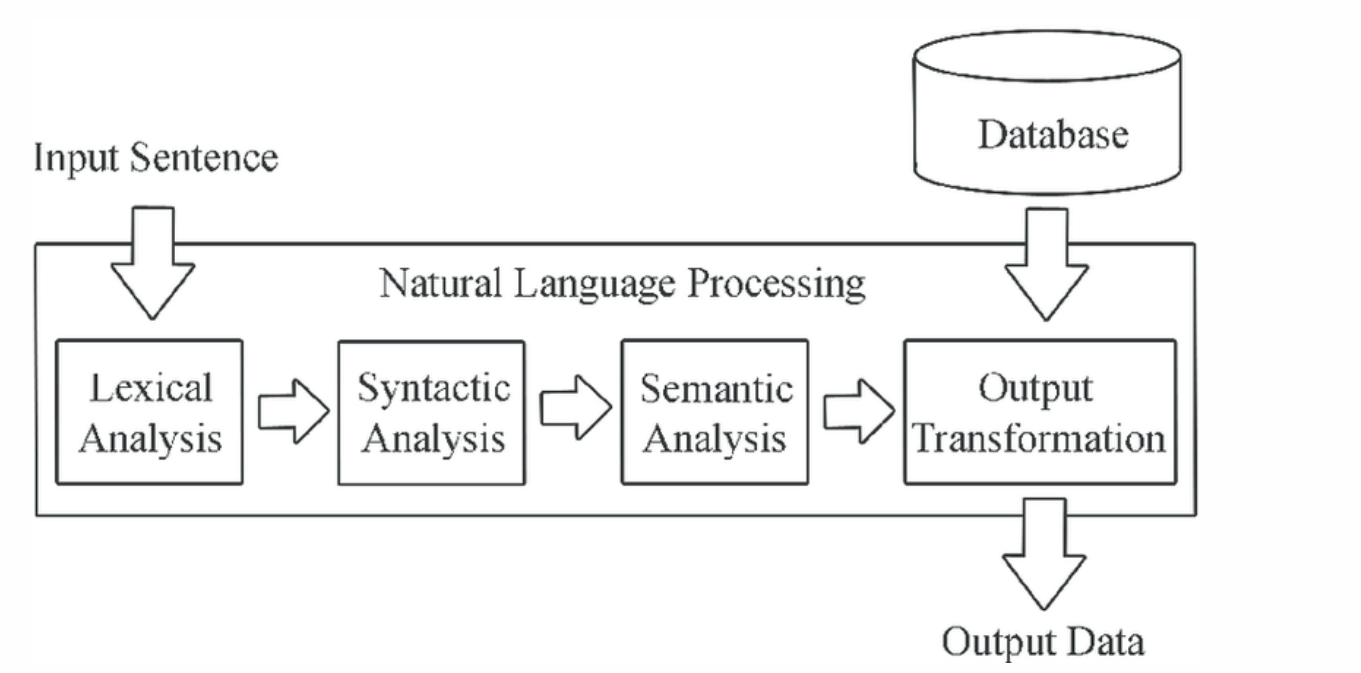
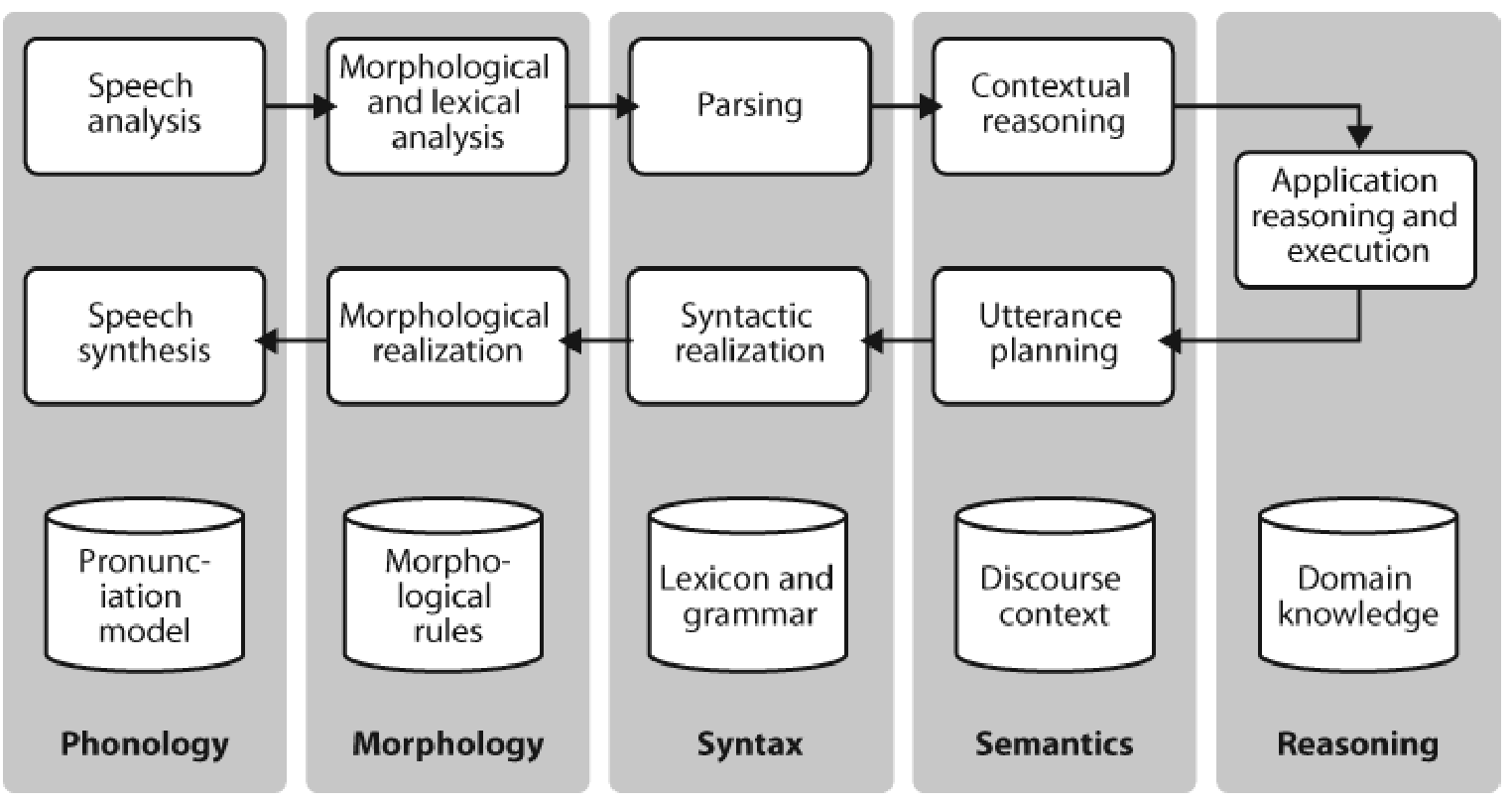


**Semantic analysis describes the process of understanding natural language–the way that humans communicate–based on meaning and contex**



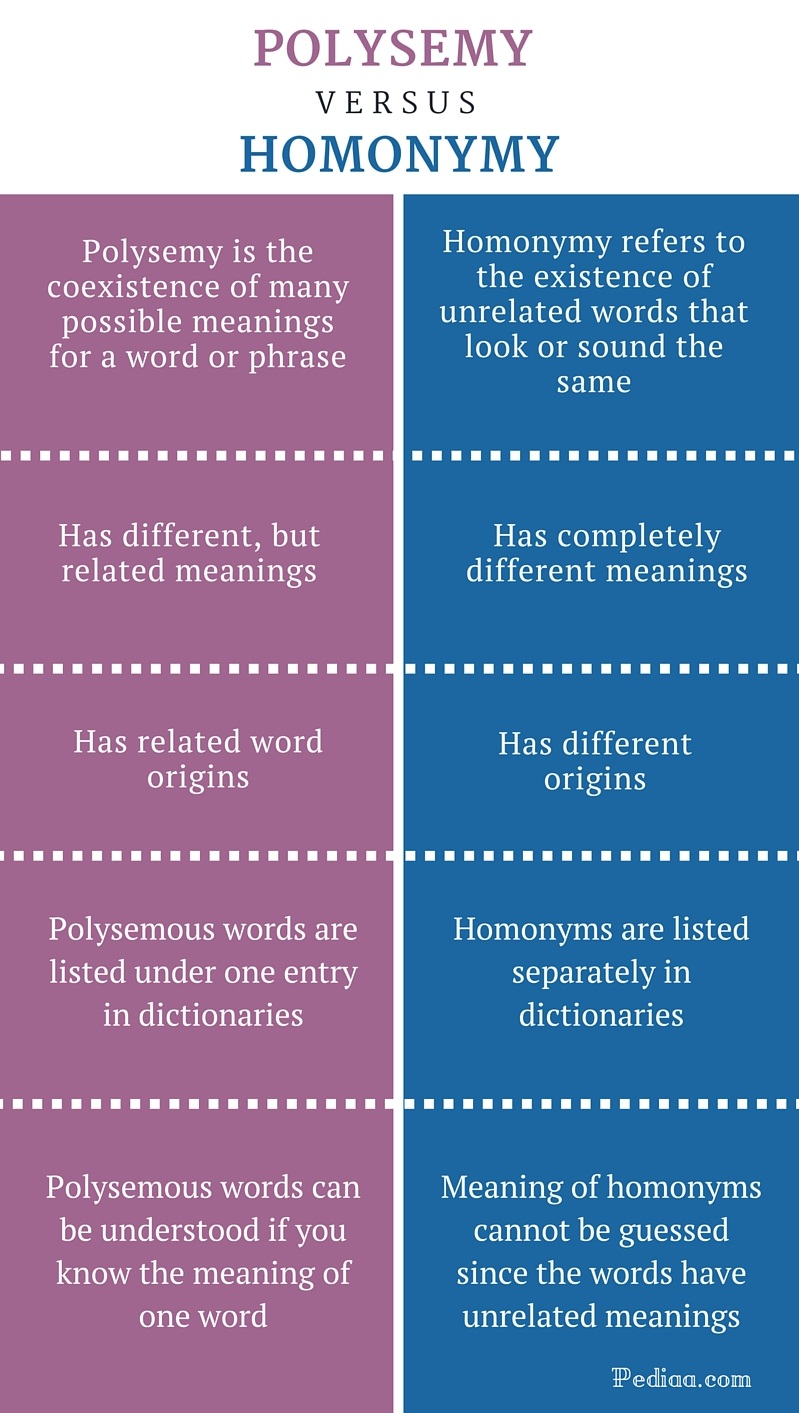


Semantic analysis is used in tools like

* machine translations
* chatbots
* search engines
* text analytics

**Types of Semantic associations:**

|  |  |
| --- | --- |
| **Hyponymy** | It illustrates the connection between a generic word and its occurrences  The generic term is known as **hypernym**  the occurrences are known as **hyponyms**  Hyponymy and hypernymy - YouTube |
| **Homonymy** | described as **words with the same spelling or form** but **diverse and unconnected meanings** |
| **Polysemy** | polysemy has the same spelling but various and related meanings |
| **Meronomy** | logical arrangement of letters and words indicating a component portion of or member of anything.  type of hierarchy that deals with part–whole relationships, in contrast to a taxonomy whose categorisation is based on discrete sets.  5.1a: A meronomy is a hierarchy that uses the composition relation. |  Download Scientific Diagram  Tree is **Holonym** of Root,trunk,branch and leaves  Roots are **Meronomy** of Tree  Computer is **holonym** of Operating System  Operating system is **meronomy** of Computer |
| **Antonymy** | relationship between two lexical items that include semantic components that are symmetric with respect to an axis |
| **Synonymy** | denotes the relationship between two lexical elements that have different forms but express the same or a similar meaning. |



 Through identifying these relations and taking into account different symbols and punctuations, the machine is able to identify the context of any sentence or paragraph.

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**building blocks of the semantic system**

|  |  |
| --- | --- |
| **Entities** | Any **sentence is made of different entities that are related to each other**. It represents any individual category such as name, place, position, etc. |
| **Concepts** | **It represents the general category of individual, such as person, city etc** |
| **Relations** | **It represents the relation between different entities and concepts in a sentence** |
| **Predicates** | **It represents the verb structure of any sentence.** |

**different approaches to Meaning Representations**

* *First-order predicate logic (FOPL)*
* *Frames*
* *Semantic Nets*
* *Case Grammar*
* *Rule-based architecture*
* *Conceptual graphs*
* *Conceptual dependency (CD)*

|  |  |  |
| --- | --- | --- |
| Pronoun Resolution | a. The thieves stole the paintings. They were subsequently sold.  b. The thieves stole the paintings. They were subsequently caught.  c. The thieves stole the paintings. They were subsequently found | finding the antecedent of the pronoun they, either thieves or paintings:   1. **anaphora resolution**: identifying what a pronoun or noun phrase refers to 2. **semantic role labelling**: identifying how a noun phrase relates to the verb |
|  |  |  |
|  |  |  |