1. **The Basic Facts**

(1) **The Classic Observation**  
Sentences like the following can be understood in (at least) two very different ways.

   a. John believes that Mary kissed a fisherman.

(2) **The De Dicto Reading**

   a. Situations Characterized by *De Dicto Reading*  
      Mary tells John the following “I kissed a fisherman at the party last night.”

   b. Possible Paraphrase of *De Dicto Reading*  
      John believes that Mary kissed someone, and *he believes that the person she kissed was a fisherman.*

   c. Possible Formal Statement of The Truth-Conditions  
      \[
      \forall w' \in \text{Beliefs}(John,w_0): \exists x . x \text{ is a fisherman in } w' \& \text{Mary kissed } x \text{ in } w' \]
      *For every world } w' \text{ in the belief-worlds of } John, \text{ there is some fisherman in } w' \text{ who kisses Mary in } w'*

(3) **The De Re Reading**

   a. Situations Characterized by *De Re Reading*  
      John saw Mary kissing our friend Bill at the party, and – as we both know (though John doesn’t) – Bill is a fisherman.

   b. Possible Paraphrases of *De Re Reading*  
      John believes Mary kissed *a particular person*, and this person actually happens to be a fisherman (though John might not know this).

   c. Possible Formal Statement of the Truth-Conditions  
      \[
      \exists x . x \text{ is a fisherman in } w_0 \& \forall w' \in \text{Beliefs}(John,w_0): \text{Mary kissed } x \text{ in } w' \]
      *There is an (actual) fisherman } x \text{ such that in all of } John’s \text{ belief worlds, Mary kissed } x.*

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1 These notes are based upon material in von Fintel & Heim (2011; pp. 83-86) and Maier (2009; pp. 429-434).
(4) **About the Terminology**

a. *De Dicto* = ‘About what’s said’
   - (Vaguely) The belief is ‘about what’s said’ by the subordinate clause.
   - The subject of “believe” would agree with *the very words chosen* to express the propositional object of belief.

b. *De Re* = ‘About the thing’
   - (Vaguely) The belief is ‘about the thing’ described in the subordinate clause.
   - The subject of “believe” would recognize *the thing itself* that the subordinate clause describes (but wouldn’t necessarily agree with the words chosen to describe that thing)

*This ambiguity isn’t just a property of the verb “believes”…*  
*... Rather, it occurs with any intensional operator!!!*

- von Fintel & Heim (2011) discusses how *modals* and *conditionals* yield this ambiguity…
- Although we haven’t studied those constructions yet, we can still see that this kind of ambiguity shows up with other propositional attitude verbs

(5) **The De Re / De Dicto Ambiguity with Other Intensional Verbs**

a. **Sentence:** Dave knows/said/fears/etc. that Mary kissed a fisherman.

b. **Interpretations**

   (i) *De Dicto Readings (Paraphrase)*
   The content of Dave’s knowledge, statements, fears, etc. include the following proposition:
   
   *Mary kissed a fisherman.*

   (ii) *De Re Readings (Paraphrase)*
   There is a particular fisherman x such that
   The content of Dave’s knowledge, statements, fears, etc. include the following preposition:
   
   *Mary kissed x*
2. The Classic Scope Analysis of the Ambiguity

(6) Core Observation

Our rule of QR is sufficient to derive the ambiguity, as characterized above.

- For our purposes, we will restrict our attention to belief-sentences like that in (1a).
- Parallel analyses can be made for structurally parallel sentences like those in (5a).

If we permit QR to move an indefinite beyond a finite subordinate clause, then our syntactic theory predicts that a sentence like (1a) could be assigned either of the LFs in (7):

(7) Possible LFs for Sentence (1a)

a. QR Moves Indefinite to a Position Inside the Subordinate Clause

b. QR Moves Indefinite to a Position Outside the Subordinate Clause
As shown below, our semantics will assign to the LF in (7a) the truth-conditions in (2c).

**Thus, our system predicts that sentence (1a) will admit of the *de dicto* reading in (2)**

(8) **Derivation of *De Dicto* Reading from LF (7a)**

\[
[[S_a]]^{w,g} = T \quad \text{iff} \quad \text{(by FA)}
\]

\[
[[VP]]^{w,g} ([[John]]^{w,g}) = T \quad \text{iff} \quad \text{(by Lex.)}
\]

\[
[[VP]]^{w,g} (\text{John}) = T \quad \text{iff} \quad \text{(by IFA)}
\]

\[
[[\text{believes}]]^{w,g} ([\lambda w' : [[S_a]]^{w',g}]) (\text{John}) = T \quad \text{iff} \quad \text{(by Lex.)}
\]

\[
[\lambda p : \lambda x : \forall w'' \in \text{Beliefs}(x,w) : p(w'') \Rightarrow T][[\lambda w' : [[S_a]]^{w',g}]) (\text{John}) = T \quad \text{iff} \quad \text{(by LC x3)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : [[S_a]]^{w'',g} = T \quad \text{iff} \quad \text{(by FA)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : [[\text{DP}_b]]^{w'',g} ([[S_c]]^{w'',g}) = T \quad \text{iff} \quad \text{(by FA)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : [[a]]^{w'',g} ([[\text{fisherman}]]^{w'',g}) ([[S_c]]^{w'',g}) = T \quad \text{iff} \quad \text{(by Lex.)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : \left[\lambda P : \lambda Q : \exists x . P(x) = T \land Q(x) = T \right] ([[\text{fisherman}]]^{w'',g}) ([[S_c]]^{w'',g}) = T \quad \text{iff} \quad \text{(by LC)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : \\
\left[\lambda Q : \exists x . [[\text{fisherman}]]^{w'',g}(x) = T \land Q(x) = T \right] ([[S_c]]^{w'',g}) = T \quad \text{iff} \quad \text{(by Lex., LC)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : \\
\left[\lambda Q : \exists x . x \text{ is a fisherman in } w'' \land Q(x) = T \right] ([[S_c]]^{w'',g}) = T \quad \text{iff} \quad \text{(by PA)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : \\
\left[\lambda Q : \exists x . x \text{ is a fisherman in } w'' \land Q(x) = T \right] ([\lambda y : [[S_d]]^{w'',g(\rightarrow y)}) = T \\
\quad \text{iff} \quad \text{(by FA, LC, PR)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : \\
\left[\lambda Q : \exists x . x \text{ is a fisherman in } w'' \land Q(x) = T \right] ([\lambda y : \text{Mary kissed } y \text{ in } w'']) = T \\
\quad \text{iff} \quad \text{(by LC x 2)}
\]

\[
\forall w'' \in \text{Beliefs}(\text{John},w) : \exists x . x \text{ is a fisherman in } w'' \land \text{Mary kissed } x \text{ in } w''
\]

*In all of John’s belief worlds w’, there is some x such that x is a fisherman in w’ and Mary kissed x in w’.***
As shown below, our semantics will assign to the LF in (7b) the truth-conditions in (3c).

Thus, our system predicts that sentence (1a) will admit of the de re reading in (3).

(9) Derivation of De Re Reading from LF (7b)

\[ [[Sa]]^{w,g} = T \text{ iff (by FA)} \]
\[ [[DPb]]^{w,g}([[Sb]]^{w,g}) = T \text{ iff (by FA)} \]
\[ [[a]]^{w,g} ([[fisherman]]^{w,g}([[Sb]]^{w,g}) = T \text{ iff (by Lex.)} \]
\[ [\lambda P : \lambda Q : \exists x . P(x) = T \& Q(x) = T ] ([[fisherman]]^{w,g}([[Sb]]^{w,g}) = T \text{ iff (by LC)} \]
\[ [\lambda Q : \exists x . [[fisherman]]^{w,g}(x) = T \& Q(x) = T ] ([[Sb]]^{w,g}) = T \text{ iff (by Lex.)} \]
\[ [\lambda Q : \exists x . [\lambda y : y \text{ is a fisherman in } w](x) = T \& Q(x) = T ] ([[Sb]]^{w,g}) = T \text{ iff (by LC)} \]
\[ [\lambda Q : \exists x . x \text{ is a fisherman in } w \& Q(x) = T ] ([[Sb]]^{w,g}) = T \text{ iff (by PA)} \]
\[ [\lambda Q : \exists x . x \text{ is a fisherman in } w \& Q(x) = T ] ([[Sb]]^{w,g}) = T \text{ iff (by FA, Lex.)} \]
\[ [\lambda Q : \exists x . x \text{ is a fisherman in } w \& Q(x) = T ] ([[\lambda y : ([[[Sd]]^{w,g}(1_{y})]]^{g(1_{y})}]) = T \text{ iff (by IFA)} \]
\[ [\lambda Q : \exists x . x \text{ is a fisherman in } w \& Q(x) = T ] ([\lambda y : [[[VP]]^{w,g}(1_{y})](\lambda w' : [[[Sd]]^{w,g}(1_{y})](John))] ) = T \text{ iff (by Lex.)} \]
\[ [\lambda Q : \exists x . x \text{ is a fisherman in } w \& Q(x) = T ] ( [\lambda y : [\lambda p : \lambda x : \forall w'' \in \text{Beliefs}(x,w) : p(w'') = T ] \text{ (([\lambda w' : [[[Sd]]^{w,g}(1_{y})]](John))] ) = T \text{ iff (by LC x3)} \]
\[ [\lambda Q : \exists x . x \text{ is a fisherman in } w \& Q(x) = T ] ( [\lambda y : \forall w'' \in \text{Beliefs}(John,w) : [[Sd]]^{w,g}(1_{y}) = T ] ) = T \text{ iff (by FA, LC, PR)} \]
\[ [\lambda Q : \exists x . x \text{ is a fisherman in } w \& Q(x) = T ] ( [\lambda y : \forall w'' \in \text{Beliefs}(John,w) : \text{Mary kissed } y \text{ in } w'' ] ) = T \text{ iff (by LC x2)} \]

\[ \exists x . x \text{ is a fisherman in } w \& \forall w'' \in \text{Beliefs}(John,w) : \text{Mary kissed } x \text{ in } w'' \]

There is an (actual) fisherman \( x \) such that in all of John’s belief worlds, Mary kissed \( x \).
3. Some Problems for the Classic Scope Analysis

3.1 The Ambiguity with DPs of Type e

Consider sentences like (10a). It seems that there is a similar ambiguity in such sentences, where they can be interpreted as T in situations like (10b) or (10c)

(10) The De Re / De Dicto Ambiguity with Non-Quantificational DPs

a. Dave believes that Mary kissed Tom.

b. De Dicto Reading:
   (i) Situation:
       Bill tells Dave ‘Mary kissed Tom’. Consequently, Dave would assent to the statement ‘Mary kissed Tom’
   (ii) Paraphrase:
       Dave has formed the literal belief ‘Mary kissed Tom’

c. De Re Reading:
   (i) Situation:
       Dave sees Mary kissing our friend Tom. He doesn’t know who Tom is, or that his name is Tom. He just knows Tom as ‘that goofy-looking guy Mary was kissing’.
   (ii) Paraphrase:
       There is a particular x such that Dave has formed the literal belief ‘Mary kissed x’, and x happens to be our friend Tom.

Again, this is not a property of ‘believes’, but any propositional attitude verb...

This fact poses rather insuperable difficulties to our simple ‘scope’ account....
The Key Problem for the Scope Analysis

- Given our semantics for proper names, QR of the name has no semantic effect.
- Therefore, QR will not generate the targeted ambiguity in these sentences.

a. Syntax (No QR): 
   \[ \text{Dave} \left[ \text{believes} \left[ \text{Mary kissed Tom} \right] \right] \]

b. Semantics of Non-QR Structure:
   (i) \[ [[\text{Dave} \left[ \text{believes} \left[ \text{Mary kissed Tom} \right] \right]]\]_w^\text{w} = T \text{ iff } \text{(by FA, IFA)}
   (ii) \[ [[\text{believes}]]^\text{w}( [\lambda w': [[\text{Mary kissed Tom}]]^\text{w'}] ) ([[[\text{Dave}]]]) = T \text{ iff } \text{(by Lex.)}
   (iii) \[ [\lambda p : \lambda x : \forall w'' \in \text{Beliefs}(x,w) : p(w'') = T ] ( [\lambda w' : [[\text{Mary kissed Tom}]]^\text{w'}] ) ([\text{Dave}]) = T \text{ iff } \text{(by LC)}
   (iv) \[ [\forall w'' \in \text{Beliefs}(\text{Dave},w) : [[\text{Mary kissed Tom}]]^\text{w''} = T \text{ iff } \text{(by FA, etc.)}
   (v) \[ [\forall w'' \in \text{Beliefs}(\text{Dave},w) : [\text{Mary kissed Tom}]^\text{w''} = T \text{ iff } \text{(by LC)}

c. Syntax (After QR): 
   \[ \text{Tom} \left[ 1 \left[ \text{Dave believes Mary kissed } t_1 \right] \right] \]

d. Semantics of QR Structure:
   (i) \[ [[\text{Tom} \left[ 1 \left[ \text{Dave believes Mary kissed } t_1 \right] \right]]\]_w^\text{w} = T \text{ iff } \text{(by FA)}
   (ii) \[ [[1 \left[ \text{Dave believes Mary kissed } t_1 \right] ]]]^\text{w} ([[[\text{Tom}]]^\text{w}) = T \text{ iff } \text{(by FA, etc.)}
   (iii) \[ [\lambda x : \forall w'' \in \text{Beliefs}(\text{Dave},w) : \text{Mary kissed } x \text{ in } w'' ] (\text{Tom}) = T \text{ iff } \text{(by LC)}
   (iv) \[ [\forall w'' \in \text{Beliefs}(\text{Dave},w) : \text{Mary kissed Tom in } w''] \]

Conclusion

- The scope analysis of the ambiguity is unnaturally limited.
- It does not apply to cases where the ambiguity seems to occur with proper names.
3.2 The Problem of the ‘Third Reading’

Consider sentence (13a) in the situation described in (13b).

(13) The ‘Third Reading’ of Subordinate Indefinites

   a. John believes that Mary kissed a fisherman.

   b. The Scenario
      • John, Mary and I are at a party thrown by the local fisherman.
      • John and Mary don’t know that the party is being thrown by fishermen.
      • The fisherman throwing the party are all dressed in tuxedos.
      • John and Mary don’t know that the people they see in tuxedos are fishermen.
      • John heard from someone he trusts that Mary was kissing one of those people dressed in a tuxedo.

   c. The Judgment:
      Sentence (13a) has an interpretation where it is true in Scenario (13b).

(14) The Core Question

   What are the truth-conditions of (13a) under the reading where it is T in situation (13b)?

   a. It’s Not the De Dicto Reading
      (i) De Dicto Reading:
         \[ \forall w' \in \text{Beliefs}(\text{John}, w_0): \exists x . x \text{ is a fisherman in } w' \text{ & Mary kissed } x \text{ in } w' \]
      (ii) De Dicto Reading is False in Scenario (13b)
         John has no idea that the people in tuxedos are fishermen, and so the people that Mary kisses in his belief worlds needn’t be fishermen in his belief worlds.

   b. It’s Not the De Re Reading
      (i) De Re Reading
         \[ \exists x . x \text{ is a fisherman in } w_0 \text{ & } \forall w' \in \text{Beliefs}(\text{John}, w_0): \text{Mary kissed } x \text{ in } w' \]
      (ii) De Re Reading is False in Scenario (13b)
         John doesn’t think of any specific fisherman x that Mary kissed x. Thus, there is no fisherman x such that Mary kissed x in all John’s belief worlds.
(15) **A Possible Candidate**

\[ \forall w' \in \text{Beliefs}(\text{John}, w_0) : \exists x . x \text{ is a fisherman in } w_0 \text{ and Mary kissed } x \text{ in } w' \]

*In all of John’s belief worlds, there is some x such that x is a fisherman in the actual world, and Mary kissed x in w’.*

(16) **The Truth-Conditions in (15) Hold in Scenario (13b)**

- Let w’ be any of John’s belief worlds in Scenario (13b).
- Clearly, w’ is a world where Mary kisses someone.
- Also, it’s clear that w’ is a world where Mary kisses someone from the group of people at the party dressed in tuxedos in w_0.
- Since those people are identical to the fishermen in w_0, it’s clear that w’ is a world where Mary kisses someone from the fishermen in w_0.
- Consequently, in any of John’s belief worlds w’ in Scenario (13b), there is some x such that Mary kisses x in w’ and x is a fisherman in w_0.
- Thus, (15) holds true in scenario (13b)

Accepting that (15) is a possible reading of Sentence (13a), can our ‘QR’ account on its own predict the possibility of that reading?...

\[ NO! \text{ And for very principled reasons...} \]

- To see this, let us first reflect a bit further on the nature of the ambiguity in (2) and (3):

(17) **Two Ways in Which the ‘Classic’ De Dicto and De Re Readings Differ**

a. **The Specificity of the Indefinite**

  *Does the indefinite ‘pick out’ a specific entity that across all belief worlds has the key property introduced by the subordinate clause?*

b. **The ‘Transparency’ of the Indefinite**

  *Is the ‘descriptive content’ (i.e., ‘NP’) of the indefinite interpreted relative to the actual world, or relative to the subject’s belief worlds?*
The Characteristic Properties of the *De Re* Reading

a. The Indefinite is Specific
   
   *There is a specific entity described by the indefinite that the subject’s beliefs are ‘about’; this entity is asserted to have the relevant property in all belief worlds.*

b. The Indefinite is Transparent
   
   *The descriptive content of the DP is interpreted relative to the actual world.*

The Characteristic Properties of the *De Dicto* Reading

a. The Indefinite is Non-Specific
   
   *There needn’t be a specific entity that exists in all the subject’s belief worlds.*

b. The Indefinite is Non-Transparent (Opaque)
   
   *The descriptive content of the DP is interpreted relative to the subject’s belief worlds. (The descriptive content of the DP is a part of the subject’s ‘belief-state’).*

Core Prediction of the ‘QR Account’

The properties in (17) are intrinsically linked.

a. Specific Indefinites Must be Transparent

   If the DP is specific, then it has scope *above* “believe”. Consequently, the NP is interpreted relative to the actual world, and not relative to the subject’s belief worlds.

b. Non-Specific Indefinites Must be Opaque (Non-Transparent)

   If the DP is non-specific, then it has scope *below* “believe”. Consequently, the NP is interpreted relative to the subject’s belief worlds, and not relative to the actual world.

Central Problem for the Scope Analysis (of Transparency)

- The transparency of a DP is *not* essentially linked to its specificity.
- Contrary to the prediction in (20b), it *is* possible for a non-specific indefinite to receive a transparent reading.
- This possibility is shown by the existence of reading (15) for sentence (13a).
The Question This Raises

How can we augment our semantic system so that an indefinite can have the following properties simultaneously:

a. The quantificational force of the indefinite is within the scope of the intensional operator (and so the indefinite is non-specific)

b. The NP of the indefinite is not interpreted relative to the worlds quantified over by the intensional operator, but rather relative to the actual world (and so the indefinite is transparent)

In the next set of notes, we will begin addressing these problems...
We will begin with the problematic ‘third reading’ in (15)...