

1 Novelty

- Indefinites pick out a novel entity
 - (1) a. A dog_i came in. The dog_i sat down.
 - b. A dog_i came in. A dog_j sat down.
 - c. A dog_i came in. *A dog_i sat down.

An indefinite must pick an entity not mentioned in the discourse before.
Modulo certain strange constructions

- (2) a. If he_i trains it_j well, a man_i can get a parrot_j to say almost anything.
 - b. A man_i can get a parrot_j to say almost anything, if he_i trains it_j well,.
- Indefinites have existential entailments in most contexts.
 - (3) a. John ate a raspberry lemon torte.
 - b. There was a raspberry lemon torte (that John ate).

2 Specific/non specific uses

- Ambiguities as to whether a specific individual is referred to: *de re*, *de dicto*

(4)

Oedipus wants to own a sloop.

de re	There is a sloop that Oedipus wants to own.
de dicto	Oedipus seeks mere relief from slooplessness.

The de dicto (or *non-specific*) reading never makes an *existential commitment*. That is, the non-specific reading of does not entail the existence of a sloop.

- Principle of Substitutivity of Identicals (Leibniz's Law)
 1. 'a' refers to a and 'b' refers to b
 2. $a = b$
 3. S1 and S2 are identical except that where S1 contains 'a', S2 contains 'b'
 4. S1 and S2 have the same truth value
 - (a) Arnold Schwarzenegger = the present governor of California
 - (b) S1 = Arnold Schwarzenegger is the Terminator.
 - (c) S2 = The present governor of California is the Terminator.
 - (d) S1 and S2 have the same truth value.

- **Opaque contexts:** Leibniz's Law fails for (5)
 - (5) Lois Lane wants to marry Superman.

 - (6)
 - a. Superman is Clark Kent. (secret identity!)
 - b. Lois Lane wants to marry Superman. (True; he's a hero!)
 - c. Lois Lane wants to marry Clark Kent. (False; he's a wimp!)
 - d. In the original DC comics by Siegel and Schuttsre, (a) and (b) are true, but (c) is not (de dicto reading).

We call contexts in which Leibniz's Law fails **opaque contexts** and contexts where it holds (the default case) transparent contexts. The verb *want* (along with many other like **propositional attitude** verbs like *wish*, *believe*, *imagine*...) creates an opaque context.

- Leibniz's Law and de re/dicto ambiguities.
 - (7) Fred wants to marry a non-smoker.

 - (8) De re
 1. Fred wants to marry Irina.
 2. Irina is a non-smoker.
 3. De re (specific) reading true: Fred wants to marry a non-smoker.

de re means “about the thing”. A *de re* reading predicates a property of a thing in the world. The *de re* reading of (8c) says there is someone in the world that has the property of being someone Fred wants to marry and that some one is a non-smoker. In this case that someone is Irina.

(9) De dicto

1. Fred wants to get married.
2. Fred has always abhorred smoking, and would never dream of dating a smoker, let alone marrying one.
3. De dicto (non-specific) reading true: Fred wants to marry a non-smoker.

de dicto means “about the words”. A *de dicto* reading can be thought of as making a claim about a *description*. The exact truth conditions of the *de dicto* reading of (7) are tricky. For example, the *de dicto* reading of (7) is clearly not equivalent to *Fred wants to marry any non-smoker*. The *de dicto* reading is consistent with Fred having other criteria (such as that she be Norwegian). Roughly speaking the truth conditions seem to be the following:

In all the worlds consistent with Fred’s desires, he is married and he is married to a non-smoker.

(10) De re true, de dicto false

1. Gustav wants to marry Irina.
2. Gustav hates non-smokers and would never have anything to do with one.
3. Unbeknownst to Gustav, Irina is secretly the masked vice-president of the ASL (Anti-Smoking League), Gunn Nyborg, one of those born-again non-smokers whom he hates!
4. Gustav wants to marry a non-smoker. (de re true)
5. Gustav wants to marry a non-smoker. (de dicto false)
6. Gustav wants to marry Gunn Nyborg. (false, Leibniz’s law fails, since Gunn = Irina)

When a context shows *de re*/ *de dicto* ambiguities, that context is always opaque, though this has to be shown with different examples:

Sentence	Test
Lois Lane wants to marry Superman	Uses referring expression: opaque/transparent test
Fred wants to marry a non-smoker.	Uses indefinite. De dicto reading test.
The Verb Phrase (VP) in <i>X wants to VP</i> is both an opaque context and a context with de dicto readings.	

- Scope treatment

1. Wide-scope existential = de re

$$\exists x[\text{non-smoker}(x) \wedge \text{want}(f, \text{marry}(f, x))]$$

2. Narrow-scope existential = de dicto

$$\text{want}(f, \exists x[\text{non-smoker}(x) \wedge \text{marry}(f, x)])$$

3. The *de re/de dicto* distinction can also be made about beliefs (not as part of our description of sentence readings, but as part of our philosophy of mind):

(11) Ralph believes the man in the brown hat is a spy.

The more facts Ralph knows about the man in the brown hat, the more a de dicto belief edges toward being a de re belief. Where is the boundary between having knowledge directly of an individual and having knowledge of an individual under a description? Given the fuzzy nature of this distinction, perhaps representing de re/de dicto ambiguities scopally is not quite right.

3 Other indefinite scope issues

- Modal ambiguities

- (12) a. John might have visited a Norwegian city.
b. Specific: John might have visited a Norwegian city, Tromso, do you know it?

c. Non-specific: John might have visited a Norwegian city – he posted a picture of the Norwegian flag on his blog.

1. Wide-scope existential (specific)

$$\exists x[\text{Norwegian}(x) \wedge \text{city}(x) \wedge \exists w \in E[\text{visit}(j, x, w)]]$$

2. Narrow-scope existential (non-specific)

$$\exists w \in E[\exists x[\text{Norwegian}(x, w) \wedge \text{city}(x, w) \wedge \text{visit}(j, x, w)]]$$

$$\diamond \exists x[\text{Norwegian}(x) \wedge \text{city}(x) \wedge \text{visit}(j, x)]$$

• Scope with respect to negation

(13) a. John didn't see a car coming round the bend — it nearly hit him.

b. John didn't see a car coming round the bend — but he wasn't really paying attention, so he's not sure if one did.

1. Wide-scope existential (specific)

$$\exists x[\text{car}(x) \wedge \sim \text{see}(j, x)]$$

2. Narrow-scope existential (non-specific)

$$\sim \exists x[\text{car}(x) \wedge \text{see}(j, x)]$$

• Scope with respect to other quantifiers

(14) a. Every student prepared a paper by Quine. It was *On Mental Entities*.

b. Every student prepared a paper by Quine. None of them chose *Two Dogmas of Empiricism*.

1. Wide-scope existential (specific)

$$\exists x[\text{paper}(x) \wedge \text{by}(x, \text{Quine}) \wedge \forall y[\text{student}(y) \rightarrow \text{prepare}(y, x)]]$$

2. Narrow-scope existential (non-specific)

$$\forall y[\text{student}(y) \rightarrow \exists x[\text{paper}(x) \wedge \text{by}(x, \text{Quine}) \wedge \text{prepare}(y, x)]]$$

4 Summary

- We have seen indefinites taking wide and narrow scope with respect to the following “operators”

- (15) a. *want* (other propositional attitude verbs like *believe*, *wish*, *tell* ...)
b. Modals like *might*
c. Negation (*not*)
d. Quantifiers like *every*

- In each of the cases there is a specific (wide-scope) reading and a non-specific narrow scope reading for the indefinite that can be represented in logic.
- The specific reading always has an existence entailment; the non-specific reading usually does not.

- (16) a. John didn't see a car coming around the bend.
b. Non-specific reading: It does not follow that there was a car coming around the bend.
c. Specific reading: There exists a car coming around the bend, namely the one John didn't see.

- De re de dicto ambiguities

1. de dicto readings have no existence entailments; de re readings do.

- (17) a. John wants to dance with a unicorn.
b. de dicto reading: It does not follow that there is a unicorn.
c. de re reading: If there is a unicorn that John wants to dance with then at least that unicorn exists.

2. de dicto readings are non-specific

- (18) a. John wants to dance with a unicorn.
b. de dicto reading: It does not follow that there is any specific unicorn he wants to dance with.
c. de re reading: If there is a unicorn that John wants to dance with then that is a specific unicorn.

3. de re/de dicto ambiguities can also be represented logically as scopal ambiguities (although this is probably not quite right!)
- Opaque/transparent contexts: A context is called opaque/transparent if Leibniz's Law fails/succeeds in that context.
 1. Many attitude verbs give rise to opaque contexts.
 2. Modality (*may, must, should*, etc.) gives rise to opaque contexts.
 3. Contexts exhibiting de re/de dicto ambiguities are opaque (on de dicto readings), though this has to be tested with different examples.
 - A leftover puzzle
 1. *seek*
 - (19) a. Schmendrick is seeking a unicorn.
 - b. de re: There is a specific unicorn Schmendrick is seeking.
 - c. de dicto: relief from unicornlessness
 2. This is not a propositional attitude verb (*seek* does not take sentential complements)

$$\text{seek}(j, \exists x \text{unicorn}(x))$$

This doesn't really make sense... What kind of a relation is *seek*?
 3. Maybe this'll work (Quine)

$$\text{try}(j, \exists x[\text{unicorn}(x) \wedge \text{find}(j, x)])$$
 4. But what about this?
 - (20) John conceived of a unicorn.