Lexical semantic relations

- Homonyms: *words that have the same orthographic and phonological form and unrelated meanings*
  - Instead, a *bank*¹ can hold the investments in a custodial account in the client’s name.
  - But as agriculture burgeons on the east *bank*², the river will shrink even more.

- Homophones: distinct lexemes with a shared pronunciation
  - E.g. *would* and *wood*, *see* and *sea*.

- Homographs: identical orthographic forms, different pronunciations, and unrelated meanings
  - The expert angler from Dora, Mo., was fly-casting for *bass* rather than the traditional trout.
  - The curtain rises to the sound of angry dogs baying and ominous *bass* chords sounding.

Lexical semantic relations: polysemy

- Polysemy: the phenomenon of multiple related meanings within a single lexeme
  - Example: While some *banks* furnish blood only to hospitals, others are much less restrictive.
  - New sense, e.g. *bank*³?
  - Polysemy allows us to associate a lexeme with a set of related senses.

- Distinguishing homonymy from polysemy is not always easy. Decision is based on:
  - Etymology: history of the lexemes in question
  - Intuition of native speakers
Word sense disambiguation

- Given a *fixed* set of senses associated with a lexical item, determine which of them applies to a particular instance of the lexical item in running text.
- Two fundamental approaches
  - WSD occurs during semantic analysis as a side-effect of the elimination of ill-formed semantic representations
  - Stand-alone approach
    » WSD is performed independent of, and prior to, compositional semantic analysis
    » Makes minimal assumptions about what information will be available from other NLP processes
    » Applicable in large-scale practical applications

Synonymy

- Lexemes with the same meaning
- Invoke the notion of substitutability
  - Two lexemes will be considered synonyms if they can be substituted for one another in a sentence without changing the meaning or acceptability of the sentence
    » How *big* is that plane?
    » Would I be flying on a *large* or small plane?
    » Miss Nelson, for instance, became a kind of *big* sister to Mrs. Van Tassel’s son, Benjamin.
    » We frustrate ‘em and frustrate ‘em, and pretty soon they make a *big* mistake.
    » Also issues of register
      ◆ Social factors that surround the use of possible synonyms, e.g. politeness, group status.

Next lectures

- Word sense disambiguation
  » Background from linguistics
    ◆ Lexical semantics
  » On-line resources
  » Computational approaches

WordNet

- Handcrafted database of lexical relations
- Three separate databases: nouns; verbs; adjectives and adverbs
- Each database is a set of lexical entries (according to unique orthographic forms)
  - Set of senses associated with each entry

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<th>Category</th>
<th># Unique Forms</th>
<th># of Senses</th>
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</table>
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