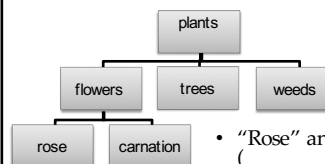


**Introduction to
L2 Vocabulary Acquisition
& Learning:
Lecture 08**

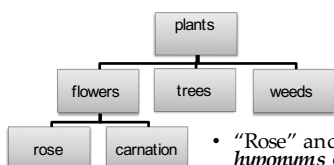
Yukio Tono
Fall 2015

REVIEW



- "Rose" and "carnation" are () of "flowers."
 - "Flower" is a () of "rose" or "carnation."
 - "Rose" and "carnation" are ().
-

REVIEW



- "Rose" and "carnation" are *hyponyms* of "flowers."
 - "Flower" is a *hypernym* of "rose" or "carnation."
 - "Rose" and "carnation" are *co-hyponyms*.
-

REVIEW

- bank (river) – bank (money) ()
 - flour/flower ()
 - a lead pipe, but a lead singer ()
 - head of your body, head of the department ()
-

REVIEW

- bank (river) – bank (money) (homonym)
 - flour/flower (homophone)
 - a lead pipe, but a lead singer (homograph)
 - head of your body, head of the department (polysemy)
-


REVIEW

- Time flies like an arrow.
 - The man got madder than a bull. ()
 - Time is money.
 - Life is a journey. ()
-


REVIEW

- Time flies like an arrow.
 - The man got madder than a bull.
(simile)
 - Time is money.
 - Life is a journey.
(metaphor)
-

REVIEW

- () Analysis
 - *Man*: [+HUMAN], [+MALE], [+ADULT]
 - *Woman*: [+HUMAN], [-MALE], [+ADULT]

-

REVIEW

- (Componential) Analysis
 - *Man*: [+HUMAN], [+MALE], [+ADULT]
 - *Woman*: [+HUMAN], [-MALE], [+ADULT]

- (semantic feature)
-

Properties of Mental Lexicon

- The metaphors of mental lexicon all had in common the idea of:
 - (i) (i.e. that language is 'written in' in some way)
 - (s) (that it is held and not lost), and
 - (r) (that it can be 'called up' when needed for use).
-

Properties of Mental Lexicon

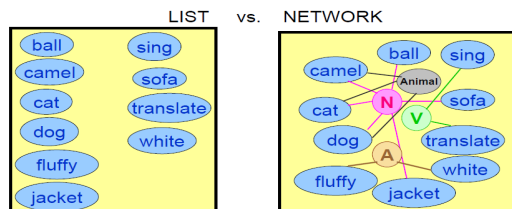
- The metaphors of mental lexicon all had in common the idea of:
 - **input** (i.e. that language is 'written in' in some way)
 - **storage** (that it is held and not lost), and
 - **retrieval** (that it can be 'called up' when needed for use).
-

The Mental Lexicon

- **Internal lexicon**: representation of words in permanent memory
 - **Dimensions of word knowledge**
 - **Two important questions**:
 - The *organization* of the mental lexicon: How words are stored in long-term memory
 - *Lexical access*: How words are retrieved from the Mental Lexicon
-

LIST vs. NETWORK

- Mental Lexicon – word repository
- Could be unorganized (a sack full of words) or organized according to some criteria



Types of Models

- Network Models
 - Hierarchical Network
 - Spreading Activation Model
- Direct model:
 - Morton's Logogen Model
 - Marslen-Wilson's Cohort Model
- Indirect model:
 - Forster's Serial Search Model of lexical access
- Levelt's (1989) 'blueprint for the speaker'

Dimension of word knowledge

- *Phonological knowledge*: pronunciation of words
- *Syntactic knowledge*: part of speech
- *Morphological knowledge*: the knowledge is related to the size of our mental lexicon.

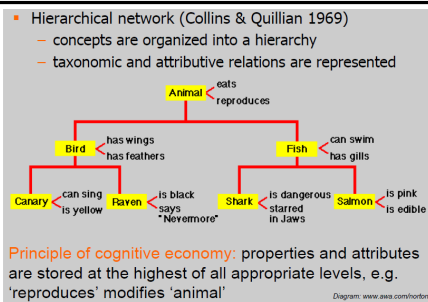
Semantic knowledge

- Meaning = reference + sense
- **Reference**: the relationship between words and things in the world.
- **Referent**: the things in the world
- **Sense**: the place in a system of relationships which the word contracts with other words in the vocabulary.
- Relations of senses: synonymy (+), antonymy (-), incompatibility (+/-), hyponymy (<)
- Denotation and connotation

Semantic network

- The organization of the lexicon is a network of interconnected elements (concepts or nodes)

Hierarchical Network Models



Hierarchical Network Models

- It saves memory space by not storing all the information in a node. The information can be retrieved by inference.
- *Cognitive economy*: store information only in one place in the network. The information is stored only at the highest possible node.
- *Intersection search*: we activate two nodes in the lexicon network for relevant information until the two items in the sentence intersect.

TASK

- If the Mental Lexicon is like the one specified in the Hierarchical Network Model, what kind of problems do we have? Think about some concrete examples.

Hierarchical Network Models

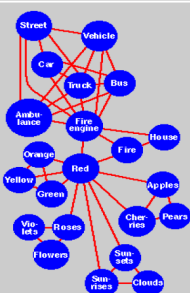
- *Problems*: the model assumed that all items on a given level of the hierarchy were more or less equal (*canary* and *ostrich*). In fact they do not.
- Alternative model—Basic-level terms: Most lexical hierarchies have a level, often near the middle, where most of the distinguishing features are assigned.

Spreading Activation Models

- The organization of word representation is closer to a web of interconnecting nodes, with the distance between the nodes determined by both structural characteristics such as taxonomic relationship and considerations such as typicality and degree of association between related concepts.

Spreading Activation Models

- Collins & Loftus 1975
- ML is a network, but the organization is not strictly hierarchical
- Web of interconnected nodes



- Distance between nodes is determined by structural characteristics, e.g. taxonomic relations, and typicality

Diagram: www.awa.com/norton

Spreading Activation Models

- *Retrieval*: activation begins at a single node and then spreads in parallel throughout the network. The activation attenuates over distance, thus ensuring that closely related concepts are more likely to be activated than distant concepts.



TASK

- Can you think of any possible problems of the Spreading Activation Models?
- Could you explain?

Spreading Activation Models

- *Problem:* fails to take into account phonological, syntactic and morphological aspects of words.
- The model only deals with semantic aspects of words. The rest of the lexical information is left unexplained.

Bock & Levelt's (1994) Model

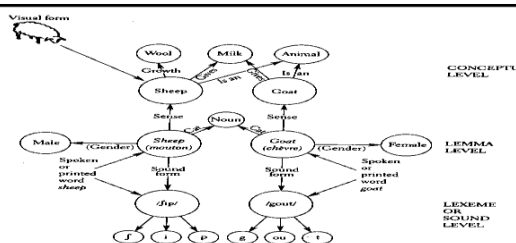


Figure 3-3. A part of the lexical network. Note that the arrows represent types of connections within the network, and the flow of information during production or comprehension. (From "Language Production: Grammatical Encoding," by K. Bock and W. Levelt, in M. A. Gruber (Ed.), *Handbook of Psycholinguistics*, p. 951. Copyright 1994 Academic Press. Reprinted by permission.)

Bock & Levelt's Model

- *Conceptual level:* word's meaning
- *Lemma level:* syntactic specifications
- *Lexeme level:* phonological & morphological properties
- Bock & Levelt's model explains the TOT state: the speaker knows the word's meaning (the conceptual level) and syntactic category (the lemma level) but not its phonological features (the lexeme level).

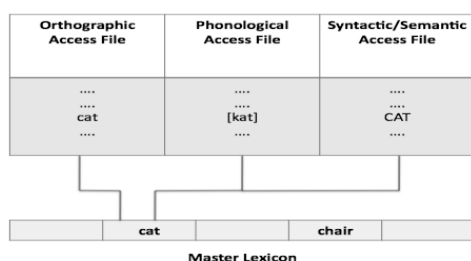
Models of Lexical Access

- Serial Search models (Forster: 1976)
- Logogen Model (Morton: 1969)
- Cohort model (Marslen-Wilson: 1987)

Serial Search Models

- The word recognition system is divided into several different components (orthographic, phonetic, syntactic/semantic) organized in descending order of frequency.
- When the input is matched to one of the items in one of the two bins, a pointer to an entry in the master lexicon is retrieved. When the entry is retrieved, other properties of the word are retrieved.
- Search model is a serial processing.

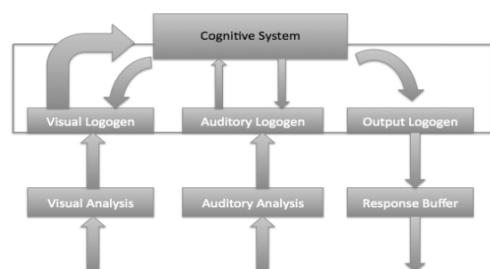
Forster's Serial Search Models



Morton's Logogen Model

- Each word in the lexicon is represented as a *logogen*, which specifies the word's various attributes.
- When the input is detected, they are matched to the logogen. When the counter rises above a predesignated threshold, the item is recognized.
- Contextual information may lower the threshold of activation.
- Logogen model is a parallel processing.

Logogen Model (Morton 1964)



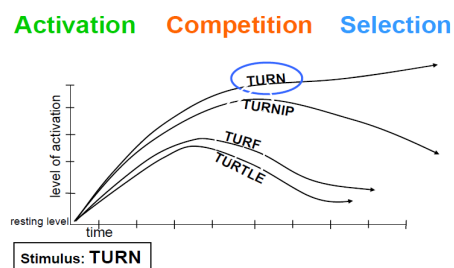
Cohort Model

- Facts in speech recognition
- Listeners recognize words very rapidly (within 200-250 milliseconds of the beginning of the word)
- Listeners are sensitive to the recognition point of a word—the point at which the word diverges from other possible words.

Cohort Model

- Three stages in speech recognition
- Activation of a set of lexical candidates (word initial cohort)
- One member of the cohort is selected for further analysis.
- The selected lexical item is integrated into the ongoing semantic and syntactic context.

Cohort Model



Evidence for Phonological Organization: COHORT

S

song
story
sparrow
saunter
slow
secret
sentry
etc.

Slide adapted from C. Phillips

Cohort

SP

spice
spoke
spare
spin
splendid
spelling
spread
etc.

Slide adapted from C. Phillips

Cohort

SPI

spit
spigot
spill
spiffy
spinaker
spirit
spin
etc.

Slide adapted from C. Phillips

Cohort

SPIN

spin
spinach
spinster
spinaker
spindle

Slide adapted from C. Phillips

Cohort

SPINA

spinach

Slide adapted from C. Phillips

Cohort

SPINA

spinach

↑
word uniqueness point

Slide adapted from C. Phillips

Cohort Model



TASK

- In a lexical access model such as Cohort Model, what kind of variables influence lexical access? Can you guess?
- Do you think all the words are equally accessed? If not, what causes a difference?

Variables That Influence Lexical Access

- Word frequency
- Syntactic category
- Morphological complexity
- Semantic priming
- Lexical ambiguity

Word Frequency

- Access time: higher frequency words have shorter durations.
- Reading speed: low-frequency words were fixed for about 80 milliseconds longer than high-frequency words.

Phonological Variables

- The perception of speech is affected by prosodic factors.
- There is a continuous interplay of bottom-up and top-down factors at work.
- We recognize words in part.

Syntactic Category

- The word frequency effect only holds for open-class words. There is no difference in the speed of retrieval of high-versus low-frequency closed-class words.
- We might have separate routes to retrieving words from different syntactic categories.

Morphological Complexity

- Morphological information and base word information are organized separately in the mental lexicon. (for the sake of storage economy)
- Problem: we have to access both base and morpheme and then combine them instead of accessing a single word.

Morphological Complexity

- MacKay (1978) found that the time taken to make these responses varied with the derivational complexity.
(government > existence > decision in terms of easiness)

Morphological Complexity

- *Affix stripping* (Taft:1975): a word is analyzed into its morphological components and then the base word is accessed. After the prefix has been stripped, a search for the base word is undertaken. If successful, the prefix and base word are compared to see whether they are compatible.
- Taft (1981) found that lexical decision times were shorter for prefixed words than for words with pseudoprefixes. The unsuccessful search for the prefix and base word is responsible for the longer decision times.

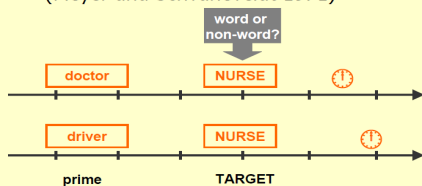
Semantic Priming

- *Semantic priming* occurs when a word presented earlier activates another semantically related word.

Semantic Priming

Semantic Priming

- Priming + Lexical decision to the target (Meyer and Schvaneveldt 1971)



Lexical Ambiguity

- A single word may be interpreted to have more than one meaning.
- Questions:
 - Do ambiguous words have more than one representation in the lexicon?
 - Do we consider multiple meanings of ambiguous words when we hear or see one?
 - How might the sentence context influence how lexically ambiguous words are processed?

More Than One Representation

- We activate more than one meaning of an ambiguous word.
- The phoneme-monitoring test showed that the responding times to monitor the first phoneme of the very next word increased slightly (by about 50 milliseconds) in the sentence: The man started to drill before the truck arrived.
- Although multiple meanings of an ambiguous word are briefly entertained, the ambiguity is quickly resolved. This is why we have little or no introspective awareness of activating multiple meanings.

Consider Multiple Meanings

- Even in the presence of a strong biasing context, multiple meanings of ambiguous words are briefly activated.
- (21): visual words: contextually related word (ant), contextually inappropriate word (spy), unrelated word (sew)

Consider Multiple Meanings

- When the visual words immediately followed the ambiguity: decision times for visual words related to either meaning of the ambiguous words were shorter than for unrelated words.
- When the visual words were presented four syllables after the ambiguity: only the contextually appropriate meaning was facilitated.

Contextual Influence

- With balanced words presented in a neutral context, both meanings may be activated because the two thresholds are so similar.
- With unbalanced words, the dominant meaning has a much lower threshold than the subordinate meaning and thus a strongly biasing context may be sufficient to selectively activate the dominant meaning.
- Meaning dominance and prior context jointly influence activation of word meanings.

Theories

- Memory
- Automatic processing
- Top-down and bottom-up processing
- Motor theory
- Prosodic factors in speech recognition
- Semantic and syntactic factors in speech recognition
- Trace model
- Internal lexicon
- Morphological complexity
- Lexical ambiguity

Some hypotheses

BILINGUAL LEXICONS

Bilingual lexicons

- Uriel Weinreich (1953):
- Three types of bilinguals:
 - *Coordinate*: the two languages operate as independent systems for the encoding and decoding of information.
 - *Compound*: formulates his thoughts first in one language (usually his native one) and then goes through a high-speed translation process into the second language.
 - *Subordinate*: one language is subordinate to the other.

Coordinate-compound distinction

- For coordinate bilinguals, the signs of each language *separately* combine one unit of expression with one unit of content.
- For compound ones, the signs combine one single unit of content with two units of expression, one for each language.
- Subordinate bilinguals would be those for whom a term in L2 signifies first in an L1 term, and then, indirectly, a unit of content.

Coordinate-compound distinction

Coordinate	Compound	Subordinate
'book' 'kniga'	'book' = 'kniga'	{ /buk/ }
/buk/ /kniga/	/buk/ /kniga/	/kniga/

The controversy

- Numerous experiments
 - inconclusive and contradictory results
- Separate listings for the two languages:
 - L2 mental lexicon differs qualitatively from the L1 mental lexicon in that it is more loosely and phonologically, rather than semantically, organized.
 - Word association tests by Meara (1983)
 - Predominance of "clang" associates (phonologically similar to stimuli)

The controversy

- Some favor the notion of a single integrated system:
 - The main organizational principle of both L1 and L2 lexicons seems to be semantic.
 - Words are classified into semantic categories, each of them being further subdivided into a set of L1 and L2 lexical units.
 - Words are organized into phonological networks, with strong associative links between similarly sounding ones.