Reconstruction and Its Problems

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Abstract
This paper is concerned with reconstruction theories of which-questions, and shows that one major limitation of these approaches lies in the way these theories derive de dicto readings of sentences such as Mary knows which children cried. Specifically, we show that when a wide range of de dicto facts is considered, an analysis where wh-phrases never reconstruct must be preferred over the reconstruction approach.

1 Why reconstruct?

The reconstruction approach, originally proposed in [4] and recently taken up in [1] among others, states that wh-phrases are interpreted in their base position and, therefore, those which are ‘displaced’ in the overt syntax ‘reconstruct’ at LF. This approach presents three immediate advantages.

First, it offers a straightforward analysis of wh-phrases that appear ‘undisplaced’ in the overt syntax, as in (1):

(1) Which man loves which woman?

Secondly, it accounts for some Binding Theory properties of the predicate of ‘displaced’ wh-phrases. For example, in (2) (from [8]), the prohibition on coreference between Diana and she can be seen as a consequence of reconstruction together with Condition C: after reconstruction Diana is c-commanded by she. According to Condition C of the Binding Theory, they cannot refer to the same individual.

(2) How many stories about Diana is she likely to invent?

Finally, reconstruction theories predict the de re/de dicto ambiguity of wh-phrases (observed in [3]). Assuming explicit world variables in the object language, and assuming that the world argument of child may be freely indexed, the de dicto/de re ambiguity of (3a) is reflected in (3b) (assume also, from now on, that Dan and Sam are the children who actually cried):

(3) a. Mary knows which children cried.
   b. Mary believes in \( w \cap \{ x : \exists x[p(w) = 1 \& p = \{ w' : x \text{ cried in } w' \text{ and } x \text{ is a child in } w/w'] \} \}

The reconstruction approach in its original format, however, presents a major

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drawback, when cases like (4a) are taken into account, as first pointed out in [12]:

(4) a. Which philosopher didn’t _ come to the party?
   b. Intuitive meaning: for which x, x a philosopher, x didn’t come to the party.
   c. Predicted meaning: for which x, it is not the case that x is a philosopher and came
to the party.

The problem, later referred to as ‘the Donald Duck problem’, has to do with what should
count as a possible answer to a question where the wh-phrase is base generated within the
scope of a Downward Entailing operator, as in (4a). If the wh-phrase were to be interpreted
in this environment (as in (4c)), “Donald Duck” should be a possible answer to (4a),
contrary to our intuitions. The correct meaning of this question (i.e. (4b)) is derived if the
wh-phrase is interpreted in its surface position.

[12] and [13] spell out two variants of the reconstruction approach, the choice
function approach (CFA) and the presuppositional approach (PA), both retaining the
above-mentioned main advantages of the original approach, and, at the same time,
avoiding the Donald Duck problem. For the purposes of the present discussion, it will be
sufficient to illustrate this point for the PA.¹ The PA avoids the problem by treating the
reconstructed/in-situ phrase as a definite description; as shown in (5):

(5) Q: For which individual x, the philosopher x didn’t come to the party.
   A: #Donald Duck (presupposition failure)

Although we agree that a presuppositional analysis of wh-phrases would represent
a solution to the Donald Duck problem, we think that this type of approach remains
problematic in another important respect: it fails to fully account for the wide range of
facts regarding de dicto/de re ambiguities.² Before turning to the discussion of the
problematic cases, it is worth concluding this introductory section by illustrating with an
example how the PA generally derives de re/de dicto ambiguities:

(6) a. Mary knows which children cried.
   b. Mary believes in w ∩ {p: ∃x[p(w) = 1 & p = {w': the-child_{w'/w} x cried in w'}]}
      Mary believes in w {w': the child_{w'/w} Dan & the child_{w'/w} Sam cried in w'}

If the world-index of child is w', the child-status of the children who cried is presupposed
to be known by Mary. This is because any world where the proposition that the child Dan
and the child Sam cried has a truth value at all is one where Dan and Sam are children.
Since the sentence asserts that all the worlds compatible with what Mary believes are such
that this proposition is true in them, it also presupposes that Mary knows that Dan and Sam
are children. Rullmann and Beck see this as a desirable outcome, as it makes their analysis
compatible with the claim made in [10] and [6] that attitude verbs presuppose that the
attitude holder believes the presuppositions of the complement of the verb.

¹ We illustrate every point throughout the paper only for the PA, but every point applies also to the CFA.
² The same conclusion is reached in [14], where a Hamblin-style reconstruction analysis is criticized.
2 Embedding verbs and *de dicto* readings

The PA predicts that *de dicto* readings should always be available, regardless of the particular choice of embedding verb. This prediction is incorrect. Consider (7) and (8):

(7) Mary didn’t know which children cried, because, although she knew that Sam and Dan cried, she was not aware that they were children.

(8) # It surprised Mary which children cried, because although she (correctly) expected Sam and Dan to cry, she was not aware that they were children.

(8) shows us that the embedded question is interpreted *de dicto*: Mary’s lack of knowledge about the child-status of the children suffices to make *Mary knew which children cried* false. However, within the PA, Mary’s knowledge of the child-status of the crying children is a presupposition and should therefore escape negation (see (6b) above). Given this, the outcome should be a contradiction between assertion and presupposition, unless the presupposition is “locally accommodated” into the assertion part, giving us (9):

(9) Mary didn’t believe in w ∩ {p: ∃x[p(w) = 1 & p = {w’: x is a child in w’ and the child w’ cried in w’}}}

An analysis in terms of accommodation, however, cannot explain the fact that (8), where the embedding verb is *surprise*, is quite odd. If the acceptability of (7) is due to local accommodation then (8) should be good as well. To see this, let us first look at the predicted *de dicto* interpretation of the first conjunct in (8), without accommodation (for the semantics of *surprise* adopted here, see [11]):

(10) Mary expected in w NOT p, where p = *that the child Dan & the child Sam cried*

Now, we expect to be able to accommodate the presupposition as we did in (9):

(11) Mary expected in w NOT *that Sam & Dan are children and they cried*

According to the accommodation analysis, the second conjunct of (8) doesn’t contradict its first conjunct. Therefore the sentence should be fine.

A potential objection to our argument might be that the meaning of *surprise* is more complicated than we assumed above. Specifically, besides a past incorrect expectation, this predicate also conveys knowledge of the complete answer to the question at the time of discovering the actual facts (cf. [14]). Conceivably, the relevant presupposition should also hold at the time the subject is surprised. Therefore, the meaning of the first conjunct in (8) should look roughly as in (12):

(12) ∃[t < now and Mary believes p at t & ∃[t’ < t and Mary expected at t’ NOT p]], where p = *that the children Dan and Sam cried.*

However, notice that even if this were correct, local accommodation (see (13)) would still suffice to resolve the contradiction in (8). Example (14) below makes a similar point:

(13) There is a time t < now such that Mary believes at t that Sam & Dan are children and they cried and there is a time t’ < t, such that Mary expects at t’ NOT (that Sam and Dan are children and they cried).

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3 What makes local accommodation plausible in this case is precisely the prevention of a contradiction, cf. [5].
Although Mary had expected Sam and Dan not to cry, it still didn’t surprise her when she found out that Sam and Dan cried, because she never found out that they were children.

We conclude, from the contrast between (7) and (8), that the child-status of the children who cried is relevant to the semantics of know, but irrelevant to the semantics of surprise, and that the question-complement of surprise doesn’t have a de dicto reading. This is problematic for the PA, which predicts questions to have de dicto readings under any verb.

A second argument against the PA comes from Quantificational Variability data (see [11], [2]), which show that Mary’s awareness of the child-status of the children who cried is entailed by (3a), rather than presupposed. To see this, consider (15a). Its meaning involves accommodating the presuppositions of the nuclear scope into the restrictive clause. If the wh-phrase is indeed reconstructed, the nuclear scope of with no exceptions is ‘Mary knows that the child x cried’, and ‘Mary believes that x is a child’ is one of its presuppositions. As such, it gets accommodated into the restrictive clause (as roughly illustrated in (15b)).

With no exceptions, Mary knows which children cried.

For no x such that x cried and x is a child and Mary believes that x is a child,

Mary doesn’t know that the child x cried.

However, if the interpretation (15b) were indeed available for (15a), we would incorrectly expect (15a) to be true in the scenario described in (16).

Dan and Sam are the children who cried. Mary believes that Dan is a child, but that Sam is not. She knows that Dan cried, but not that Sam did.

We conclude that the presuppositional analysis of wh-phrases is problematic.

3 Contextual de dicto readings

It is claimed in [13] that (17) has a de dicto reading:

Which unicorns does John want to play with?

Rullmann and Beck argue that in our world, where unicorns do not exist, this question means something like: “which entities that are unicorns according to John does he want to play with?” The PA predicts this reading, assuming that want presupposes that the subject of want believes the presuppositions of the complement. We argue, however, that this is a very different de dicto reading from the one observed in [3], and we call it “contextual de dicto”. For the contextual de dicto reading to come about, unicorns has to be uttered with a special intonation (and for some speakers, must be accompanied by a gesture of drawing quotation marks in the air). In addition, the contextual de dicto reading does not require a presuppositional trigger such as want; it can arise in matrix questions too. For example, we can ask Which unicorns played the piano?, with the same special intonation, drawing quotation marks in the air, to mean something like: “which imaginary unicorns played the piano?”.
Interestingly, *know* and *surprise*, which show a contrast with respect to *de dicto* readings in (7)-(8), are both good when they embed (17):

(18) Mary knows which unicorns John wants to play with.

(19) It surprised Bill which unicorns John wants to play with.

We conclude from this that the contextual *de dicto* reading illustrated in (17) is very different in nature from the *de dicto* reading in the sense of [3] and our theory should reflect that. Contextual *de dicto* readings should probably be analyzed within a theory of quotation (which we do not discuss here).

### 4 Proposal

We propose that *which*-phrases are not interpreted in their base position. Following ideas in [7] and [14], we propose that a verb such as *know* has a Groenendijk-and-Stokhof-like meaning (inherently strongly exhaustive and *de dicto*, see [3]) as one of its meanings, while a verb such as *surprise* has a Karttunen-like meaning (inherently weakly exhaustive and *de re*, see [9]) as its only meaning. This yields (20) as a possible interpretation of (3a), and (21) as the only interpretation of *It surprised Mary which children cried*.

(20) Mary believes in \( w' \cap \{ p : p( w') = 1 \text{ and } \exists x [ x \text{ is a child in } w' \text{ and } p = \text{that } x \text{ cried} ] \} \) \( \cap \{ p : p( w) = 1 \text{ and } \exists x [ x \text{ is a child in } w \text{ and } p = \text{that } x \text{ cried} ] \} \) (i.e., Mary believes in \( w \) that Sam and Dan are children-criers and everyone else is not a child-crier).

(21) Mary expected in \( w \) NOT \( \cap \{ p : p( w) = 1 \text{ and } \exists x [ x \text{ is a child in } w \text{ and } p = \text{that } x \text{ cried} ] \} \) (i.e., Mary expected in \( w \) that Sam and Dan didn’t cry).

The claim that *know* is strongly exhaustive is due to [3]. Evidence that *surprise*, by contrast, is inherently weak comes from an observation made in [7] that (22) is intuitively false, while (23) can be true.

(22) Although Mary expected Dan and Sam – the children who cried – to cry, it still surprised her which children cried because she also expected Ann, who didn’t cry, to cry.

(23) Although Mary knows that Dan and Sam – the children who cried – cried, she still doesn’t know which children cried (at least not completely), because she doesn’t know that Ann didn’t cry.

According to our proposal, *know* exhibits a *de dicto/de re* ambiguity, but *surprise* cannot. This is consistent with the judgments in (7), (8) and (14). The oddity of (8) and (14) comes from the fact that the child-status of the children who cried is completely irrelevant to the interpretation of the question embedded under *surprise*. As for (15a), it is roughly interpreted as follows: “for all \( x \) such that \( x \) cried and \( x \) is a child, Mary knows that \( x \) cried (and \( x \) is a child)” (and therefore judged false in (16)).

To conclude, the uneven distribution of *de dicto* readings, which is problematic for reconstruction theories, follows from the semantics of the relevant embedding verbs, if
wh-phrases never reconstruct. Although we have nothing to say about Condition C effects (see section 1), we believe that the advantages of not reconstructing outweigh the apparent advantages afforded by the reconstruction approach with respect to the Binding Theory.

References