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# Word Meaning

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MIT Press

**Published on:** Jun 17, 2026

**URL:** <https://oecs.mit.edu/pub/8p0rfzey>

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A word's meaning is the set of knowledge associated with a particular spoken, written, or signed word form that captures what the word refers to and how it is used and understood in context. This information is referred to as *lexical-semantic* knowledge and is typically distinguished from *grammatical*, or *syntactic*, information. Word meanings are a basic unit of linguistic knowledge and are combined together to express complex meanings in phrases and sentences. Cognitive theories of word meaning explore how word meanings are learned, represented, and processed.

## History

Sumerian scholars compiled lists of words and their meanings on clay tablets as early as about 2000 BCE. These early dictionaries mainly clarified rare or specialized terms, but over centuries, dictionaries became broader as dictionary writers (known as lexicographers) endeavored to exhaustively document how all words were used across entire languages ([Mugglestone, 2011](#)).

Since the early 20th century, linguists have reflected on the nature of word meanings more broadly as part of a system of linguistic *signs*. Saussure famously argued that linguistic signs (i.e., words) consist of a *signifier* that represents its physical form and a *signified* that represents its meaning, with the relationship between these two components being conventional and largely arbitrary ([Reda, 2016](#); see the section “Core concepts” for examples).

From the mid-20th century, researchers increasingly turned to experimentation to reveal how people learn and process word meanings [see [Psycholinguistics](#)]. Since the 1980s, computational models, especially neural network models, and cognitive neuroscience, have led to increasingly well-specified and neurobiologically plausible theories ([McClelland & Rogers, 2003](#)) [see [Computational Models of Language Learning](#); [Neuroscience of Language](#); [Recurrent Neural Networks](#)]. Large language models have recently transformed the field, demonstrating the richness of lexical-semantic knowledge that can be extracted from massive bodies of text [see [Large Language Models](#)].

## Core concepts

### *Arbitrariness*

There is often no necessary or intrinsic link between a word's form and its meaning. Words like “cat,” “can,” and “cap” sound similar but have unrelated meanings; “big” and “large” have similar meanings despite dissimilar forms. This arbitrariness in the form-to-meaning mapping is reduced in some domains ([Monaghan et al., 2011](#)); onomatopoeic words (“buzz,” “hiccup”) resemble the things to which they refer, and morphological families, which are built from the same base word (e.g., “hop,” “hops,” “hopping”), systematically share form and meaning. Signed languages are somewhat less arbitrary, as some signs (referred to as *iconic*) visually resemble what they denote [see [Sign Language](#); [Iconicity](#)].

## Ambiguity

Nearly all common words are ambiguous, with a single form mapping onto multiple meanings. This phenomenon, known as lexical or semantic ambiguity, takes different forms. *Homonyms* have multiple unrelated meanings that share the same form by historical accident (e.g., the bark of a tree/dog).

*Polysemous* words have clusters of related senses that have evolved as their usage has extended over time (e.g., an athlete/paint/river/program all can “run”, and the meaning of “run” is related but not identical). Such ambiguities are typically resolved by using the surrounding context to settle on the most likely interpretation ([Rodd, 2022](#)).

## Conventionality

Successful communication between individuals within a language community relies on shared, conventionalized norms as to the agreed meaning of words. These conventions change over time as words gain new senses (e.g., “cloud” for remote data storage; [Rodd, 2022](#)). Words can also be used in unconventional ways, being flexibly repurposed by speakers in novel and imaginative ways, for example, in novel metaphors (e.g., science is a glacier; [Bowdle & Gentner, 2005](#)).

## Combinatoriality and productivity

A finite vocabulary can generate an endless set of phrases and sentences [see [Language](#); [Compositionality](#)]. Words occur within grammatical structures that indicate how word meanings combine into larger structures (e.g., “The student emailed the professor” vs. “The professor emailed the student”). This combinatorial aspect of language underlies its creative nature, allowing novel, unusual, or even nonsensical ideas to be conveyed using familiar words (e.g., “Colorless green ideas sleep furiously”; [Chomsky, 1957](#)).

## Theoretical explanations

Classical feature-based theories view word meanings as bundles of semantic features ([Collins & Quillian, 1969](#)); the concept “bird” is linked to features like “is an animal,” “has feathers,” and “can fly.” Although neural network models often retain the notion that word meanings are distributed across many discrete featural units, these units typically do not correspond to interpretable, labeled features.

Distributional theories that assume word meanings are grounded in patterns of linguistic use have strong historical roots in philosophy (“The meaning of a word is its use in the language”; [Wittgenstein, 1953/2009](#), section 43) and linguistics (“You shall know a word by the company it keeps”; [Firth, 1957](#), p. 11). These insights are implemented in computational models that represent words as high-dimensional vectors that summarize their co-occurrence with other words ([Landauer & Dumais, 1997](#)). Contemporary large language models significantly extend this approach; words are represented by *embeddings* that encode complex, nonlinear statistical information about their co-occurrence patterns (i.e., the meaning of “tea” derives from the language with which it occurs: a cup of tea, tea and coffee, tea leaves).

Embodied, or *grounded*, accounts emphasize the role of perceptual, motor, and emotional systems; understanding “run” involves simulating relevant motor patterns, whereas understanding “cake” may activate visual, tactile, and taste representations. Embodied theories claim that aspects of words’ meanings are represented in the neural circuits used for perception and action ([Barsalou, 2008](#)).

## Questions, controversies, and new developments

### *How predictive is word meaning processing?*

Widespread evidence suggests that listeners and readers actively anticipate upcoming words, such that aspects of a word’s meaning can become active before its form is encountered on the basis of its preceding context ([Ryskin & Nieuwland, 2023](#); [Wong et al., 2025](#)). Open questions include the specificity of these predictions—do they constitute specific word meanings or relatively broad semantic category information?

### *How does the flexibility of word meanings arise?*

Successful communication requires word meanings to be relatively stable across individuals within a language community. Yet, meanings are highly flexible; they shift across contexts and are creatively extended in poetry, metaphor, and everyday conversation. Does this flexibility reflect dynamic updating of stored lexical–semantic knowledge or the additional contributions of more flexible cognitive systems such as episodic memory ([Gaskell, 2024](#))?

### *How does the structure of word meanings vary across languages?*

Current theories of word meaning are overly reliant on evidence from Indo-European languages, especially English. Other languages differ markedly. Agglutinating languages (e.g., Turkish) combine multiple meaning-bearing units into long words. Nonconcatenative languages (e.g., Arabic) form words from a root, which provides the core meaning and a pattern that helps determine the final interpretation.

## Broader connections

Communication is inherently social in nature, yet most evidence about word meanings comes from experiments that deliberately minimize and standardize social context. Word meaning should be understood within broader models of social learning, recognizing the motivational forces that lead (most) humans to readily acquire words and use them to form and sustain complex social relationships [see [Language Socialization](#); [Social Learning](#)]

Adequate theories of how word meanings are learned and processed are essential to support educational initiatives to improve critical language skills, which vary widely across the population [see [Word Learning](#); [Developmental Language Disorder](#)]

Recent developments in artificial intelligence are influencing cognitive theories of word meaning. Examining the representations of words and their meanings that emerge during training in large

language models, and that support near-human performance across diverse language tasks, has yielded surprising insights.

## Further reading

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