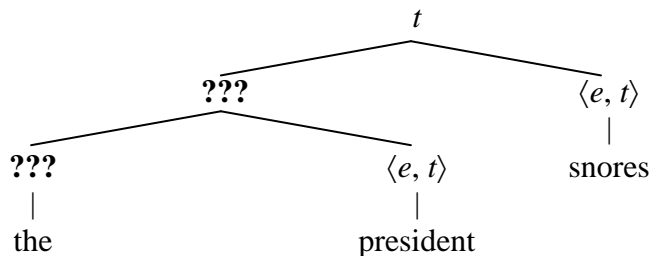


[[The]]
LING 553
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1. THE *THE* CHALLENGE

We now have an idea of the denotation of most open-class items: nouns, verbs (both transitive and intransitive), adjectives.¹ So what about all those horrid little connecting words?



As is so often the case, we have fundamentally two options:

- **[[snores]]** takes **[[the president]]** as its argument (the same way it does when its subject is, e.g., **[[George W. Bush]]**); or
- **[[the president]]** takes **[[snores]]** as its argument (similar to the way **[[tall]]** takes the type- $\langle e, t \rangle$ function **[[man]]** as its argument).

Which is to say:

- **[[the president]]** has the type e , just like, e.g., **[[George W. Bush]]**; or
- **[[the president]]** has the type...um...something worse.

But the fact of the matter seems to be this: *the president* (or other NPs with *the*, such as *the professor*, *the textbook*, etc.) denotes an individual; it's a real live referring expression.

Brief aside: “referring expression”? Well, names refer to individuals. Use a name, and you pick out an individual. Use a noun phrase with *the*, and you also pick out an individual—in fact, even if your description is wrong....

(1) **The student who brought a salad** wears glasses.

...you've nevertheless managed to refer to something, i.e., in this case, Caitlin, who had brought something to class in a bag, though it turned out not to be a salad after all. The standard sentence in this case is

¹ Adverbs are probably very similar to adjectives, with an added complication. We might talk about them later, or we might not, depending on what time we have, on whether y'all are interested, and whether I'm interested.

- (2) **The man over there drinking champagne** is happy tonight.²

which we might consider true even if the man pointed to has sparkling water in his champagne flute—indeed, even if the man who *is* over there drinking champagne, the one taking furtive sips from a hip flask, is clearly unhappy.

So why do some, but not all, uses of *the* succeed in referring?

- (3) a. The president of the United States snores.
[may be true, may be false, but we know what it means]
- b. #The king of the United States snores.
[seems to go wrong]
- c. #The senator from Massachusetts snores.
[seems to go wrong too]

2. TRUE? FALSE? *NEITHER*?

In general: we believe that either *p* is true, or *not p* is true. e.g.,

- (4) a. Caitlin was born in New York City.
b. Caitlin was not born in New York City.

We may not know which one of those is true, but we believe that one of them is, and that (5) must be true.

- (5) Either Caitlin was born in NYC, or Caitlin was not born in NYC.
(Or: Caitlin either was or wasn't born in NYC.)

What about:

- (6) a. The king of France is bald.
b. The king of France is not bald.

Intuition one: (6a) is false, (6b) is true.

- (6a) is false: if you look in the set of bald things, you won't find anyone in there called "the king of France".
- Thus, (6b) is true: the set of bald things in fact does not contain any kind of "the king of France" individual.

² This sentence is Kripke's recounting of Donnellan; Donnellan actually uses "Who is the man drinking the martini?" possibly used of a man with water in his martini glass. Tracing the history of this sentence and inferring what alcohol or alcohol substitutes various philosophers prefer is left as an exercise to the reader.

Intuition two: (6a) and (6b) are neither true nor false.

- (6a) can't be either true or false: you take the set of bald things, you try to take the individual called "the king of France" to see if he's in the set, but there is no such individual, so things just break down.
- And (6b) can't be either true or false: you take the set of bald things, you try to take the individual called "the king of France" to see if he's *not* in the set, but there is still no such individual, so things break down in exactly the same way.

2.1. *Russell's Answer*

In fact, Bertrand Russell (1905) maintained the former, because the Law of Excluded Middle (i.e., "either p or not p ") is too fundamental to logic to casually discard. He therefore claimed the following meaning for (6a):

- (7) There exists an x , such that:
- x is a king of France, and
 - if y is a king of France, then $y = x$, and
 - x is bald.

So you can prove (6a) false by showing that there does not exist any x for which all three of these are true. That may be because all the kings of France have hair; or it may be because there aren't any individuals x who are kings of France.

(Note that *The senator from Massachusetts snores* is also false: there's no individual x such that x is a senator from MA, and if y is a senator from MA then y is x —for instance, Ted Kennedy is a senator from MA, but there's a y who's a senator from MA but who isn't Ted Kennedy.)

2.2. *Problems with Russell's answer*

There are a few problems with Russell's answer. One is that not everyone shares his intuitions about the truth and falsity of *the king of France is bald*. Another is that definite descriptions are no longer referring expressions—even when the sentence is something like *the president snores*, it's not about the individual; it's a procedure that involves checking various entities x .

But then, what do we do when things are "neither true nor false"? We could add NEITHER to D_t as another possible value for the interpretation function to return for sentences, but trust me, that's a nightmare.

3. THE SOLUTION

Let's back up to the case we (sort of) understand.

(8) The president of the United States snores.

We want **[[the president]]** to have type e . So, assuming we're not going to contort an $\langle e, t \rangle$ into something unrecognizable, we need:

- **[[the]]** takes a function of type $\langle e, t \rangle$ as its argument and returns an individual of type e ; therefore, its semantic type is $\langle \langle e, t \rangle, e \rangle$.

And which function? Well, we know what should happen for singleton sets: the function should return the individual in the set. (**[[the woman married to Charles]]** gets its meaning from **[[woman married to Charles]]**, which is the set {Julie}, and the full DP refers to Julie—thus, we want to take a set, and return the individual in it.) For non-singleton sets, like **[[king of France]]** (which has cardinality zero) or **[[senator from MA]]** (which has cardinality two), we want things to just break down. Therefore:

$$(9) \quad \mathbf{[[the]]} = \lambda P_{\langle e, t \rangle} \cdot \begin{cases} \text{the sole member of } S_P & \text{if } |S_P| = 1 \\ \text{undefined} & \text{otherwise} \end{cases}$$

(Recall that S_P is the set characterized by the function P .³)

That leaves things in a somewhat strange place—does it make sense for part of a sentence to be undefined? It means that **the king of France** isn't in the domain of **[[...]]**, because **[[king of France]]** isn't in the domain of **[[the]]**, and that's sort of odd. "The king of France is bald" doesn't seem to be "not in the domain of the interpretation function" in the same way that "Julie snores Charles" is.

This kind of failure is something we'll look at more next semester, in relation to sentences like the following, which seem to be uninterpretable in the same way:

³ Caveat: the set characterized by P may depend on context. If we're on the floor of the Senate and Ted Kennedy is snoring and John Kerry is nowhere to be seen, or if we're at the annual slumber party for senior senators, I could get away with saying *The senator from Massachusetts snores*. We'll have to get back to why this is.

- (10) *A whole bunch of failed/broken sentences*
- #**The** king of France (is/isn't) bald.
 - #Lydia (did/didn't) **manage** to finish the homework.
 - #Caitlin (has/hasn't) **stopped** eating kittens for breakfast.
 - #Lydia (does/doesn't) **realize** that she is failing this course.
 - #Dimka (was/wasn't) snoring **while** she napped in the back of the room.
 - #**It** (is/isn't) Yanyan **who** has no chance of passing this course.
 - #I called Lydia a semanticist, and then *she* insulted *me*.
 - #I called Lydia a syntactician, and then I *insulted* her.
- (11) *A whole bunch of false assumptions*
- There is a king of France.
 - Finishing the homework was hard for Lydia.
 - Caitlin has eaten kittens for breakfast at some point in the past.
 - Lydia is failing this course.
 - Dimka did nap in the back of the room.
 - Someone has no chance of passing this course.
 - Calling someone a semanticist is an insult.
 - Calling someone a syntactician is a complement.

And now: we're *way* out of semantics and into something else entirely. Let's go back.

Of course, even when we get back to semantics, there are all kinds of other issues with the use of *the*. Plurals, generic kinds...

- (12) a. **The students in my class** are doing well.
(≠ "the only x such that x is a student in my class")
- b. **The male lion**, easily recognized by his mane, weighs between 150–250 kg.⁴
(= "typical male lions")
- c. #**The lion with a broken leg** has trouble hunting.
(≠ "typical lions with broken legs")

4. THE BOTTOM LINE ABOUT *THE*

The (*noun*) has a whole lot of complications, and there's no way to explain them all with our current tools or in a reasonable amount of time.

But ultimately: all other things being equal, setting aside things like generics: *the* (*noun*) is a referring expression—it denotes an individual.

⁴ From <http://en.wikipedia.org/wiki/Lion> .