

1 Semantically Vacuous Words

Syntactic but no semantic contribution:

of

- (1) a. Joan is a teacher of chemistry.
- b. Joan teaches chemistry.

be

- (2) a. Billy is smart.
- b. I consider [Billy smart].

a in predicate nominals

- (3) Kylie is a singer.

- many languages (Hindi, Russian,...) do not use an article in predicative constructions.

Two options:

- (4) a. Identity functions
- b. 'Semantic Invisibility'

Handling Nonverbal Predicates:

- (5) a. Monadic: *cat, brown, out*
- b. Dyadic: *part, fond, in*

What about *teacher, king* etc.?

- (6) a. Tina is a teacher.
- b. Tina is a teacher of Physics/Physics teacher.

2 Modification

Number of sets we want to talk about

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Number of sets for which we have primitive terms

How to talk about parts of sets?

Set Intersection: constructing new sets by combining smaller set-denoting expressions.

The many usages of PPs:

- (7) a. a part of Europe (argument)
- b. a city in Texas (restrictive modifier)
- c. Pierre, from Quebec (non-restrictive modifier)

Similarly for Adjectives.

Non-restrictive vs. Restrictive Modification:
phonological and orthographic distinction
the semantics of conjunction (not intersection)

3 New Rules or New Types

- (8) a. Austin is a city. $\rightarrow \llbracket \text{city} \rrbracket$ is of type et
b. Austin is in Texas. $\rightarrow \llbracket \text{in Texas} \rrbracket$ is of type et

But:

- (9) Austin is a $\llbracket \text{city} \rrbracket$ $\llbracket \text{in Texas} \rrbracket$.

Two options:

- (10) a. Assign new types
b. Add a new semantic composition rule

4 New Types and Functional Application

- New types and new semantic entries for $\llbracket \text{in} \rrbracket$, $\llbracket \text{brown} \rrbracket$.

But:

- (11) a. Austin is in Texas.
b. Mona is a brown cat.

One option: new types for $\llbracket \text{be} \rrbracket$

Another option: systematic ambiguity
Type-shifting rules

What about the bad combinations?

5 Old Types and a new rule

- (12) *Predicate Modification* (PM)
If α is a branching node, $\{\beta, \gamma\}$ is the set of α 's daughters, and $\llbracket \beta \rrbracket$ and $\llbracket \gamma \rrbracket$ are both in D_{et} , then
$$\llbracket \alpha \rrbracket = \lambda x \in D_e. [\llbracket \beta \rrbracket(x) = \llbracket \gamma \rrbracket(x) = 1]$$

No semantic ambiguity despite much syntactic ambiguity:

- (13) Mona is a brown cat in Austin fond of Eric.

- follows from associativity of conjunction/intersection.

6 Non-intersective Adjectives

Both approaches predict the following entailments:

- (14) a. Mona is a brown cat. \rightarrow Mona is brown.
b. Mona is a brown cat. \rightarrow Mona is a cat.

What about cases like:

- (15) a. Jumbo is a small elephant.
b. Jumbo is a small animal.

Maybe *small* in its attributive usage is indeed of type $(et)et$.

- (16) $\llbracket \text{small} \rrbracket =$
 $\lambda f \in D_{et}. [\lambda x \in D_e. [f(x) = 1 \text{ and the size of } x \text{ is below the average size of the elements of } \{y : f(y) = 1\}]]$

Then again:

- (17) Jumbo is small.

Options:

1. Null NP modifier.
2. 'Type Lowering'

Another stab: context sensitivity

- (18) $\llbracket \text{small} \rrbracket = \lambda x \in D_e. [x\text{'s size is below } c, \text{ where } c \text{ is the size standard made salient by the utterance context.}]$

7 Truly Non-intersective Adjectives

former, *alleged*

- (19) a. John is a former airline pilot. \nrightarrow John is an airline pilot.
b. Mary is an alleged prestidigitator. \nrightarrow Mary is a prestidigitator.

Further:

- (20) a. *John is former.
b. *Mary is alleged.

former and *alleged* are not **extensional** adjectives.

Assume the two following two sets are equal:
Students of the MIT Linguistics Department
Residents of Building E39

- (21) a. Karlos is a former student of the MIT Linguistics Department.
b. Karlos is a former resident of Building E39.

former and *alleged* are called **intensional** adjectives.

- intensional adjectives cannot be of type $(et)et$.

8 The Definite Article

- (22) a. The President of the United States of America
b. The MIT Professor of Linguistics
c. The MIT Professor of Astrology

$\llbracket \text{the} \rrbracket$ as a partial function:

- (23) $\llbracket \text{the} \rrbracket =$
 $\lambda f : f \in D_{et}$ and there is exactly one x such that $f(x) = 1$.
the unique y such that $f(y) = 1$

An abbreviation: the ι operator

- (24) For any $f \in D_{et}$, $\iota(f) = x$, if there is exactly one x such that $f(x) = 1$,
other $\iota(f)$ is undefined.

9 Presupposition Failure and Truth

False or Undefined?

- (25) a. The MIT Professor of Linguistics is from Ohio.
b. I had lunch with the MIT Professor of Astrology.
- (26) a. The sentence in (25a/b) is not true.
b. The sentence in (25a/b) is not false.

Disagreements about (26b).

10 Presupposition vs. Assertion

- (27) a. John is absent again today.
b. Today is not the first time that John is absent.
c. John is absent today, and that has happened before.
- (28) a. There will be one mid-term, which will be on March 31st.
b. The mid-term will be on March 31st.

11 Presupposition Failure vs. Uninterpretability

Intuitive difference between:

- (29) a. *John put on the table.
b. John likes the MIT Professor of Astrology.
- (30) If α is *uninterpretable*, then it can be proved from the semantics alone that α is outside the domain of $\llbracket \cdot \rrbracket$.
- (31) If it is a contingent matter of fact that α is outside the domain of $\llbracket \cdot \rrbracket$, then α is a *presupposition failure*.

12 Contextualizing Uniqueness

Absolute uniqueness is rarely required outside of mathematical contexts.

- (32) a. Did you lock the door?
b. The cat is hungry.
c. Not every student is in class.

Contextual Restrictions:

- (33) $\llbracket \text{the} \rrbracket =$
 $\lambda f : f \in D_{et}$ and there is exactly one $x \in C$ such that $f(x) = 1$.
the unique $y \in C$ such that $f(y) = 1$,
where C is a contextually salient subset of D .

Other usages:

- (34) The classic case of problems caused by a company not taking account of all its costs must be Salomon Brothers, the New York investment company.
- (35) I couldn't reach you last night. I must have had the wrong number.
John didn't get any replies to his ad because the paper published the wrong number.