

# INTRODUCTION

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p0005 *The Concise Encyclopedia of Semantics* gathers into one compact volume 214 articles from the world's leading experts. All aspects of semantics are appraised, making the scope of coverage unrivalled for a single volume. The lightly re-edited articles were selected from the wealth of scholarly work compiled for *The Encyclopedia of Languages and Linguistics, Second Edition* (Brown 2006). This introduction explains the expansive scope of *The Concise Encyclopedia of Semantics*.

p0010 Semantics is the study of meaning in human languages; more precisely, it is the study and representation of the meaning of every kind of constituent and expression in language (morph, word, phrase, clause, sentence, text/discourse), and also of the meaning relationships among them. To say *Her frown means she's angry* is to talk about the frown as a sign of anger; a language expression is not the sign of its meaning, but an arbitrary (though conventional) symbol (or set of symbols) for the meaning. Semantics studies the interpretation of these symbols in their various combinations.

p0015 More often than not, full understanding requires some knowledge of context, consequently one might be misled on overhearing the following (adapted from Rachel Giora 2003: 175).

“Emma come first. Den I come. Den two asses come together. I come once-a-more. Two asses, they come together again. I come again and pee twice. Then I come one lasta time.”

The addressee knew that his Italian companion was telling (in his quaint English) how to spell *Mississippi*. More prosaically, the various meanings of English *bank* are, necessarily, elicited with reference to different contexts. A comprehensive volume on semantics cannot ignore context and common ground, even though these take us into pragmatics (the context dependent assignment of meaning to language expressions used in acts of speaking and writing). Common ground includes such assumptions as that the interlocutor is normally an intelligent being, that a speaker (let this be shorthand for “speaker and/or writer”) does not need to spell out those things obvious to the sensory receptors of the hearer (“hearer and/or reader”), or those which can easily be reasoned out on the basis of knowing the language and conventions for its use and from experience of the world the interlocutors inhabit. Common ground allows meaning to be underspecified by a speaker, so that language understanding is a constructive process in which a lot of inferencing is expected from the hearer (the person whom the speaker intends to be the (or a) recipient of the speaker's message and consequently to react to it).

p0020 Most people in our community hold two true beliefs: that meanings are a property of words and that word meanings are stored in dictionaries. Lexical semantics focuses on the semantic content of words and morphemes and the semantic relations among lexical items. This obviously leads us to consider certain semantically oriented aspects of lexicology. A dictionary (or lexicon, the terms are not differentiated here) gives the decontextualized sense of a word, abstracted from innumerable usages of it; the dictionary user must puzzle out for him- or herself what the speaker uses the word to refer to in the particular text in which it appears. Speakers refer to things – physical objects, abstract entities, places, states, events – that have existed (happened) in the past, things that exist (are happening) at present, and things that they predict will exist (happen) in the future. They also talk about things that could be or could have been if the world were different than it was, is, or is expected to be. Speakers talk about things in the fictional worlds and times of books and films; about things represented in paintings and photographs; about things that they deny exist; even, occasionally, about impossible things such

as *the largest prime number* or *My brother is an only child*. The existential status of entities referred to, and the nature of the world and time being spoken of, are very significant aspects of meaning that need to be accounted for within semantic theory. Semantics must meet the challenge of connecting the language expressions used to talk about all these different kinds of things to the very things spoken about, that is language forms must be linked to a model of the world and time spoken of ( $M^{w,t}$ ). To give the sense (roughly, “decontextualized meaning”) of a language expression  $e_O$  in the natural language being described (the object-language) is to translate it into a language expression “ $e_M$ ” in the metalanguage, the language of the semantic representation, which may be the same as the object-language (e.g., *dog* means “canine animal”), another natural language (e.g., Hausa *kare* means “dog”) or something more formal (e.g.,  $\forall x[\text{DOG}(x) \leftrightarrow \lambda y(\text{ANIMAL}(y) \wedge \text{CANINE}(y))(x)]$ ).

p0025 Meaning is compositional. The meaning of a text (or discourse, the terms are used interchangeably here) is composed from the meanings of its constituent utterances (including their punctuation or prosody – stress, disjunctures, intonation, tone of voice) and the sense of the sentence used in each utterance. The senses of phrases and sentences are computed from the senses of their constituents, with the most primitive chunks of meaning being taken from a lexicon (dictionary). The lexicon contains every language expression whose sense cannot be computed from its constituent parts, e.g., *paddle* must be listed because its meaning does not derive from *p+addle* or *pad(d)+le*, but *traveler* need not be listed because it derives from *travel+er*. Within twentieth century linguistics, studies of meaning progressed from lexical semantics to assigning senses which are to sentences, then to assigning denotation/reference to utterances and meanings to speech acts, culminating in studies of text (discourse) meaning and the analysis of meaning within conversations.

p0030 The very distinction between sense and reference (roughly, “what, in given a world and time, is spoken about”) drags in contexts and speakers, speech acts and hearers, and so pragmatics. Indexicals link language expressions to the situations of utterance and interpretation, and an indexical used as a form of address invokes socio-cultural matters such face and the use of honorifics. For example, in French it would normally be inappropriate for a child to address the teacher with *je t’en prie* (“you’re welcome; please do”) instead of the more respectful *je vous en prie*; in Japanese a socially distant third person can be insulted through the use of an in-group pronoun or verb form as in *Ano yaroo ga soo iiyagatta* (“That guy said so [impolite form]”). There are many languages where the indexical and other lexical and morphosyntactic choices indicate the status and familiarity of the speaker relative to the addressee and/or who (and sometimes what) is spoken of. We can generalize this to a choice of discourse style. There’s a link, here, to tabooed language. So along with articles on sense and many approaches to reference, *The Concise Encyclopedia of Semantics* has papers on aspects of socio-cultural behavior and pragmatics.

p0035 Semantics was traditionally concerned only with literal meaning and with sense, denotation (what the language expression is normally used to refer to), and reference. Yet much everyday language relies for its communicative force on the figurative language of metaphor and metonymy which drive reinterpretation and the creation of many novel expressions. Often language is enlivened with sound symbolism, which undermines the claim that the form~meaning correlation is completely arbitrary. There is also connotation: effects that arise from encyclopedic knowledge about the denotation (or reference) of a language expression and also from experiences, beliefs, and prejudices about the contexts in which the expression is typically used, e.g., the differences between *bunny* and *rabbit*, between *Nigger* and *African American*, between *frak* and *fuck*. Connotations reflect social and stylistic aspects of meaning. Avoiding words with dysphemistic connotations gives rise to euphemisms such as *the n-word*, *the f-word*, *the c-word* (as if there were only one English word beginning with each of these letters).

p0040 The study of semantics evolved on the one hand from the compiling of dictionaries and on the other from developments in rhetoric, dialectic, and rational argument among philosophers in Ancient Greece; these combined with interest in literary analysis to inspire the study of grammar in the Ancient World. Throughout history there has been a strong correlation between investigations of semantics and philosophical inquiry into rational argument and the meanings of language expressions analyzed and tested in systems of logic. There are therefore many essays on logic and the philosophy of language in *The Concise Encyclopedia of Semantics*. By and large, formal semantics developed from these areas of research.

p0045 The philosophical tradition bequeathed to linguistic semantics a branch of the discipline with strong adherence to truth-conditional semantics. In order to understand and evaluate the meaning of *It is raining* or *Kangaroos are marsupials* you need to know the conditions under which these statements would be true. Knowing these conditions allows you to make such inferences as that you will get wet if you go out into the rain and that female kangaroos have pouches to hold neonates. One problem is, as mentioned earlier, connecting the

language used to the world and time being spoken of. A greater problem is providing an acceptable semantics for non-truth-functional sentences (or utterances) like *Be quiet!* and *What's your name?* and expressive idioms such as *Thanks* or the ejaculation *Shit!* It has long been recognized that not all sentences (or utterances) are truth-bearing. Aristotle noted that 'Not all sentences are statements; only such as have in them either truth or falsity. Thus a prayer is a sentence, but neither true nor false' (*On Interpretation* 17a,1, Aristotle 1984). Later, the Stoics distinguished a 'judgment' (*axiōma*) as either true or false whereas none of an interrogation, inquiry, imperative, adjectival, optative, hypothetical, nor vocative has a truth value (Diogenes Laertius 1925 *Lives VII*: 65–68). For more than two millennia, logicians and language philosophers concentrated their minds on statements and the valid inferences to be drawn from them, to the virtual exclusion of other propositional types (questions, commands, etc.). Then Austin 1962 noted that people actually perform acts through certain forms of utterance (for example, make a promise by saying *I promise*, offer thanks with *Thank you*). Searle 1975 identified five macro-classes of such speech acts in the following words: 'we tell people how things are, we try to get them to do things, we commit ourselves to doing things, we express our feelings and attitudes and we bring about changes through our utterances.' Speech acts are the very source for (potentially verifiable and manipulable) language data; they are, however, quintessentially pragmatic. Nonetheless, several of the articles in *The Concise Encyclopedia of Semantics* investigate the more semantic aspects of speech acts.

p0050 Since Aristotle's time, formal logics (systems establishing the principles of reliable inference) have been used in representing meaning. Whereas a logic functions primarily as an abstract reasoning device, a natural language exists for use as a practical means of communication about our responses as human beings to our experiences. The semantic descriptions of natural language need to reflect this characteristic. Standard logics define the truth values of propositions connected by special uses of *and*, *or*, *if . . . then*. The meanings of general vocabulary items like *man*, *know*, *yesterday*, etc. are given by meaning postulates only in nonstandard logics. A formal nonstandard logic should make a useful metalanguage for natural language semantics if its terms and processes are fully defined, explicit, and rigorously adhered to. However, there is the problem that the metalanguage for natural language semantics needs to be at least as comprehensive, and of the same notational class, as natural language itself, and no existing logical system yet achieves this goal. All the following four criteria need to be met by a formal metalanguage for natural language semantics. (1) All the terms and processes of the formal metalanguage must be explicitly defined and strictly adhered to. Ideally, the vocabulary will be a specified set of symbols whose forms and correlated meanings are fully defined; all possible combinations of vocabulary items in the metalanguage will be generated from fully specified syntactic axioms and rules of syntax; and the meanings of syntactically well formed structures will be fully specified by semantic axioms and rules for the metalanguage. Proper formalization of the metalanguage should permit proofs of particular conclusions about semantic structure and so prevent mistakes derived from faulty assumptions and/or inference procedures. Such standards of rigor and exactitude tend to be ignored when using an informal metalanguage such as a natural language, however, none of the advantages of a formal system is necessarily unobtainable in an informal metalanguage. (2) The metalanguage must be applicable to the whole of the object-language and not just a selected fragment of it. (3) The formal metalanguage must be able to assign denotations to senses, i.e. link  $e_O$  to worlds and times (potentially) spoken of. (4) The products of the metalanguage should combine explicitness of statement with clarity of expression, so as to genuinely illuminate the meaningful properties and meaning relations of any and every expression within the object-language in terms which correlate with everyday notions of meaning in language. The basic requirement of semantic analysis is to satisfactorily communicate the meaning of language expression  $e_O$  from the object-language into expression " $e_M$ " in the metalanguage, bearing in mind that the metalanguage is meant to be understood by human beings who normally communicate in a natural language of which they have fluent command. If you understand neither Polish nor Swahili there is little point using Swahili as a metalanguage for the semantic analysis of Polish (or vice versa); e.g., to say *To jest pies* means "Ni mbwa" will not help you at all (using English as a metalanguage, they mean "It's a dog"). In practice, scholars either provide natural language glosses for exotic metalanguage expressions, or assume some existing knowledge of the semantics of the symbols and expressions being used: e.g.,  $\forall$  means "for all",  $\leftrightarrow$  means "if and only if",  $\wedge$  means "logical and",  $\lambda y(P(y))(x)$  means "x is a member of set P".

p0055 Lexical semantics comprehends content words like nouns, verbs, and adjectives, and grammatical elements like connectives, articles, modal and serial verbs; it also extends to the meanings of grammatical operators like number, tense, mood, and aspect. The semantics of quantifiers (e.g., *all*, *most*, *some*) needs to take syntax into account in order to ascertain the relative scope of the quantifier, especially where there is more than one quantifier in a clause (compare *Everyone in the room knew two languages* with *Two languages were known by everyone in the room*: their salient meanings seem to differ). Semantics cannot ignore the contribution that

morphosyntax makes to meaning because, of course, the morphosyntactic dissimilarity makes *The hunter killed the crocodile* (in Latin, *venator crocodillum occidit*) mean something different from *The crocodile killed the hunter* (*venatorem crocodillus occidit*). Although only a handful of grammatical theories are represented in *The Concise Encyclopedia of Semantics*, the semantic components of those described here concentrate on the meanings of sentences and the propositions which they contain. Theories of formal semantics do likewise. And although semantic relations such as antonymy, synonymy, and meronymy are usually associated with lexical semantics, these relations apply to the semantics of larger syntactic structures too (for instance, *venatorem crocodillus occidit*, *crocodillus venatorem occidit*, *crocodillus occidit venatorem*, *occidit crocodillus venatorem* are all synonymous).

To admit into semantic theory the semantic analysis of sentences leads directly to a concern with connected sentences and hence to longer texts. *The Concise Encyclopedia of Semantics* therefore includes a handful of articles which focus on the meanings of texts and discourses. An important aspect of texts is the intertextual relations, which include anaphoric relations often manifest through indexicals. Anaphors typically indicate coreference (*Sue<sub>1</sub> screamed at her attacker<sub>2</sub> and then she<sub>1</sub> hit him<sub>2</sub>*) but often merely semantic identity or similarity (*Sue bought a white shirt and Harry a black one, although Sue had said she didn't like the color*).

Consideration of texts raises matters of cohesion and coherence. Roughly speaking, a discourse is judged coherent where (the model of) the world spoken of ( $M^{w,t}$ ) is internally consistent and generally accords with accepted human knowledge. Discourse semantics needs to be able to represent  $M^{w,t}$  as a product of the meaningful contributions of such formal strategies as the choice of vocabulary, syntactic construction, and prosody (or its graphic counterpart, punctuation). A model of communicative behavior explaining exactly how discourse meaning is composed from the language expressions within the text requires input from many branches of linguistics.

Formal and mathematical systems are essential tools of research when computers are applied to lexicological, textual, and other semantic analysis. A discourse parser takes as input a text, and automatically derives its discourse structure representation. This requires the assembly of complex algorithms, speech recognizers and generators, lexica, sets of morphological and morphophonemic rules, grammars, parsers, logical form builders, and inference engines, all networked with vast amounts of encyclopedic knowledge. Computational lexicology develops machine-readable dictionaries from which to extract semantic definitions and semantic relations for use in natural language processing applications such as disambiguation, meaning overlap, information extraction, question answering, and text summarization. With the huge increase in on-line text and multimedia information in recent years, demand for automatic summarization systems has grown. The goal of automatic summarization is to extract information content from a source document so as to present the gist in a condensed form in a manner sensitive to the needs of the user and task. Articles in *The Concise Encyclopedia of Semantics* deal with such aspects of computational linguistics.

Aristotelian logic concentrated on entailments of propositions; Frege 1892 drew attention to their (or the speaker's) presuppositions. Only if *Sue has stopped smoking* is true does it entail *Sue no longer smokes*; but whether it is true or false, it (or the speaker) presupposes (or pretends to presuppose) that there is someone in the world spoken of ( $M^{w,t}$ ) identifiable as Sue, and also that Sue used to smoke. Grice 1975 famously identified certain non-monotonic (defeasible) inferences accessible from conversational sequences that arise from a speaker's implicature if s/he is abiding by the cooperative principle. For instance, a (male) colleague turns up late for a meeting and on entry immediately says *I'm sorry, my car broke down*. In so saying, he uses a conversational implicature from which he expects it to be understood that he is apologizing for being late, not for the fact that his car broke down, and that mention of the car break-down is intended to explain his being late because car-break-downs disrupt journey schedules. Even if none of his colleagues knew he was coming by car, he does not have to spell this premise out, it is implicit in (and non-monotonically entailed by) what he has said. Such mundane enrichment of what is said rests upon knowledge of social and cultural conventions and the cognitive principles that govern our thinking, all of which need to be accounted for in a semantic theory that comprehends utterance meaning.

Since meaning is in the head, the cognitive, psychological, and neurological aspects of meaning are a significant consideration. These range from how children acquire meanings, through the relation between meanings and concepts, to the impairment of meaning in people suffering brain disorders. *The Concise Encyclopedia of Semantics* includes articles on all these topics. Aristotle divided up human experience into ten categories, each associated with a grammatical class. He believed that the nature of the mind determines that all humans have similar phenomenal and conceptual experiences; a view that was adopted by, among many others, a number of seventeenth century rationalists. One, John Wilkins 1668, created symbols which

characterize and label each ‘thing and notion’ so as to represent its place in the natural order relative to all other things and notions. Wilkins also proposed a pronunciation system and syntax for this ‘philosophical language’ and wrote a dictionary translating English words into it, to produce a most comprehensive componential analysis of the language. However, twentieth century componential analysis owed nothing directly to Wilkins and others interested in a ‘universal character’; perhaps the closest heirs are thesauri and Wierzbicka’s natural semantic metalanguage.

p0085 There were several sources for twentieth century componential analysis: one was Prague school distinctive feature analysis of inflexional morphology; another was anthropology, where universal concepts like BE-THE-MOTHER-OF were used in giving the meaning of kin terms; a third was semantic field theory. Seemingly closed fields such as case inflexions or kin terms should permit exhaustive componential analysis in which every term within the field is characterized by a unique subset of the universal set of semantic components defining the field. However, these systems invariably leak into other fields when meaning extensions and figurative usage are considered. Furthermore an exhaustive componential analysis of the entire vocabulary of a language is probably unachievable, because it proves impossible to define the boundaries – and hence all the components – of every field. There is also a problem with the notion ‘component’. For instance, MALE is not so much a ‘component’ of *bull*, but an inferred property of a typical bull such that it is true to say *if something is a bull, then it is male*. Nonetheless, many lexical semanticists favor componential analysis, as will be seen from the articles in this compilation.

p0090 I have sought to explain in this Introduction the scope of coverage in *The Concise Encyclopedia of Semantics*, which is unrivalled for a single volume. The subject matter comprehends lexical semantics, lexicology, semantic relations, cognitive, psychological, computational, formal and functional approaches with excursions into text and discourse, context, pragmatics, the syntax-semantics interface and the semantics of grammar. This anthology is a Pandora’s box of scholarly delights for readers of all kinds who wish to acquaint themselves with the recent work by the world’s leading authorities within the broad field of semantic inquiry and research.

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