1 Novelty

- Indefinites pick out a novel entity
  
  (1)  
  a. A dog\textsubscript{i} came in. The dog\textsubscript{i} sat down.  
  b. A dog\textsubscript{i} came in. A dog\textsubscript{j} sat down.  
  c. A dog\textsubscript{i} came in. *A dog\textsubscript{i} sat down.

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

  (2)  
  a. If he\textsubscript{i} trains it\textsubscript{j} well, a man\textsubscript{i} can get a parrot\textsubscript{j} to say almost anything.  
  b. A man\textsubscript{i} can get a parrot\textsubscript{j} to say almost anything, if he\textsubscript{i} trains it\textsubscript{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: \textit{de re}, \textit{de dicto}

  (4)  
  Oedipus wants to own a sloop.

  \begin{itemize}
  \item \textit{de re} There is a sloop that Oedipus wants to own.  
  \item \textit{de dicto} Oedipus seeks mere relief from slooplessness.
  \end{itemize}

  The \textit{de dicto} (or \textit{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 Schutsre, (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:
Lois Lane wants to marry Superman
Fred wants to marry a non-smoker.
The Verb Phrase (VP) in *X wants to VP* is both an opaque context and a context with de dicto readings.

<table>
<thead>
<tr>
<th>Sentence</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lois Lane wants to marry Superman</td>
<td>Uses referring expression: opaque/transparent test</td>
</tr>
<tr>
<td>Fred wants to marry a non-smoker</td>
<td>Uses indefinite. De dicto reading test.</td>
</tr>
</tbody>
</table>

• Scope treatment

1. Wide-scope existential = de re

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

2. Narrow-scope existential = de dicto

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

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

2. Narrow-scope existential (non-specific)
\[ \exists w \in E[\exists x[\text{Norwegian}(x, w) \land \text{city}(x, w) \land \text{visit}(j, x, w)]] \]
\[ \Diamond \exists x[\text{Norwegian}(x) \land \text{city}(x) \land \text{visit}(j, x)] \]

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)
\[ \exists x[\text{car}(x) \land \lnot \text{see}(j, x)] \]

2. Narrow-scope existential (non-specific)
\[ \lnot \exists x[\text{car}(x) \land \text{see}(j, x)] \]

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

2. Narrow-scope existential (non-specific)
\[ \forall y[\text{student}(y) \rightarrow \exists x[\text{paper}(x) \land \text{by}(x, \text{Quine}) \land \text{prepare}(y, x)]] \]
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)

    \[
    \text{try}(j, \exists x [\text{unicorn}(x) \land \text{find}(j, x)])
    \]

  4. But what about this?

    (20) John conceived of a unicorn.