

24.900: Introduction to Linguistics

3/9/05

Semantics 2

- Don't forget: If you have questions, write them down and leave them in one of the black boxes at the back of the classroom.
- 24.900 as a CI-H
- Squib topics

I. Semantics

- Strings of words do not have meaning.
- Syntactic *structures* (which include words) have meaning.
- Sentence (1) has two meanings:

(1) **Structural ambiguity:** *We will hit the man with the hammer.*

[*with the hammer* modifies V' (we'll use the hammer') or modifies N' (man has a hammer)]

2. Semantics vs. syntax

- The fact that semantics and syntax are connected does not mean that we cannot also tease them apart.
- For example, we can imagine sentences with semantic flaws that are syntactically well-formed:
(2) Colorless green ideas sleep furiously.
 - Compare (3), which is both semantic and syntactic gibberish:
(3) *Furiously sleep ideas green colorless.

3. Pronouns: basic facts

a) basic properties:

- Syntax: pronoun is an N heading an NP
- Semantics: takes its reference from context

b) reference from non-linguistic context

(4) a. [A woman runs by.] "Do you know that she won a gold medal in the Olympics?"

b. [A man leaves the room.] "Thank goodness he's gone!"

c) reference from linguistic context:

(5) a. Sue_i said [that she_i saw Bill].

b. $Virtue_i$ is its_i own reward.

II. Binding Theory: A review

A. Some preliminaries:

1. *Antecedent*:

An NP that gives meaning to a pronoun or anaphor.

Sarah hit herself on the head with a carrot.

↓ ↓
antecedent anaphor

B. **What is binding?**

- Binding theory concerns syntactic restrictions on nominal reference. It particularly focuses on the possible coreference relationships between pronouns and their antecedents (the nominal that a pronoun depends on for its reference).
- For instance, in (1a) *himself* must refer to the same individual as *he*. In contrast, in (1b) *her* cannot refer to the same individual as *she*. Instead, the sentence must mean that some person voted for some other person.

(1) a. He_i voted for $himself_i$.
b. She_i voted for $her_{j/*i}$.

- Pronouns like *himself* or *ourselves*, which must corefer with some other noun phrase in the sentence, are called reflexive pronouns or reflexives. (Pronouns like *she*, *her*, and *us* are nonreflexive pronouns.)
- Two nominal expressions that corefer, or refer to the same individual or individuals are annotated by identical subscripts; if two nominals do not corefer, they are annotated with different indices/ subscripts:

(2) a. He_i voted for $himself_i$.
b. She_i voted for her_i .

- In an example like He_i voted for $himself_i$, we say that the reflexive pronoun *himself* is bound by *he*, and that *he* is the binder of *himself*.
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{Reciprocals like *each other* and *one another* must also be bound by a local antecedent and are grouped in binding-theoretic terms with reflexives:

(3) a. $They_i$ voted for each other_i.
b. * I_i voted for each other_j. }

Reflexives (and reciprocals) are together called anaphors.

- Some major works on binding are Faltz (1977), Wasow (1979), Chomsky (1981, 1986), Reinhart (1983), Dalrymple (1993), Reinhart & Reuland (1993), and Pollard & Sag (1994). Huang (2000) contains a rich cross-linguistic survey of pronominal systems. Buring (2004) provides a recent comprehensive overview of the syntax and semantics of binding and presents a new synthesis.

2. *Binds*

A binds B iff

A c-commands B *and*

A and B are coindexed.

(Binding is a kind of coindexation. It is coindexation that happens when one of the two NPs c-commands the other. Notice that coindexation alone does not constitute binding. Binding requires *both* coindexation and c-command.)

- Binding theory accounts for whether a nominal expression can, must, or must not refer to the same individual as some other nominal in the sentence.
- Coreference possibilities for a pronoun like him or herself are determined by binding conditions on the relation between the pronoun and its antecedent, the nominal that a pronoun depends on for its reference.
 - Binding theory is typically formulated on some syntactic representation.
 - Three aspects are important in determining proper and improper binding relations: the class of nominal, the syntactic domain within which binding must or must not hold, and the syntactic relation between a nominal and its potential binder.

2. **Binding conditions**

- Binding theory is typically stated in terms of conditions that refer to three key aspects: the class of nominal involved, the syntactic region that constitutes the domain of binding, and a structural condition on the syntactic relation between a nominal and its potential binder.

2.1 Classes of nominals

- For the purposes of binding theory, nominals are traditionally partitioned into several classes, the major ones are shown here:

R-expressions

Pronouns

Anaphors

2.2 Binding domains

Consider the following sentence:

(5) Bill_i said that [Gonzo_j voted for himself_{i,j}].

- The reflexive himself must be bound in its local domain, here the subordinate clause *Gonzo voted for himself*. The only appropriate binder in this domain is Gonzo.
- The reflexive cannot be bound by the higher subject Bill, which is outside the reflexive's local domain. This is indicated by placing the marker of ungrammaticality (*) beside the illicit index.
- A pronoun in the same position must not be bound in its local domain:

(6) Bill_i said that [Gonzo_j voted for him_{i,*j}]

- The local domain for the pronoun is also the subordinate clause, and it cannot be bound in this domain. It can, however, be bound by the matrix subject, which lies outside the local domain.

II. Class Exercise:

What binding principles allow or disallow the following?

- A. *Herself_i bopped Heidi_i on the head with a carrot.
- B. *Heidi_i said that herself_i danced with Henry.
- C. *Heidi bopped her_i on the head.
- D. *She_i kissed Heidi_i.

III. **Thematic Roles:**

(See A. Carrie, *Syntax: A Generative Introduction* (2002) Blackwell Publishers)

A. Once again we see that our Phrase Structure Rules, though elegant and simple, still generate sentences that are not acceptable or grammatical.

NB: X-bar theory allows us to account for the distinction among adjuncts, complements, and specifiers as well as heads. It incorporates the most articulated view of sentence hierarchy required by constituency tests, and it captures cross-categorical generalizations (i.e., the fact that all kinds of phrases-- NPs, VPs, APs, PPs, CPs, IPs... have the same properties). And, X-bar allows us to draw trees for most of the sentences of any language.

B. Let's consider some pairs of sentences that X-bar generates:

- 1) Rosemary hates Cal Tech.
- 2) *Rosemary hates.

- 3) Bill smiled.
- 4) *Bill smiled the breadbox.

- 5) Sam gave the whale a jawbreaker.
- 6) *Sam gave the whale.

C. Sentence 1) should be grammatical. Consider,
7) Rosemary ran.

- X-bar theory says that *complements* are optional. Therefore, shouldn't direct objects which are complements also always be optional?
- The opposite of this case is true in sentence 4. The direct object in this sentence should be OK also.
- Sentence 5 consists of both a direct object and an indirect object which in this sentence are both obligatory, not optional, in order to generate a grammatical sentence.

D. **So what is going on?**

E. It appears that certain verbs require objects and others do not. It appears to a property of a *particular* verb.

F. Information about the particular verb in terms of its particular properties, is contained in our mental *lexicon*.

III. Essential Terminology:

A. **Predicate:** defines the relation between the individual being talked about and the real world-- as well as each other. (~mathematical notion of predicate).

B. **Arguments:** the entities (which can be abstract) which participate in the relation.

8. Rosa hit the baseball.

Arguments: Rosa, baseball

Predicate: hit

(The first argument (Rosa) is applying some force to the second argument (baseball)).

Argument Structure: the number of arguments that a particular predicate requires.

C. One argument verbs: *smile, arrive, sit, run* → **intransitives**

D. Two obligatory argument verbs: *hit, love, see, kiss, admire* → **transitive**

E. Three obligatory argument verbs: *put, give* → **ditransitives**

(In determining how many arguments a predicate has, we only consider complements and specifiers. Adjuncts are never counted in the list. And, only obligatory elements are considered arguments. Although this may not always be as straightforward as it seems. For example, *run* has both a transitive and an intransitive use. Spanish and Italian as subject drop languages raise issues. The imperative use in English does also).

F. Predicates impose other restrictions on their arguments.

- Restrictions on the categories of their complements
- Example: *ask* I asked [_{NP} the question].
I asked [_{CP} if you knew the answer].
 - Restrictions on the categories a verb can have are called **subcategorization restrictions**.
 - There are also semantic restrictions on what can appear in particular positions.
 - 9. #My comb raises peanuts.
 - 10. #A bolt of lightening killed the rock.
 - These restrictions are called: **selectional restrictions**

B. However, notice that there is not necessarily a one to one relationship between the thematic relations and arguments.

6. *Jason* gave the books to Anna.

C. In 6., *Jason* gets two thematic roles: (agent and source). Hmmmmmm

D. Linguists have developed a special construction called a **theta role** (Θ role), that does map one to one with arguments.

- Theta roles are bundles of thematic roles that cluster on one argument.
- In 6, while *Jason* may get two thematic relations, it only gets one Theta role.
- When an argument such as in 6. has more than one theta role, linguists refer to the most **prominent** thematic relation that an argument may contain/possess.
- Somewhat incorrectly, linguists would refer to the “agent theta role” for [*NP Jason*] in sentence 6 above. Agent refers to a thematic role and theta role refers to a bundle of thematic relations.

Example: *Give* (agent, theme, and instrument)

Ditransitive verb: requires three arguments. Subject- agent (giver); direct object – theme (the thing being given) and an indirect object- the location or goal (the person to whom the thing is being given). Any variation on this results in ungrammaticality.

7. John gave Mary the book.

8. *Gave Mary the book.

9. *John gave to Mary.

10. *John gave the book.

11. *John gave the book the pen to Mary.

12. *The rock gave the sky with the fork. (use of NPS with the wrong theta roles)

[External and Internal Theta roles: Marantz, 1984]

III. The Theta Criterion

- a. Each argument is assigned one and only one theta role.
- b. Each theta role is assigned to one and only one argument.

(you can't have more arguments than you have theta roles and you can't have more theta roles than you have NPS.)

**Since theta roles express particular thematic relations, the arguments will have to be of appropriate semantic types for the sentence to pass the constraint.

Love: experiencer, theme

13. Megan loves Kevin.

14. *Megan loves.