Last Time

- Normality Judgements and Linguistic Tests
- Paradigmatic vs. Syntagmatic Affinity
- Aspects of Semantic Infelicity (Pleonasm, Dissonance, Improbability, Zeugma)
- Semantic Traits
- Semantic Constituency
Recurrent Contrast Test

- Construct two very different contexts in which the item can occur and can be replaced by a second item (all other words must be different).
- If you can find at least two contexts where the semantic difference between the two contexts is comparable, then the item is a semantic constituent:

  \[
  \text{John} \left( \text{in-} \atop \text{ex-} \right) \text{haled.} = \text{They} \left( \text{im-} \atop \text{ex-} \right) \text{port textiles.}
  \]

  \[
  \text{His remarks are} \left( \text{im-} \atop -\text{oss} \right) \text{pertinent.} \neq \text{What you suggest is} \left( \text{im-} \atop -\text{oss} \right) \text{possible.}
  \]

  This means that \text{im-} is a semantic constituent in \text{import} but not in \text{impertinent}.

More on the Recurrent Contrast Test

This does not work for random parts of words:

  \[
  \text{The cat sat on the m} \left( -\text{at} \atop -\text{oss} \right). \neq \text{He does not like his new b} \left( -\text{at} \atop -\text{oss} \right).
  \]

  Now let's look at compounds again:

  \[
  \text{I saw a} \left( \text{black-} \atop \text{blue-} \right) \text{bird in the garden.} \neq \text{Cynthia wore} \left( \text{black} \atop \text{blue} \right) \text{stockings.}
  \]

  and \text{blue} in \text{bluebird} and \text{blackbird} are not semantic constituents.
• Arthur poured the butter into a dish.
→ the butter must be liquid.

• Let me cash the cheque at the bank before we go.
→ he must be talking about the financial institution.

• In each context, there is some semantic information contained in the lexical item, and some comes from the context
• But: different mechanisms in place: balance of information
• Sense selection: Rich bundles of semantic traits, one is chosen on the basis of the context; context acts as trigger.
• Contextual Modulation: One semantic trait (e.g., solid vs. liquid state) which is not explicitly mentioned is inferred from context

Underspecification vs. Ambiguity

Underspecification:
• Sue visited her cousin.

cousin is underspecified wrt [male/female]. Which interpretation applies is (sometimes) inferred from the context:

• Sue’s cousin is pregnant.

Ambiguity:
• We finally reached the bank.

bank has two distinct senses, with no general meaning covering both. Which sense applies is sense selected from the context:

• The bank is steep and covered with brambles.
First Test for Ambiguity

The term "underspecified" indicates that the context totally conditions the interpretation of a word form, whereas "ambiguous" suggests that its senses should not be totally conditioned by their contexts.

**Recipe:**
- Generate two contexts in which the item has different interpretations.
- Replace the item with a synonym or hypernym that covers both interpretations.
- If no information loss occurs, then the distinguishing interpretation is entirely the result of contextual modulation.

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First Ambiguity Test; underspecified lexical item

**Example:**
- Is "monarch" ambiguous between male and female interpretation, or is it underspecified?

Construct contexts for the two interpretations:
- The Ruritanian monarch is expecting her second baby.
- The child's father is the reigning monarch.

Replace with synonym (e.g., crowned head, sovereign).

If no information loss occurs, then the distinguishing interpretation is entirely the result of contextual modulation.

Ergo: monarch is not ambiguous, but underspecified.
• Now: bank
• Construct contexts:
  – His wife is the manager of the local bank.
  – At this point, the bank was covered with brambles.
• Replace with common hyponym:
  – His wife is the manager of the local place.
  – At this point, the place was covered with brambles.
• This results in information loss.
• So we have failed to show that the interpretation of bank is entirely the result of contextual modulation.
• Ergo: bank is ambiguous.

Another example

dog has two senses: canine/male dog

• John prefers bitches to dogs/?canines.
• Arthur breeds dogs.

The “male dog” sense is not the result of context modulation:

• Incredibly, John prefers an aged, half-blind bitch to a dog, as his canine companion.
• ? Mary prefers mares to horses.
If a word form is ambiguous, then both of its senses must be independently maximisable (i.e., the interpretation is forced to cover all possible referents).

Recipe:

- Construct a situation including both interpretations of the word form, where one interpretation is false and the other correct.
- Show that this is so with a question concerning the word form which can be answered both yes and no, depending on the interpretation.
- Then the word form is ambiguous.

- *Is that a dog?*
  - Yes, *it's a Spaniel.*
  - No, *it's a bitch.*

- *Did Arthur make it to the bank?*
  - Yes, *he's a strong swimmer.*
  - No, *he was arrested as soon as he came out of the water.*
In contrast:

- *Is the subject of this poem a monarch?*
  - Yes, it’s a queen.
  - ? No, it’s a king.

Third Test for Ambiguity: Zeugma Test

contexts which activate more than one sense of an ambiguous word form give rise to the oddness called zeugma:

- ? John and his driving licence expired last Thursday.

underspecified word forms don’t give rise to zeugma:

- My cousin, who is pregnant, was born on the same day as Arthur’s, who is the father.
Fourth Test for Ambiguity: Crossed Interpretations Test

- For underspecified items, we can get a crossed interpretation:
  - *Mary has adopted a child; so has Sue.*
- I.e., there is the possibility that one has adopted a boy and the other a girl.
- Not so for ambiguous items:
  - *Tom has reached the bank; so has Joe.*
  - *Tom wants to know if this is a dog; so does Joe.*
- This can only mean that both reached the same type of bank, and enquire either about the breed or the sex of the dog.

Indirect Tests for Ambiguity

Word form X is ambiguous if it stands in relation Y with other word forms $Z_1$ and $Z_2$ in one occurrence context but not another (and the two contexts exemplify different senses).

**Y=Synonymy**

*Guy struck the match.* – lucifer
*The match was a draw.* – contest

**Y=Antonymy**

*The room was painted in light colours.* – dark
*Arthur has a light teaching load.* – heavy

**Y=Paronymy**

*She complained about discrimination by race.* – racist
*The race was won by Arthur* – racing.
• Physical object – content:
  – *I was hit on the head by a novel.*
• Unit – type:
  – *I want that shirt.*
• Metaphor:
  – *Has Arthur changed his position?*
• . . .
• These systematic relationships are sometimes referred to as “lexical rules”.

Sense Spectra

Zeugma test shows different senses for *mouth*:

• ? *The poisoned chocolate entered the Contessa’s mouth at the same instant that the yacht entered that of the river.*

But there is a sense spectrum connecting the two:

1. *John keeps opening and shutting his mouth like that of a fish.*
2. *The parasite attaches itself to the mouths of fishes, sea squirts etc.*
3. *The mouth of a sea squirt resembles that of a bottle.*
4. *The mouth of a cave resembles that of a bottle.*
5. *The mouth of the enormous cave was also that of the underground river.*

We can’t do the same with *expire* and *expire*!
Lexical unit: a form-meaning complex with relatively stable and discrete semantic properties which stand in meaning relations such as antonymy (long:short) and hyponomy (dog:animal). The meaning aspect of a lexical unit is called a sense. The form aspect of a lexical unit is called a lexical form.

Lexical form: family of word forms differing only in inflectional morphology. Must be a semantic constituent, i.e., can include multi-word units.

Lexeme: contains one or more lexical units of the same POS, if either

- there exists a lexical rule which permits the existence of the sense of one from the existence of the sense of the other. Recurrent semantic contrast between senses is evidence of a lexical rule (e.g., unit and type readings of pieces of clothing).
- the senses are local senses belonging to a sense spectrum (e.g., mouth of a river and human mouth)

Polysemy

A lexeme which has a number of senses is polysemous.
A lexical form is **homonymous** if it realises lexical units belonging to more than one lexeme.

An **underspecified** lexical form has only one sense, but a (single) semantic trait that is left open/underspecified.
Word Senses: Example *interest*

- She pays 3% interest on the loan.
- He showed a lot of interest in the painting.
- Microsoft purchased a controlling interest in Google.
- He said nothing of great interest.
- It is in the national interest to invade the Bahamas.
- I only have your best interest in mind.
- Playing chess is one of my interests.
- Business interests lobbied for the legislation.
- Primary colours can add interest to a room.

Breakout session:
How many clusters are there here, and why?

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Lexical Relations: Congruence Relations

- **Synonymy** (*sofa/couch*): X is a cognitive synonym of Y if X and Y are syntactically identical, and any grammatical declarative sentence S containing X has equivalent truthconditional conditions to another sentence S₁, which is identical to S expect that X is replaced by Y.

- **Hyponymy** (*dog/animal*): X is a hyponym of Y if there is unilateral entailment \( S \Rightarrow S_1 \) Condition: S, S₁ are of form “This is X”.

- **Compatibility** (*dog/pet*), (*husband/policeman*): No systematic entailment relations hold, but a common superordinate exists. Some semantic traits are shared; difference concerns traits which do not clash
Lexical Relations: Congruence Relations

Incompatibility (*cat/dog*):

- *It's a X ⇒ It's not a Y*
- Not very interesting: *affix* and *volcano* are incompatibles.
- Normal definition includes the criterion that X and Y must fall under a single superordinate: *cat, dog, lion, elephant, aardvark*, etc.
- Close relationship to contrariness, but relationship not straightforward
- Items in a coordinated list are usually incompatibles:
  - ? *I like fruit and bananas.*

Congruence Variants

- X is a **congruent** of Y:
  \[
  \forall X R(X, Y) \cap \forall Y R(X, Y)
  \]
- X is a **hypo-R** of Y; Y is a **super-R** of X:
  \[
  \forall X R(X, Y) \cap \exists Y \neg R(X, Y)
  \]
- X and Y are **semi-Rs**: some but not all X and some but not all Y stand in relation R(X,Y).
- Y is a **quasi-R** of X: if X, Y in the right relationship exist, but do not agree in their POS: *Cutlery* is a quasi-hypernym of *knife, fork, spoon*.
- X is a **para-R** of Y: expectation rather than necessity holds. E.g., *student, bankmanager* are para-incompatibles:
  - *He's a student but he's a bank-manager.*