

LING 364: Introduction to Formal Semantics

Lecture 19
March 28th

Administrivia

- Homework 4 due today
 - usual rules: in my inbox by midnight
 - handed out last Tuesday

Today's Topic

- Finish Chapter 5

Last Time

- **(Section 5.3)**
- Contrast **Novelty** (*indefinite*) and **Familiarity** (*definite*)
- **Example:**
 - (6a) **A dog** (*new information*) came into the house
 - (6b) **The dog** (*old information*) wanted some water
- **(Section 5.4.1)**

Names = concealed descriptions
- **Example:**
 - (A) (*Name*) Confucius
 - (B) (*Definite Description*) **the** most famous Chinese philosopher
 - both seem to “pick out” or refer to a single individual but there is one important difference:
 - (B) gives you the criterion for computing or picking out the individual

Last Time

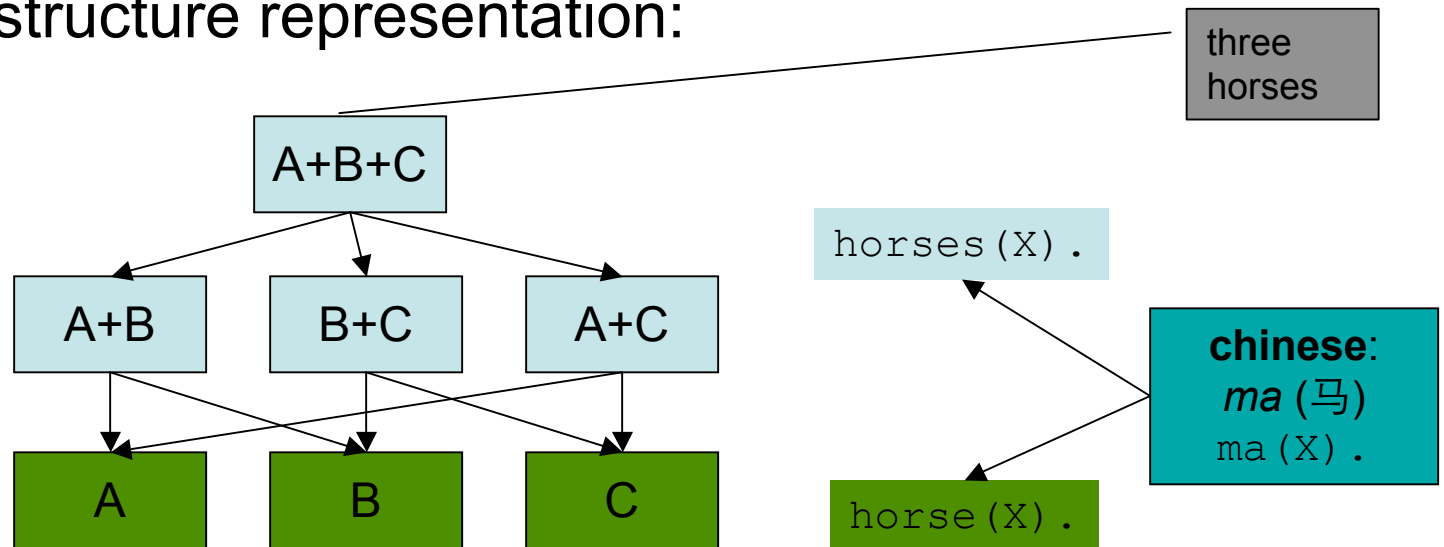
- **(Section 5.4.2–3)**
- Names are directly referential
- Variations:
 - **Kripke**: names are non-descriptive, names refer to things from historical reasons (causal chain)
 - **Evans**: *social context is important* (names can change wrt. referent)
- **Examples:**
 - **Madagascar**
 - originally named part of mainland Africa
 - as a result of Marco Polo's mistake: the island off the coast of Africa
 - **kangaroo**
 - “I don't understand” (aboriginal)
 - *ganjurru* (Guugu Yimidhirr word)
 - **ono** (a fish: aka wahoo)
 - “good to eat” (Hawaiian)
 - **livid** as in “livid with rage”
 - pale **or** red

Last Time

- **(Section 5.5) (Topic of Homework 4)**
- Plural and Mass Terms
- **Godehard Link:** Lattice structure
- **Example:** possible worlds (w_1, \dots, w_4)
 - *a mapping from world to a set of individuals*
 - $w_1 \rightarrow \{A, B\}$ horse(a). horse(b).
 - $w_2 \rightarrow \{B, C\}$ horse(b). horse(c).
 - $w_3 \rightarrow \{A, B, C\}$ horse(a). horse(b). horse(c).
 - $w_4 \rightarrow \emptyset$

Last Time

- W3:
 - meaning of *horse*: {A,B,C}
 - meaning of *horses*: {A+B,A+C,B+C,A+B+C}
- Lattice structure representation:



Last Time

- **Mass nouns:** “uncountable”
- **Examples:**
 - gold *(no natural discrete decomposition into countable, or bounded, units)*
 - water
 - furniture *three furnitures
 - three **pieces** of furniture
 - (unit = one piece)
 - *defines a bounded item which we can count*
- **Generalizing the lattice viewpoint**
 - *do we have an infinite lattice for mass nouns?*
 - *how do we represent mass nouns?*
- **Compare with:**
 - three horses (English)
 - *does “horses” comes complete with pre-defined units?*
 - three horse-classifier horse (Chinese: sān pǐ mǎ 三匹马)
 - three “units of” horse

Computing Quantity

- One idea (*later to be modified for Chapter 6*):
 - **phrase** **meaning**
 - furniture furniture(X).
 - piece of furniture furniture(X), X is bounded.
 - three pieces of furniture - *requires X to be bounded*
 - |X: furniture(X) | = 3, X is bounded.
 - *three furniture | X: furniture(X) | doesn't compute
 - **Chinese: *ma* is like furniture, doesn't come with bounded property**

 - **phrase** **meaning**
 - horses horses(X), X is bounded.
 - three horses | X: horses(X) | = 3, X is bounded.

Kinds

- **(Section 5.6)**
- **Bare plurals:** *relation to quantification?*
 - occur on their own, i.e. without some determiner or quantifier
- **Examples:**
 - (15) Horses are rare
 - (16) Horses are mammals
 - (17) Horses have tails
 - (18) Horses give birth to their foals in the spring
 - (19) Horses were galloping across the plain
- *What is different about the meaning of horses in (15)–(19)?*

Kinds

- **Carlson:** nature of predication
- concept of horse:
 - species-level: **kind** or object-level
- assertion:
 - *horses*: intrinsically of level: kind
- Idea (**coercion**):
 - Meaning of horse depends on the type of predicate
- **Examples**
 - (15) *Horses* are rare
 - predicate *rare*: selects for kind or species-level
 - (20) *rare(horses)*
 - (17) *Horses* have tails
 - predicate *have tails* is an object-level predicate (permanent property)
 - mismatch
 - apply a generic operator Gn: Gn: object-level → species-level

Kinds

- Semantics:
 - $G_n(P)$ true of a kind iff P is true of typical instances of P
 - here: iff = *if and only if*
- Idea: stage-level
 - object-level property
 - not a permanent property
 - applies during a time-slice
- Example
 - (19) **Horses** were galloping across the plain
 - predicate *were galloping across the plain* is stage-level
 - coercion or shift needed to apply to some individual: **Silver**
- ***Other predicates? Name some Adjectives***

Pronouns and Anaphors

- **(Section 5.7)**
- Example:
 - (25) Shelby is cute. **He** is a Keeshond.
 - predicate saturation
- Referent of pronoun not always fully determined:
 - may be ambiguous
- Example: (ambiguity)
 - (26) Shelby met Bucky. **He** sniffed **him**.
 - possibilities for *he* and *him*?

Pronouns and Anaphors

- Example:
 - (27) Shelby met another male dog and a female cat. **He** sniffed the dog and bit the cat.
- Example:
 - (29) Only John loves his mother
 - possibilities for *his*?
- World 1 (=31):
 - loves(john,mother(john)).
 - also, no other facts in the database that would satisfy the query
 - ?- loves(X,mother(john)), \+ X=john.
- World 2 (=32):
 - loves(john,mother(john)).
 - also no other facts in the database that would satisfy the query
 - ? - loves(X,mother(X)),\+ X=john.