Outline

• Chapters 9 and 11 in Altmann

Sound, Meaning, and Language

• Language is the tool to convey meaning – transforming mental states (meaning) to a commonly understood structure (spoken language → sound)
Charles Lutwidge Dodgson

- a.k.a. Lewis Carroll
- Alice’s adventure in Wonderland, Jabberwocky
- Literary nonsense
- Portmanteau: a word that combines two words, or morphemes, to give double meaning.
  e.g., DISDAQs → Discarded and Deleted Acquisitions
- Conventions (grammar) without meaning
- No meaning will be interpreted even if grammar is preserved.

http://en.wikipedia.org/wiki/Lewis_Carroll

Dictionary and Thesaurus

- Is the meaning of language described in the dictionary and thesaurus?
- Old dictionaries only report literal meanings, but newer ones also report usage and give examples.
- Almost impossible to acquire meaning of new words from those already in the lexicon
  → especially in the early developmental stage

http://dictionary.reference.com/browse/google
http://www.askoxford.com/worldofwords/newwords/?view=uk

Meaning as Sounds?

- Complicated matter…
- Sentence means more than each individual word
  → gestalt psychology: the whole > the sum of its parts
- Meaning of each word → mental lexicon
- Grammar → word order, inflection…etc.
- Prosody
- Usage → culture
- Gesture
Irony and Sarcasm

- Meaning get reversed!
- Are they the same?
- “Sarcasm is a remark seasoned with irony.”
- Sarcasm has a entertaining purpose while irony could either be casual or serious.
- Sarcasm is the vehicle to reach both humour and irony.

http://www.sarcasmgallery.com/sarcasmandirony/

Types of Meaning

- Meaning of individual words
- Meaning of combinations of words

Meaning of Individual Word

- Knowledge that one has of the situations or contexts in which it would be appropriate to use that word
- In the brain: event occurs when “some particular neural circuitry somewhere in the brain is stimulated into activation”

linguist fish
Neural Network of Meaning

- Or should I say concept associated with each word?
- My understanding of a "linguist" could be different from yours!

Does it matter?

- Unique neural network for each person
- Some more extensive, some more confined
- As long as the neural networks of 'linguist' are activated in the same context, they will elicit some common understanding between the two individuals.
- Important: sounds of 'linguist' activate the linguist network, sounds of 'fish' activate the fish network
- Does the distinction ability mean understanding?
Experience

- Pattern of neural activities changes as a function of accumulated experience (physical characteristics and context in which an individual encounters)
- Neural activities reflect experiences
- Similar things also happen in similar context and elicit similar experience → similar pattern of neural activities
- Meaning → concepts about a particular entity that is influenced by experience of interacting with that entity → concepts of similar entities are overlapped because of similar associated contexts

Scientific Evidence

- Visual experience
- Environmental enrichment
- Bilingualism
- Drugs
- Nutrition
- Meditation??

Meaning of Word Combinations

http://www.recordholders.org/en/list/lego.html
Understanding the Other’s Mind

Studying the Mind

- Logicians in Philosophy
- Alan Granham
  - Meaning as mental equivalent of the language used to describe something
  - Meaning as mental equivalent what happens when one observes that something directly

By the window was a man with a martini.
The man with the martini waved at the hostess
The man by the window waved at the hostess

Mental Worlds

- The entity that we want to communicate to others via language
- Endless possibilities!

The winged unicorn flew high across the fiery skies.

http://www.ratemyscreensaver.com/nature/the-fiery-skies/
Not that far-fetched...

Materializing Mental Models

- Lego models:
  One-to-one mapping between model components and real-world entity components
- Mental models:
  One-to-one mapping between the neural activity that corresponds to the mental model and the neural activity that corresponds to the actual experience

Building a Mental Model

- Mental model's lifetime exceeds that of the duration of the sentence.
- New sentences update the ever-changing mental model
- We also make predictions when we read.
Words with Intangible Meanings

In the mid-1990s, it was believed that a change of government would do the country some good.

Try drawing a picture for each of the word in that sentence…

Summary of Chapter 9

• Language is the tool to bridge together sound and meaning.
• Sentence comprehension reflects that the combination of semantics and syntax is far greater than the total semantics of each individual word.
• Meaning interpretation is influenced by experience and is related to activation of a neural network of a particular word → concept of a word
• Meaning is also a channel to access mental models, which is not restricted by the physical characteristics of the physical world.

Written Languages

• Spoken language does not last long.
• Written language is the channel that cradles culture and civilization.
• Earliest purpose of written languages is for trading → ledgers
• Early writings are pictorial-based → hieroglyphic writing system: words made up of pictures and sounds.
Early Forms of Writing

Cuneiform from Mesopotamia
Egyptian demotic script

http://www.lib.unm.edu/pap/exhibit/exhibitmain.cfm
http://mulibraries.missouri.edu/specialcollections/exhibits/cuneiformmain.htm

Evolving into an Efficient Writing System

• Written symbols refer to spoken languages rather than the actual entity
• Developing phonetic symbols to represent individual sounds
• Used in hieroglyphic and cuneiform scripts
• Combining phonemes
• Adopt different pitch patterns

Non-alphabetic Writing Systems

• Logograms: Chinese
• Pictophonetic compounds
  – Semantic radicals signify meaning
  – Phonetic radicals signify sounds
• But only 40% accuracy in sounding out the phonetic radicals

Means “female”
Sounds “nü”

Means “horse”
Sounds “ma”

Means “mother”
Sounds “ma”
Syllabaries

- Japanese
- Three types of written representations:
  - Hiragana: syllables represent original Japanese words
  - Katagana: syllables represent imported words
  - Kanji: Chinese characters

日本 Mean "beer"
Sounds "sui-shi"

寿司 Means "sushi"
Sounds "su-shi"
Dual-route Access

• Recall Reynolds & Besner (2005) paper? DRC model describes exactly this situation
• Lexical route: whole-word approach because the words are already in the lexicon
• Non-lexical route: phonics approach because need to sound out the letters to help search for the meaning of the word