ways, including network diagrams, where multiple senses are distributed in a network around prototypical senses. The
distribution, i.e. the architecture of the network, depends on arguments about the interrelatedness of the senses. Tyler and Evans (2003) discuss some principles for identifying and classifying senses and give detailed networks for English prepositions. Other writers, such as Glynn and Robinson (2012), have proposed the use of corpus data and statistical models to substantiate analyses of sense relations.

Possibly the most influential work in cognitive semantics has been in re-assessing metaphor, metonymy and other linguistic strategies that have been traditionally viewed as figurative language. Dispensing with the distinction between literal and figurative language, where the latter is seen to represent rhetorical or decorative additions, cognitive semanticists see metaphor as a basic and universal part of human understanding. In this view it is basic to our attempts to categorize the world, especially in our attempts to integrate novel concepts into our existing knowledge system. Conceptual Metaphor Theory (Lakoff and Turner 1989) characterizes metaphor as an analogical mapping from a source domain to a target domain. The mapping is seen as structured and as having key features such as systematicity, asymmetry and abstraction. Systematicity is a crucial feature, recognizing that many metaphors consist of more than an extension to a single sense of a word. Instead, they are used to structure a whole conceptual domain, the target, in terms of another, the source. In this account speakers’ knowledge of attributes of the source domain will allow them to characterize elements of the target domain. So for example the metaphor THEORIES ARE BUILDINGS licenses a series of links: the theorizer to a builder; formulation to construction; assumptions to foundations; validity to structural rigidity, etc. Consequently speakers can say things like His theory lacked adequate foundations; The theory was demolished by new evidence; The data doesn’t support the theory etc. The features of asymmetry and abstraction reflect the claim that conceptual metaphors are viewed as a means of integrating new knowledge. So the new domain is characterized in terms of the old rather than the other way round and the source domain also tends to be more concrete than the target, as in this THEORIES ARE BUILDINGS example.

A similar approach may be taken to metonymy so that rather than viewing it as a rhetorical trope, it is viewed as a referential strategy that relies on domains of knowledge. In this account speakers choose contextually salient associations to guide hearers to the intended referent. Metonymic reference is traditionally divided into several types, including the following where the metonym is underlined: PART FOR WHOLE (We need some new blood in the department), WHOLE FOR PART (Australia has retaken the Ashes), PRODUCER FOR PRODUCT (She never wears Tom Ford), PLACE FOR INSTITUTION (Houston, we have a problem). This account, however, predicts that metonymy is a ubiquitous and flexible process that can be based on any knowledge or assumptions in the context.

At the level of sentence meaning cognitive semanticists have proposed dynamic models of discourse such as mental spaces (Fauconnier 1997; Fauconnier and Turner 2002), which is a theory of how speakers and hearers employ various linguistic devices to mutually manage references to entities, time references and distinctions between actual and possible scenarios. These linguistic markers, which are termed spacebuilders, act as invitations to the hearer to construct mental spaces and the relevant referential links. So adverbials of time and situations, for example when we were children, in Shakespeare’s play ‘Hamlet’, modal verbs like possibly and really and connectives like if trigger the use of background knowledge to set up mutual models of situations. Speakers and hearers then interpret references to individuals, times, etc. relative to the mental models. Speakers’ and hearers’ facility with the manipulation of such mental models is also held to underpin the online processing of novel complex analogies in what is called conceptual integration (or blending), as in examples like...
Ireland is the poster child of austerity. Here the speaker invites the hearer to draw on different areas of knowledge, including the use of images of children by charitable organizations and Europe’s recent financial crisis, and to extend these to a novel conception.

10.5 Semantics and pragmatics

The approaches we have discussed, along with most others, have increasingly had to take account of the growth of pragmatics (Chapter 13). The study of utterances in real-life situations clearly reveals the importance of contextual knowledge in how hearers interpret a speaker’s meaning. At the level of word meaning the issue is how to balance a notion of conventional meaning against the contextual processes of selecting or accommodating to the specific sense intended by the speaker. An example is the narrowing of *drink* in *All politicians drink* from the meaning ‘drink liquid’ to mean ‘drink alcohol’ and possibly further to ‘drink substantial amounts of alcohol’. To the extent to which such processes are seen as inferential and based on contextual knowledge they can be characterized as pragmatic and indeed a field of lexical pragmatics has been suggested in such theories as Relevance Theory (Wilson and Sperber 2012). Such accounts extend to cover loose or approximate uses like *circle* in *Children, please form a circle!* and the metaphorical use of *martyr* in *My sister is a martyr*.

At the level of sentence meaning the proposal to identify propositions as the semantic content of sentences runs into similar issues. The words used in sentences often (some would say always) lack sufficient specificity to identify a particular proposition and thus be able to support truth conditions, which is problematic for those approaches relying on them. It has always been clear that deictic elements like pronouns, demonstratives and temporal and spatial adverbs rely for their interpretation on contextual information. However, the elements of which this is true have been gradually extended to cover quantifiers, for example the scope of *everyone* in *Everyone will be at the party*; gradable adjectives with their implicit standards, such as *expensive* in *That apartment is very expensive*; and cardinal numbers, which in context often have implicit qualifications of *exactly*, *at least* or *at most* left to inference, so that a statement *Undergraduates may borrow six books from the library* would not normally prohibit them from taking five. These are a few examples of the extent to which semantic form underspecifies the meaning gained by hearers. What is currently a matter of investigation and debate is the nature of the semantic representations before and after contextual enrichment and the resulting balance between semantics and pragmatics.

Note

1 Key to glosses: 3 = third person; HAB = habitual; IMPF = imperfective; PFV = perfective; PL = plural.

Further reading

References

Boas, F. (1911) Handbook of American Indian Languages, Part I. Smithsonian Institution, Bureau of
John Benjamins.
Polysemy. Amsterdam: John Benjamins.
100.
Schwarze and A. von Stechow (eds) Meaning, Use and Interpretation of Language, pp. 164–89.
Berlin: De Gruyter.
Chicago: University of Chicago Press.
Chicago: University of Chicago Press.
Longman.