On "Exclusive Questions", Kratzer 2005 (Part 1)

1. Review of Groenendijk & Stokhof (1982)

- Question intension: relation between worlds

1) [[**which cats ate**]] =

$\lambda w \lambda w'$ [λx [cat(x)(w) & ate (x)(w)] = λx [cat (x)(w') & ate (x)(w')]]

- Question extension: proposition

2) [[**which cats ate**]](w_0) =

λw [λx [cat(x)(w_0) & ate (x)(w_0)] = λx [cat (x)(w) & ate (x)(w)]]

- Some question embedding verbs combine with question extensions, e.g., **know**:

3) **John knows which cats ate** is true in w_0 iff in all of the worlds that are compatible with what John believes in w_0 the set of cats that ate is the set of cats that ate in w_0.

- Some question embedding verbs combine with question intensions, e.g., **agree** [example not discussed in G & S 1982]

4) **Pat and Mary agree on which cats ate** is true in w_0 iff Pat's and Mary's belief worlds in w_0 give the same answer to the embedded question (that is, the set of ats that ate is the same in all of Pat belief worlds as in all of Mary's belief worlds).

- Prediction: when the domain is fixed *?xPx* and *?x¬Px* (the positive should come out as equivalent.

- Counterexamples:

5) (a) It surprised me who was at the party.
   (b) It surprised me who was not at the party

Scenario: Mary, Peter, and John were at the party. Sally wasn't. I expected Mary, Peter, John and Sally to be at the party.

(see discussion in Berman 1991, Heim 1994).

6) I was better at predicting who would show up than I was at predicting who would show up (Beck & Rullmann 1999: 282)

Beck & Rullman's scenario: You predicted of 10 people that they would show up and 8 of them actually did. And you predicted of 10 people that they wouldn't show up, and only 5 of them did.

7) (a) The video shows which of those animals the man fed.

(b) The video shows which of those animals the man didn't feed.

(Kratzer 2005)

Scenario (not in Kratzer's handout): There are four animals in the animal shelter: a cat, a dog, a hamster and a parrot. The cat and the dog were fed by a man. The hamster and the parrot were fed by a woman, in a different room. We videotaped the man feeding the cat and the dog.

2. Kratzer 2005 (Part 1)

- Claim: The problem posed by examples like (5) through (7) disappears if G & S's theory is implemented within a semantics based on events/situations.

  [Kratzer also discusses another apparent problem with G & S'theory – quantificational variability in questions. We won't talk about this today.]

2.1. Background:

<u>Kratzer's situation semantics</u> (Kratzer 1989)

- Some crucial assumptions:

1. Sentences denote propositions.

2. Propositions are sets of possible situations.

3. Possible situations are parts of possible worlds

> "possible situations are particulars. Consider this shirt. It is striped in a very particular way. This very particular way of being striped is an actual state of my shirt. It is a state so particular that it is a state that only my shirt can be in. Its particular way of being striped is just one of the states of my shirt. There are others. Its very particular way of being cotton, its very particular way of being as long as it is, and its very particular way of being from Italy. All of those states are fairly permanent. But there are also more fugitive states that my shirt might be in. Its very particular spinning in the washing machine this morning. Its very particular drying on the line. Its very particular way of being folded and placed in the drawer. Particular states like these, whether actual or merely possible, I suggest, are the kind of situations that are in S" (Kratzer 2002: 659-660)

4. Situations stand in part-whole relations to each other.

5. For all $s \in S$ there is a unique $s' \in S$ such that $s \leq s'$ and for all $s'' \in S$, if $s' \leq s''$, then $s' = s''$

   (Every possible situation s is related to a unique maximal element, the world of s. Thus, no possible situation can be part of more than one world.)

<u>Counting situations: What are the truth-makers?</u>[1]

- Counting situations is hard due to the part-whole structure of the domain of situations:

8) John climbed Mt. Holyoke twice.

> "This sentence should obviously not be true in a world where John only climbed Mt. Holyoke once. But clearly, even if John climbed Mt. Holyoke only once, there will be many situations in which John climbed Mt. Holyoke. For example, there is the situation that contains John's climbing Mt. Holyoke and the celebratory dinner he had afterwards. To correctly count Mt. Holyoke-climbing situations, we have to get rid of all sorts of irrelevant junk. What we want is to retrieve the truth-makers the situations that make the proposition that John climbed Mt. Holyoke true." (von Fintel 1997/2005: 2)

- Berman 1987, Heim 1990: we need to count <u>minimal situations</u> in which John climbed Mt. Holyoke (situations that have no proper parts in which John also climbed Mt. Holyoke).

- But: there are propositions that do not seem to have minimal situations (Kratzer, p.c. to von Fintel): atelic propositions, e.g., that John runs. And "even if we are lucky and end up with some very small undividable running situations, those will not be what we are counting" (von Fintel 1997/2005: 5):

9) Often, when John runs, he wears his old tennis shoes.

   Here, we seem to be counting situation "in which John starts to run, runs and stops" (von Fintel 1997/2005).

10) Whenever Hans drinks beer, it's always a whole liter (Schwarz)

[1] This discussion follows very closely the discussion in von Fintel (1997/2005) and Angelika Kratzer's 2005 LSA slides.

• A new tool: <u>Situations that exemplify a proposition</u> (Kratzer 1998, 1990, 2002):

11) s is a situation that exemplifies p iff

(i) p is true in s and

(ii) any subsituation of s in which p is not true can be extended to a subsituation of s that is a minimal situation in which p is true.

Consider:

12) There are teapots.

13) It is raining.

• So what are we counting?

• Not: Maximal situations that exemplify the proposition.

Since we can put together two situations to form a bigger situation, in a given world there will be only one maximal situation that exemplifies any given proposition. Thus, sentences like (14) below will never come out true.

14) John ran twice.

• Better: Maximal spatiotemporally connected situations that exemplify the proposition.

[this is still too simplistic – see von Fintel 1997/2005 for discussion and references. But we don't need to worry about it here]

[For an overview of the role of situations in natural semantics, see Kratzer 2006 (http://semanticsarchive.net/Archive/GViOGNiN/)]

2.2. Back to the counterexamples

15) (a) The video shows which of those animals the man fed.

(b) The video shows which of those animals the man didn't feed.

Transparency

- The embedded complement of **show** is transparent (all examples below from Kratzer 2005):

16) The video shows which animals the man fed. The man is the director of the zoo. Therefore the video shows which animals the director of the zoo fed.

17) The video shows which animals the man fed. Those animals are precisely the animals the Gazette wrote about yesterday. Therefore the video shows which of the animals the Gazette wrote about yesterday the man fed.

18) The video shows which of those animals the man fed. What the man fed the animals contained poison. Therefore the video shows which of the animals was poisoned.

Comparison with direct perception reports

- The complement of **show** behaves exactly like the complement of direct perception reports.

- Direct perception reports, a construction illustrated in (19), contrast with direct perception reports, such as (20) (examples from Kratzer 2006).

19) Beryl saw Meryl feed the animals.

20) Beryl saw that Meryl feed the animals.

- Direct perception reports are epistemically neutral; indirect perception reports are not epistemically neutral (examples from Kratzer 2005).

21) The librarian actually saw Trudy steal the book, but she had no idea that she was witnessing a theft.

22) # The librarian actually saw that Trudy stole the book, but she had no idea that she was witnessing a theft.

- The embedded complement of indirect perception reports can be transparent or opaque. The first premise in (23) has a reading that renders the argument below invalid. (examples from Kratzer 2006).

23) Beryl saw that Meryl sprinkled the white powder on Cheryl's dinner
The white powder was the most deadly poison.
___

Beryl saw that Meryl sprinkled the most deadly powder on Cheryl's dinner.

- The embedded complement of direct perception reports can only be transparent, as illustrated by the validity of (24).

24) Beryl saw Meryl sprinkle the white powder on Cheryl's dinner
The white powder was the most deadly poison.
___

Beryl saw Meryl sprinkle the most deadly powder on Cheryl's dinner.

<u>Where situations come in:</u>

- Barwise 1981: direct perception reports like (25) should be analyzed along the lines of (26).

25) Beryl saw Meryl feed the animals. .

26) There is an actual past situation s that Beryl saw and s supports the truth of the proposition that Meryl feed the animals.

- The situation semantics of Barwise & Perry (1983) is very different from the one proposed by Kratzer. But the result carries over:

27) There is an actual past situation s that Beryl saw and s exemplifies the proposition that Meryl feed the animals.

28) Beryl saw Meryl fed the animals hay.

29) There is an actual past situation s that Beryl saw, and s exemplifies the proposition that Meryl feed the animals hay.

(Transparent) **show** also selects for a situation or event

30) [[**show**]] = $\lambda Q \lambda x \lambda s \exists s'$ [exemplify(Q(w_s)(s') & show (x)(s')]

- **The video shows which of those animals the man fed** is true in the actual world iff the video shows an actual situation s that exemplifies [[**which of those animals the man fed**]] (w_0).

31) [[**which of those animals the man fed**]] (w_0)=

λs [λx [fed(x)(the man)(s) & animals(x)(s) = λx [fed(x)(the man)(w_0) & animal (x)(w_0)]]

The proposition that is true in every situation where the animals the man fed are the same as the animals he fed in the actual world.

32) **The video shows which of those animals the man didn't feed** is true in the actual world iff the video shows an actual situation s that exemplifies [[**which of those animals the man didn't feed**]] (w_0).

33) [[**which of those animals the man didn't feed**]] (w_0) =
λs [λx [~ fed(x)(the man)(s) & animals(x)(s) = λx [~ fed(x)(the man)(w_0) & animal (x)(w_0)]]

34) The video shows which of those animals the man fed.

Exemplified by situations containing fed animals.

35) The video shows which of those animals the man didn't feed

Exemplified by situations containing unfed animals

- Since the positive and the negative question extensions are not exemplified by the same situations, (34) and (35) come out as having different truth-conditions.

- Tricky: what situations exemplify the negative embedded question?

Consider the following quote from Kratzer 2006:

(51) a. There is no teapot.
b. $\lambda s\ \neg\exists x$ teapot (x)(s)

> "51(b) is exemplified by the situations in which it is true. This makes the situations exemplifying negative sentences a rather disparate batch that do not resemble each other in any intuitive sense. Negative propositions like 51(b) are unfit for stating generalizations, or saying anything contentful for that matter, unless they are used to make claims about particular situations. If we want to quantify over situations exemplifying the propositions expressed by negative sentences, as we do in (52) below (…), contextual restrictions for the topic situation must play a major role, including those contributed by the topic-focus articulation and presuppositions (Kratzer 1989, von Fintel 1994, 2004a). (….)

(52) Whenever nobody showed up, we canceled the class. (Kratzer 2006: 27-28)

- What can we say about:

36) (a) It surprised me who was at the party

(b) It surprised me who was not at the party.

37) I was better at predicting who would show up than I was at predicting who would not show up.

More of my positive predictions were matched with actual truth-makers than my negative predictions were.

- Conclusion: "Many verbs that embed questions have a *res* argument that is a situation exemplifying the question extension. Recognizing the existence of this argument solves our First Puzzle"