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

>>

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 → [city] is of type et
   b. Austin is in Texas → [in Texas] is of type et

But:

(9) Austin is a [city] [in Texas]].

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 [in], [brown].

But:

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

One option: new types for [be]

Another option: systematic ambiguity

Type-shifting rules

What about the bad combinations?

5 Old Types and a new rule

(12) Predicate Modification (PM)

If $\alpha$ is a branching node, $\{\beta, \gamma\}$ is the set of $\alpha$’s daughters, and $[\beta]$ and $[\gamma]$ are both in $D_{\alpha}$, then:

$$[\alpha] = \lambda x \in D_{\alpha}.[\beta](x) = [\gamma](x) = 1$$

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 → Mona is brown.
     b. Mona is a brown cat → 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) $[\text{small}] = \lambda f \in D_{\text{small}}. \exists x \in D_{\text{small}}. f(x) = 1$ and the size of $x$ 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) \[ \text{small} = \lambda x \in D_c. |x| \text{'s size is below } c, \text{ where } c \text{ is the size standard made salient by the utterance context.} \]

7 Truly Non-intersective Adjectives

former, alleged

(19) a. John is a former airline pilot. \(\not\rightarrow\) John is an airline pilot.
b. Mary is an alleged prestidigitator. \(\not\rightarrow\) 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

[the] as a partial function:

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

An abbreviation: the \( \iota \) operator

(24) For any \( f \in D_{et}, \iota(f) = x, \text{ if there is exactly one } x \text{ such that } f(x) = 1, \)
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:

    b. John likes the MIT Professor of Astrology.

(30) If $\alpha$ is uninterpretable, then it can be proved from the semantics alone that $\alpha$ is outside the domain of $[]$.

(31) If it is a contingent matter of fact that $\alpha$ is outside the domain of $[]$, then $\alpha$ 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) $[\text{the}] = \lambda f : f \in D_{\alpha} \text{ and there is exactly one } x \in C \text{ such that } f(x) = 1,$
    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.