

LECTURE 7

INFORMATION AND MEMORY



The process of translating

- Is a special case of the more general phenomenon of human information processing
- Should be modeled in a way which reflects its position within the psychological domain of information processing
- Takes place in both short-term and long-term memory through devices for decoding text in the SL and encoding text in the TL, via a non-language-specific semantic representation
- Proceeds in both a bottom-up and top-down manner in processing text and integrates both approaches by means of a cascaded and interactive style of operation; analysis or synthesis at one stage need not be completed before the next stage is activated and revision is possible

Such a model assumes

- Links between translating and linguistic structure—‘meaning’ in all aspects—on the one hand and models of human communication on the other.
- The model of human information processing is the background of the model of translation.

Reading

- Consists of processing text by reference to existing knowledge and applying analytic skills which permit the reader to extract the information contained in the text

Writing



- Consists of organizing existing knowledge and applying synthetic skills to that knowledge which permit the writer to realize it as information in a text

Translation



- Combines the two in the way demonstrated in the model

Model of human information processing must be able to account for the following

- That sensory stimuli received by the senses and transmitted to the brain for processing are chaotic rather than organized
- That the processing system is able to convert an input which consists of continuous stimuli into discrete units of data
- That even degraded or ambiguous stimuli can be processed

Model of human information processing must be able to account for the following

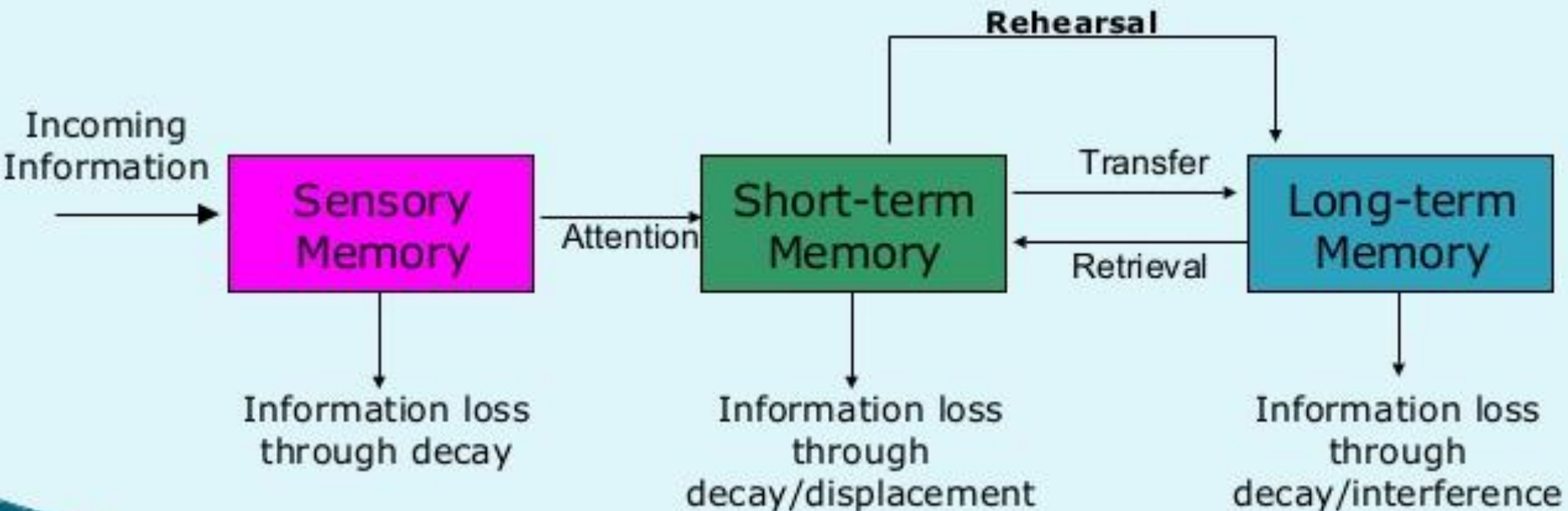
- That inherently meaningless ideas can, once received, be converted into meaningful messages
- That enormous quantities of information can be produced, stored, retrieved and re-used with apparent ease and accuracy

Tree stages associated with a specific storage system

1. Reception, filtering, storage and initial processing of information be the sensory information system
2. Final analysis, short-term storage and second filtering of the data by the short-term memory system
3. Accessing the long-term memory system and integrating new information within the long-term memory base

Models of Memory

- ▶ R. Atkinson and R. Shiffrin (1968) proposed that our memories are not just stored in one place but actually memory consists of several 'stores'.
- ▶ Memory is made up of a series of parts, working together as a process.



Cognition: a mental event

Learning event: semantic encoding of information into long-term memory.

Instructional event: stimulus designed to evoke a learning event in order to achieve a specified objective.

Educational event: programmatically sequenced instructional events designed to achieve specific goals.

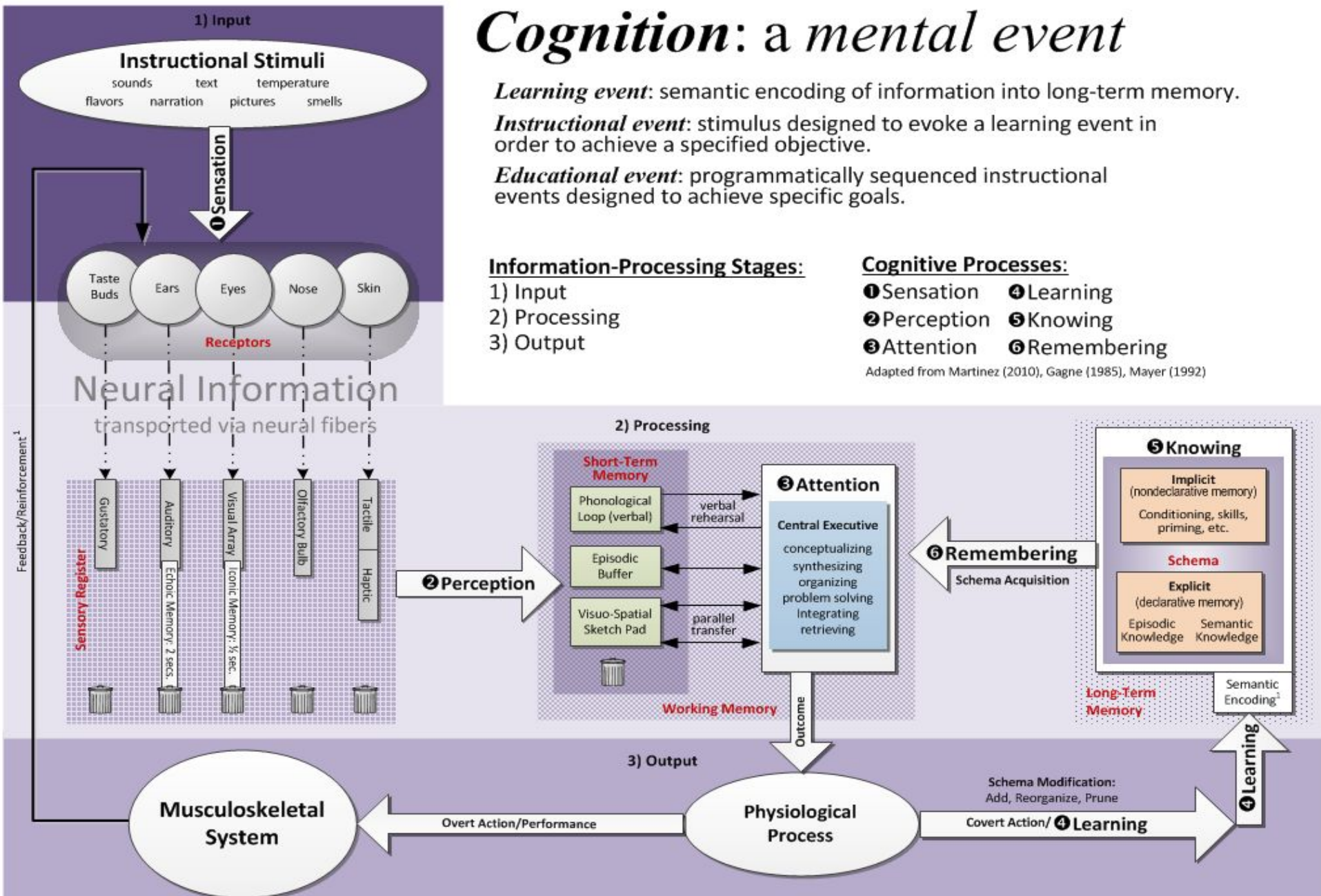
Information-Processing Stages:

- 1) Input
- 2) Processing
- 3) Output

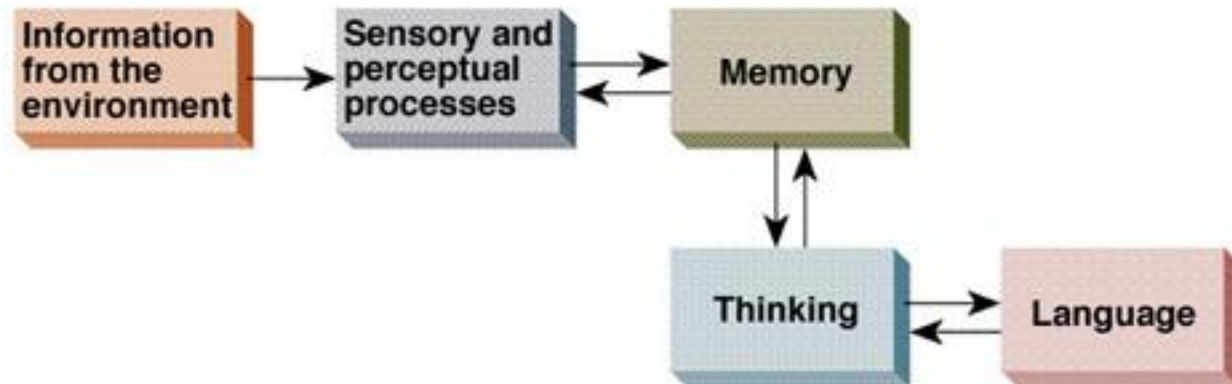
Cognitive Processes:

- ① Sensation
- ② Perception
- ③ Attention
- ④ Learning
- ⑤ Knowing
- ⑥ Remembering

Adapted from Martinez (2010), Gagne (1985), Mayer (1992)



Model of Information Processing



Three processes

- Processing can and does operate in the opposite direction at the same time, i.e. top-down, by drawing on existing knowledge to augment data which is incomplete or resolve ambiguities
 - Bottom-up processing
 - Top-down processing
 - Interactive processing

1. Bottom-up processing

- Is data-driven in the sense that it begins with the input of raw sensory stimuli and analyses this continuous influx of chaotic sensory stimuli into discrete meaningful units of information. These are processed, cumulatively, into progressively more sophisticated patterns which themselves build into generalizations

Top-down processing

- Is concept-driven and begins with assumptions or hypotheses about the nature of the data and seeks regularities in it which confirm those assumptions.
- There is a need for the processing system in which we are interested to operate in both directions at once, revealing simultaneous parallel processing which is both bottom-up and also top-down

Interactive processing

- Combines bottom-up with top-down which permits processing to take place simultaneously in both directions with each process 'feeding' the other with information and arriving at an agreed conclusion, unless the data is too degenerate to process or too ambiguous etc.

Five demons



- The processes of analysis of the information processing process are termed demons and include image, feature, cognitive, decision and supervisor ones

These five types of demons are required to carry out the following operations

- To convert the sensory information into an image
- To analyze images of their component features
- To gather bundles of features into coherent patterns
- To categorize patterns and assign them a non-ambiguous reference
- To coordinate these operations and facilitate them by drawing on information stored in long-term memory.

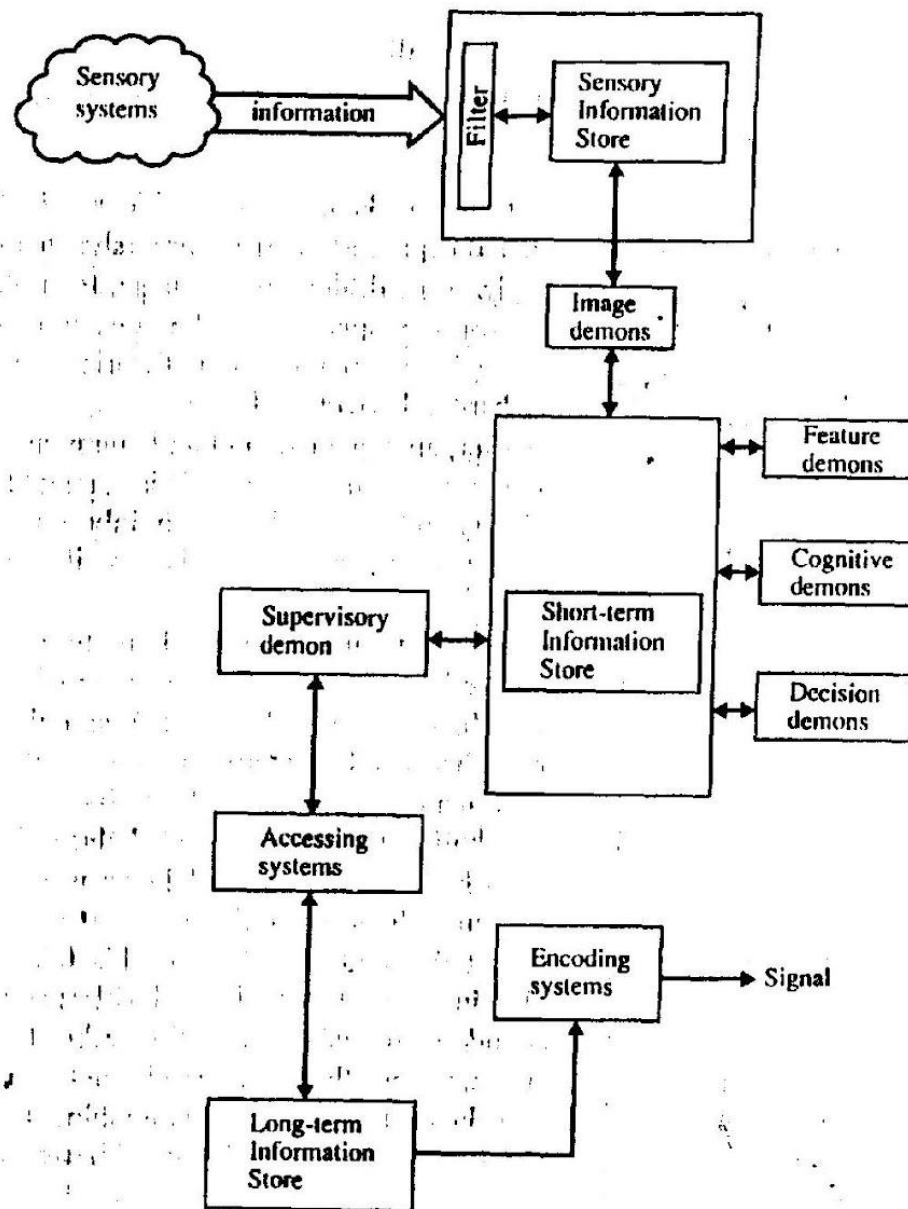


FIGURE 7.2 Human information processing

Image demon

- Is charged with the task of converting stimuli received from the sensory systems—sight, hearing, touch, taste, smell—into images. It takes the incoming aggregate and converts it into a whole, an image. It records the image and transmits it to the next group of demons for further analysis

Feature demons

- Receive images from the image demon, scan them in order of ascertain the features they possess and, in the event that an image contains the feature assigned to a particular demon, the presence of the feature is signaled by that demon. Feature recognizing mechanisms are located in the brain

Cognitive demons

- Only recognize and respond to a single feature, so the cognitive demons only recognize and respond to a single pattern, i.e. a collection of features. Each of them receives an image and simultaneously records the existence of the features and codes parameters representing those features from the feature demons.
- This demon compares the image and its partial analysis with the pattern it already possess. The image which fits best with an existing pattern is what will be passed on to the final processor, the decision demon

Decision demon

- Has the responsibility of arbitrating between competing claims for patterns suggested by the cognitive demons.

Supervisory demon

- Has to cope with degenerate data, with images which contain too little or too much data to permit unambiguous interpretation and anything which has defeated the rest of the demons.
- It controls the initial filter ensuring that only relevant information is allowed in for processing
- Oversees the work of the other demons and
- Stands between the pattern-recognition systems and the database of long-term memory and holds incoming data in the short-term information store while deciding on the basis of the reference to stored knowledge whether it is to be passed on into the LTM or erased

LECTURES 8-9.

MEANING. APPROACHES TO STUDY
OF MEANING IN LANGUAGE.

Reference/ referential theory

- Expresses the relationship between the word and entity in some terms (a word X refers to entity Y)
- It seeks to provide the answer to the question: What is the relationship between the phenomena observed through the senses and the words that are used to refer to those phenomena

- 
- Language uses a system of linguistic signs, each of which is a combination of meaning and phonological and/or orthographic forms.
 - Semantics is traditionally defined as the study of meaning in language.

- Linguists and dictionary makers face considerable problems in dealing with meaning. There are two traditional schools of theories of meaning: the reference theory and the representation theory .
- Some have been trying to establish definitions of the meanings of words so that the meaning of linguistic expressions can be given. Saeed (1997) calls it the definition theory.

- The referential theory holds that a linguistic sign derives its meaning from it refers to something in the reality.
- This suggests that language is a system of arbitrary vocal symbols used for human communication.
- For example, words like *man*, *fish*, are meaningful in that they each refer to an individual or a collection of living beings existing in the reality.
- However, some linguistic signs, like **God**, *ghost*, *dragon*, *unicorn*, merely denote something imaginative.

- Some entities or concepts are hypothesized and so may be contrary to the actual reality. For example, our knowledge of the current social-political reality of France tells us that the referent of the nominal phrase "the King of France" in "The King of France is bald." is non-existent, but this does not prevent us from taking this sentence as meaningful.

The representational theory

- The representational theory holds that language in general, and words in particular, are only an icon (or representation) for an actual thing (or form) being symbolized.
- In other words, they conjure in our minds pictures of the things, happenings and ideas. This suggests that there is one kind of "natural" resemblance or relationship between words and the things represented by them. For the most part, this seems to happen.
- But there are a number of function words, such as *a*, *an*, *the*, *or*, which "conjure" no pictures of this kind.

Types of meaning

- According to Leech (1981), there exist **seven** types of meaning, five of which are included in the associative meaning.

Conceptual meaning

- Conceptual meaning is also called “denotative”, “logical” or “cognitive” meaning.
- This refers to the definition given in the dictionary. It is widely assumed to be the central factor in linguistic communication and is integral to the essential functioning of language.
- For example, man can be defined by the contrastive features [+Human], [+Male], [+Adult], as distinct from girl, which can be defined as [+Human], [-Male], [-Adult].

Associative meaning

- This refers to the meaning associated with the conceptual meaning, which can be further divided into following five types:
- **Connotative meaning:** This is the communicative value attributed to an expression over and above its purely conceptual meaning.

Associative meaning

- ▣ **Social meaning:** This refers to what is communicated of the social circumstances of language use, including variations like dialect, time, topic, style.
- ▣ **Affective meaning:** This is what is communicated of the feelings and attitudes of the speaker/writer towards the listener and/or what is talking about.

Associative meaning

- ❑ **Reflected meaning:** This is the meaning when we associate one sense of an expression with another.
- ❑ **Collocative meaning:** This refers to what is communicated through association with words which tend to occur in the environment of another word.

Thematic meaning

- This is what is communicated by the way in which the message is organized in terms of order and emphasis. Now compare the following pair of sentences:
- (1) **The young man** donated the kidney voluntarily.
- (2) **The kidney** was donated by a young man voluntarily.

Ambiguity

- Ambiguity refers to the linguistic phenomenon in which one linguistic expression allows more than one understandings or interpretations.
- **Lexical ambiguity**
- **Structural ambiguity**

Lexical ambiguity

- The multiple meaning of the utterance depends on the meaning of the single word.
- For example, the sentence "I saw him at the bank" could mean he was cashing a check at the money bank, or fishing at the river bank, or even giving some blood at the blood bank.

Structural ambiguity

- The multiple meaning of the utterance depends on the sentence structure.
- For example, the following sentences allow for two understandings when we attribute different interpretations to its structure:
- Flying kites can be dangerous.
- Mike didn't beat his wife because he loves her.

- Ambiguity is not desirable in most cases. We can employ the following means to disambiguate the problematic expressions:
- (1) Pragmatic factors
- (2) Lexical or grammatical devices
- (3) Phonological devices

APPROACHES TO THE STUDY OF MEANING



The Traditional Approach

- The traditional approach is founded on the assumption that the word (in the sense of lexeme) was the basic unit of syntax and semantics.
- Ogden and Richards (1923) argue that the link between words and things can be made only through the use of mind. For every word, there is an associated concept. They present the following triangle:

Thought

Symbol

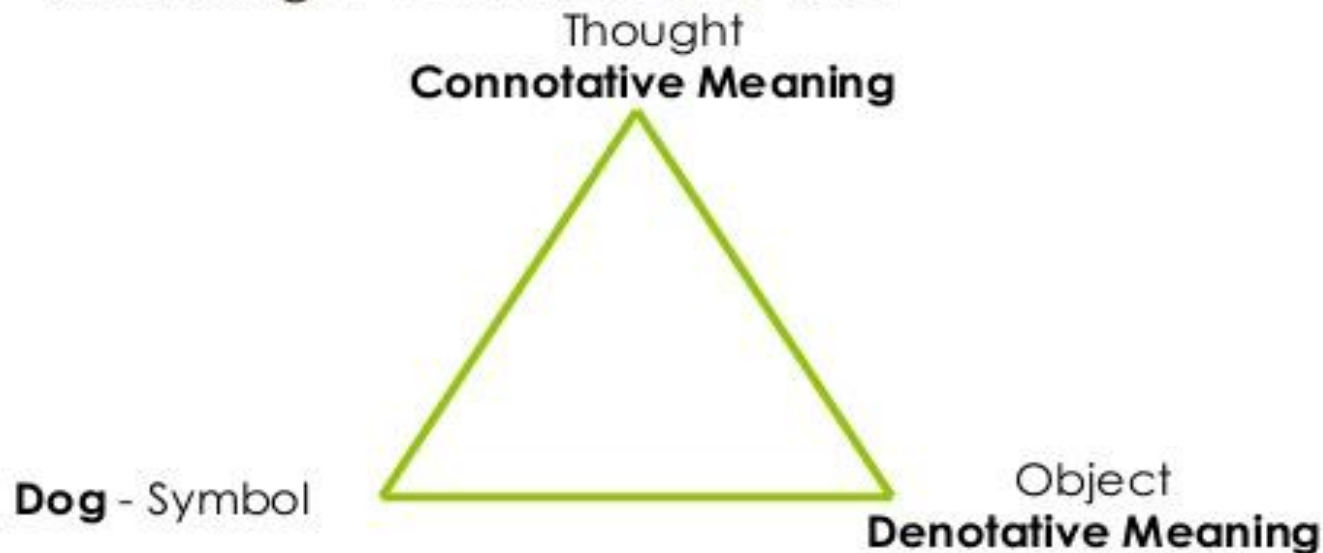
Referent

Denotation and connotation

- Denotation refers to the specific, literal meaning of a word independent of the possible associations, images, echoes, or impression it may arise
- Connotation refers to the implications and associations that words may carry with them

Denotative and Connotative Meaning

- On the Ogden and Richards Triangle, denotative and connotative meaning would fit in like this:



The Functional Approach

- Functional linguists emphasize the social aspect of language and view language as "**social semiotic**". Text is the basic unit of the semantic process and represents choice the speaker makes in context.
- According to Halliday (1978), a text is what is meant, selected from the total set of options that constitute what can be meant.
- The meaning potential is characterized in two ways: context of situation and context of culture, and can be represented as the range of options that is characteristic of a specific situation type.

The Pragmatic Approach

- This approach emphasizes the dependency of the understanding of an utterance on the situational context.
- What the hearer takes to be the speaker's meaning is the meaning of the utterance. On most occasions, the meaning of the speaker's utterance is the same for each hearer.
- However, it may mean different things to different hearers. In other words, his utterance has as many meanings as it communicates to the different hearers. A distinction is thus made between sentence meaning and utterance meaning.

MEANING POSTULATES



Synonymy and Antonymy

- Because of the way lexemes occur in sequence and the way in which lexemes can substitute for each other, we can recognize several kinds of sense relations between lexemes.

Synonymy

- Words or expressions with the same or similar meaning are said to be synonymous. In other words, synonyms are words or expressions that share common semantic features.
- couch $\longleftrightarrow$ sofa,
- homely $\longleftrightarrow$ domestic;
- large $\longleftrightarrow$ big $\longleftrightarrow$ enormous ;

□ However, true synonyms are rare. In most cases, synonyms may differ in one or more of the following aspects:

- A. Difference in origin
- B. Difference in the shades of meaning
- C. Difference in socio-expressive meaning
- D. Difference in stylistic meaning
- E. Differences in collocation and distribution

Antonymy

- Antonymy is the relationship of oppositeness of meaning. When two or more lexemes or expressions are "opposite" in meaning, they are said to be **antonyms**. According to the semantic relationship, antonyms can be loosely divided into three categories:
 - A. Complementary antonyms
 - B. Gradable antonyms
 - C. Relational opposites

- **Complementary antonyms:**
- dead - alive single - married male – female
- **Gradable antonyms:** *hot cold* (we can insert adjectives like *warm* and *cool* between them along the continuum.)
- **Relational opposites :**
- wife - husband student - teacher father - son

Meronymy and Hyponymy

- *Meronymy is a term used to describe a part-whole relationship between lexical items. Root, trunk, branch and leaf are meronyms of a tree because they are in the relationship of X is part of Y, or Y has X.*
- *Hyponymy is used to refer to a specific-general semantic relationship between lexical items.*
- *Dog and cat, wolf and tiger are respectively **hyponyms** (or **subordinates**) of livestock and wildlife, which in turn are both hyponyms of animal.*

Polysemy and Homonymy

- When a single lexeme has several meanings, it is called polysemic.
- For example, the English word *chip* has several meanings. It may mean "electronic circuit", "a kind of food" or "a piece of wood".

- **Homonymy** refers to cases where lexemes with the same phonological or morphological shape have different meanings.
- Homographs refer to words which are written in the same way but differ in meaning and sometimes in pronunciation or derivation as well. e.g. Lead
- **Homophones** are words with identical pronunciation but with different spellings and meanings. Examples include: flour flower, I eye

Intersentential Semantic Relations

- An **entailment** refers to something that logically follows from what is asserted in the utterance.
- In the following example, (a) entails (b) because if we assert (a), i.e. the speaker really saw a boy, then (a) is also true, i.e. he really saw a child. Conversely, if (b) is false, i.e. the speaker didn't see a child, then (b) is also false.
- (a) I saw a boy.
- (b) I saw a child.

Presupposition

- A presupposition refers to what is assumed by the speaker and/or assumed by him to be known to the hearer before he or she makes the utterance. Such semantic presupposition can be defined as a truth relation. As in the following example, if someone utters (a), then he or she must presuppose (b); otherwise, what he or she utters is nothing but nonsense:
- (a) Mary's dog is barking. (**p**)
- (b) Mary has a dog. (**q**)

Implicature

- In communicative practice, the speaker may use an utterance to imply further information. He may imply what he does not literally mean. Such information is called implicature.
- Sometimes, the interpretation of such implications largely depends on the contexts in which the utterance is made. In the following example, the utterance (a) in some situations may be taken as a request like (b):
 - (a) Don't you think it's quite stuffy here?
 - (b) Would you please open the windows to air the room?

Componential Analysis

- **Componential analysis** defines the meaning of a lexical element in terms of **semantic components** or **semantic features**. Each word has certain semantic elements of its own.

Componential Analysis

man: [+noun] [+concrete] [+animate] [+human] [+male] [+old]
woman: [+noun] [+concrete] [+animate] [+human] [-male] [+old]
boy: [+noun] [+concrete] [+animate] [+human] [+male] [-old]
cat: [+noun] [+concrete] [+animate] [-human] [+feline]
rock: [+noun] [+concrete] [-animal]
idea: [+noun] [-concrete]

Tautology

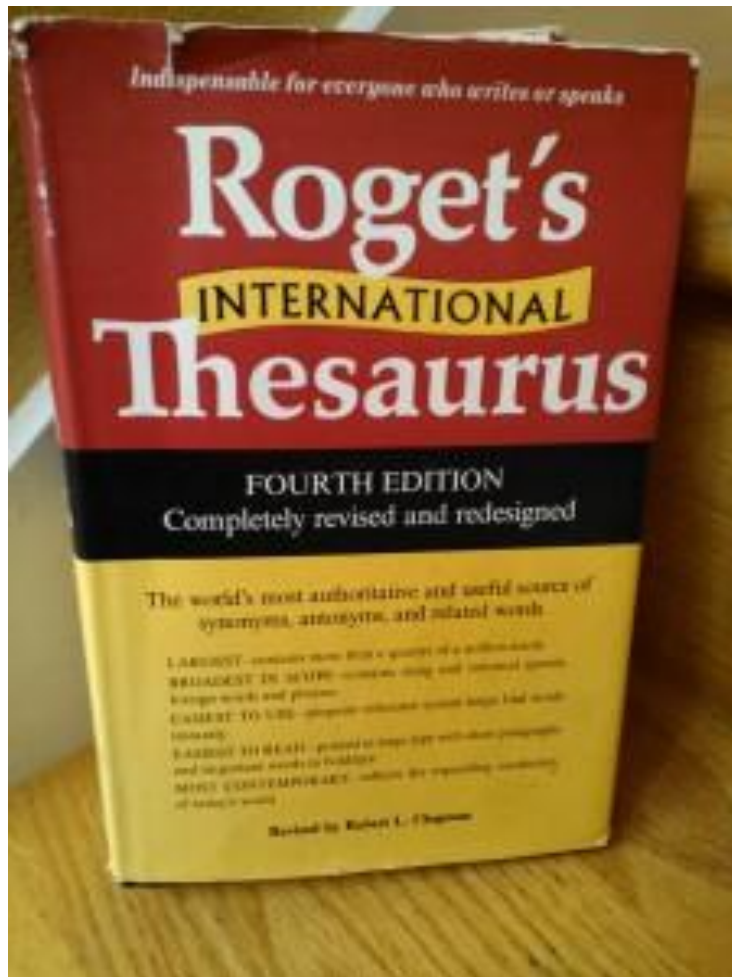
- Tautology traditionally refers to a proposition which is automatically true by virtue of its meaning but informatively empty. The following are some examples:
 - (1) Hungry people are hungry.
 - (2) A bachelor is unmarried.
 - (3) This orphan has no father.

Thesaurus



- Is a model for storing groups of words and phrases in a number of ways: whether they are synonyms, antonyms or related to other ways.

The intention of Peter Roget



- Was to create a system of verbal classification, a classed catalogue of words showing links between the groupings

Main Entry: **great**

Part of Speech: *adjective*

Definition: excellent, skillful

Synonyms: able, absolute, aces, adept, admirable, adroit, awesome, bad*, best, brutal, cold*, complete, consummate, crack*, downright, dynamite, egregious, exceptional, expert, fab, fantastic, fine, first-class*, first-rate, good, heavy*, hellacious, marvelous, masterly, number one, out of sight, out of this world, out-and-out, perfect, positive, proficient, super-duper, surpassing, terrific, total, tough, transcendent, tremendous, unmitigated, unqualified, utter, wonderful

Antonyms: ignorant, menial, poor, stupid, unskilled, weak

* = informal/non-formal usage

Visual thesaurus

