Computational Linguistics

Lecture 10

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EXERCISES ON LEXICAL SEMANTICS

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Homonymy

*John cashed a check at the **bank**.*

*Mary sat on the **bank** of the river and watched the currents.*

bank1: *financial institution*

bank2: *sloping mound*

HOMONYMS

The senses of the word do not have any particular relation among them

Polysemy

*John cashed a check at the **bank**.*

*Mary sat on the **bank** of the river and watched the currents.*

*Donors give blood for storage at a **bank** for emergency transfusions.*

bank1: *financial institution*

bank2: *sloping mound*

bank3: *repository of biological entities*

POLYSEMY

The senses of the word are related semantically

Metonymy

John cashed a check at the **bank**.

Mary sat on the **bank** of the river and watched the currents.

Donors give blood for storage at a **bank** for emergency transfusions.

The bank is on the corner of Regent street and Queen avenue.

bank1: *financial institution*

bank2: sloping mound

bank3: repository of biological entities

bank4: *the building belonging to a financial institution*

A subtype of polysemy: METONYMY

The use of one aspect of a concept or entity to refer to other aspects of the entity, or to the entity itself, e.g. BUILDING ↔ ORGANIZATION
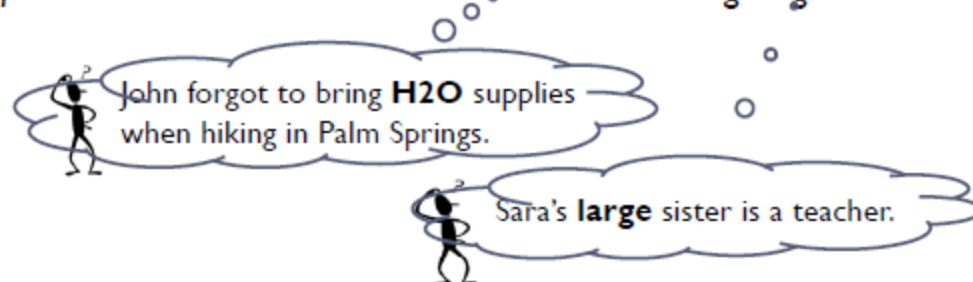
Relations between senses: synonymy

Two senses of two different lemmas are **synonyms** when their meaning is identical or nearly identical (i.e. if they are substituable one for the other in any sentence without changing the truth conditions of the sentence)

couch/sofa   car/automobile   water/H_2O big/large

John forgot to bring **H2O** supplies when hiking in Palm Springs.

Sara's **large** sister is a teacher.

Relations between senses: antonymy

Two senses are **antonyms** if they define a binary opposition, or are at opposite ends of some scale.

long/short   fast/slow   rise/fall   up/down

REVERSIVE:
describe some sort of change or movement in opposite directions

Relations between senses: hyponymy

One sense is a **hyponym** of another sense if the first sense is more specific, denoting a subclass of the other.

hypernym	vehicle	fruit	furniture	mammal
hyponym	car	mango	chair	dog

Relations between senses: meronymy

Part-whole relation

A leg is a meronym of chair.
A wheel is a **meronym** *of car.*
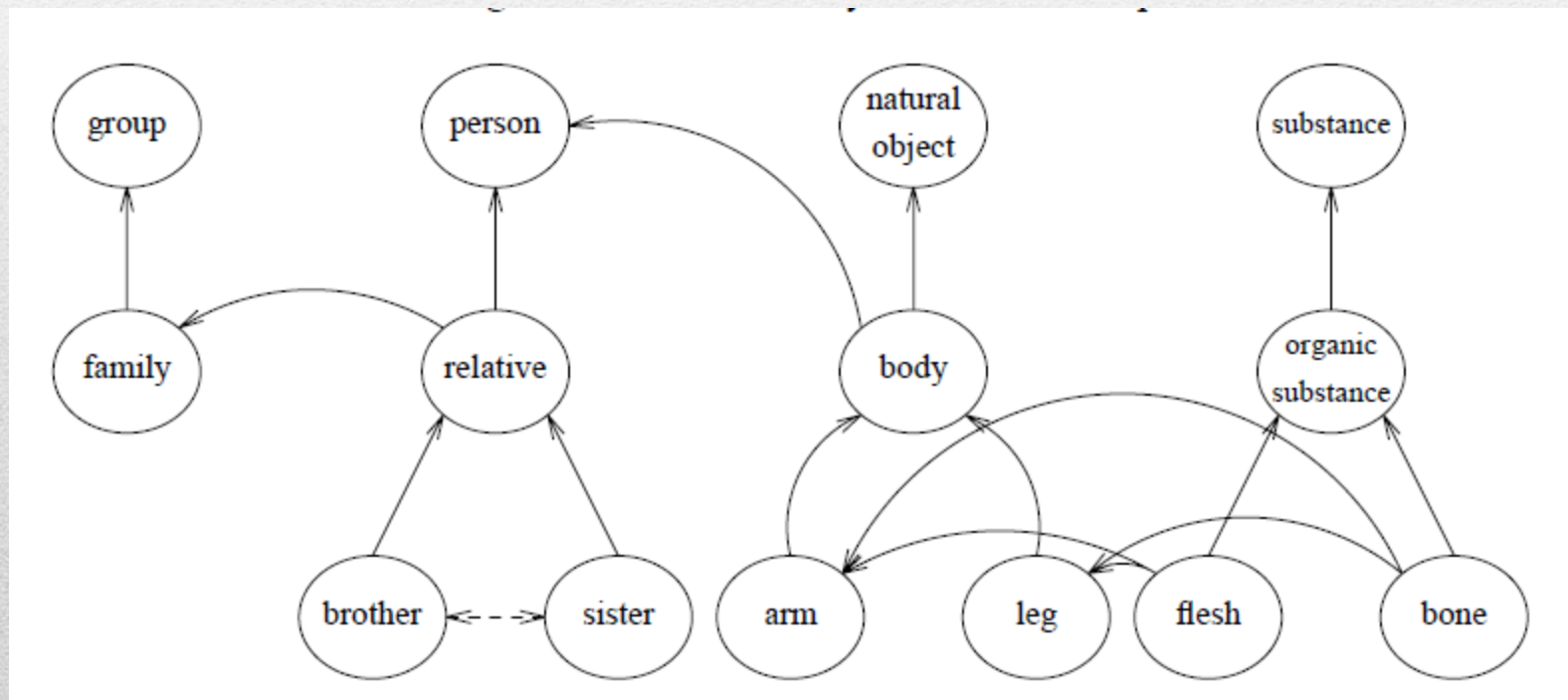*Car is* **holonym** *of wheel.*

Identify homonyms and polysems

➢ **file** (a set of related records kept together vs. a steel hand tool with small sharp teeth)

➢ **purse** (a small bag for carrying money vs. a sum of money offered as a prize)

➢ **fan** (a device for creating a current of air by movement of a surface vs. an ardent follower or admirer)

➢ **tail** (the posterior part of the body of a vertebrate vs. a spy employed to follow someone and report their movements)

➢ **date** (sweet edible fruit of the date palm vs. a meeting arranged in advance)

➢ **tie** (a neckwear consisting of a long narrow piece of material tied in knot at the front vs. to fasten or secure with a rope, string, or cord) **10**

What is the semantic relationship between the following words?

➢ couch : sofa
  • SYNONYMY
➢ vehicle : car, truck, SUV, bicycle
  • HYPONYMY
➢ awake : asleep
  • ANTONYMY
➢ take : grasp, carry, go
  • POLYSEMY
➢ crown : king or queen
  • METONYMY
➢ I saw the spring (season) : (metal coil)
  • HOMONYMY

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Define different semantic relations on the given example of wordnet

Define the troponymy relation between the following verbs

- snore –sleep
  - Inclusion
- Succeed – try
  - Backward Presupposition
- give – have
  - cause

Example of Resnick Similarity

Calculate Sim_{Res} (Car, Bicycle)