

Truthmakers for what we say

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Leverhulme Lectures 2019

Lecture 3

UCL

Truthmakers for what we say

The story so far

Truthmakers for what we say

Natural languages have constructions that link propositions to their truthmakers. Investigating those constructions leads to a well-motivated notion of truthmaking that also covers cases where our intuitions give out.

Direct windows into truthmaking

- Adverbial quantification
- Davidsonian event semantics
- Event nominalizations
- Direct perception reports
- Pronouns referring to truthmakers

From propositions to truthmakers

A situation s is a **truthmaker** for a proposition p (s **exemplifies** p) iff whenever there is a part of s where p is not true, then s is a minimal situation where p is true.

Kratzer 1990, 2002, 2007 (last edition 2019), 2012.

Interaction with other principles

- Pressures for entities we quantify over: Distinctness, spatiotemporal connectedness.
- Maximalization for plural quantification.
- Questions under discussion (QuDs) as discourse organizers.
- General constraints for possible vs. impossible meanings in a situation semantics, e.g. (global) persistence. Kratzer 1989, 2012.

Last time

- The situations we talk about. How to get from a question under discussion (QuD) to an Austinian topic situation.
- The origin of scalar implicatures.

The origin of scalar implicatures

The perception of scalar implicatures comes about by our taking the situations we talk about or quantify over to be **truthmakers** (exemplifiers) of what we say.

The argument

There is independent evidence for the role of truthmakers in semantics and the role of questions under discussion for the organization of discourse.

Given the role of truthmakers and questions under discussion scalar implicatures emerge on their own. We don't need a separate theory for them.

Today

Truthmakers and the many meanings of embedded questions.

Bits and pieces from: An investigation of the lumps of thought (L&P 1989, rewritten OUP 2012). How specific is a fact? (1990, L&P 2002, rewritten OUP 2012). UMass seminar 2004. LSA class MIT 2005. MIT Colloquium 2005. Sinn & Bedeutung Berlin 2006.

Embedded questions

Groenendijk & Stokhof again



Groenendijk &
Stokhof 1982,
1984 on questions
& exhaustivity.

Lewis 1988 & Yablo
2014 on subject
matter.

The Semantics of Questions

Question intension

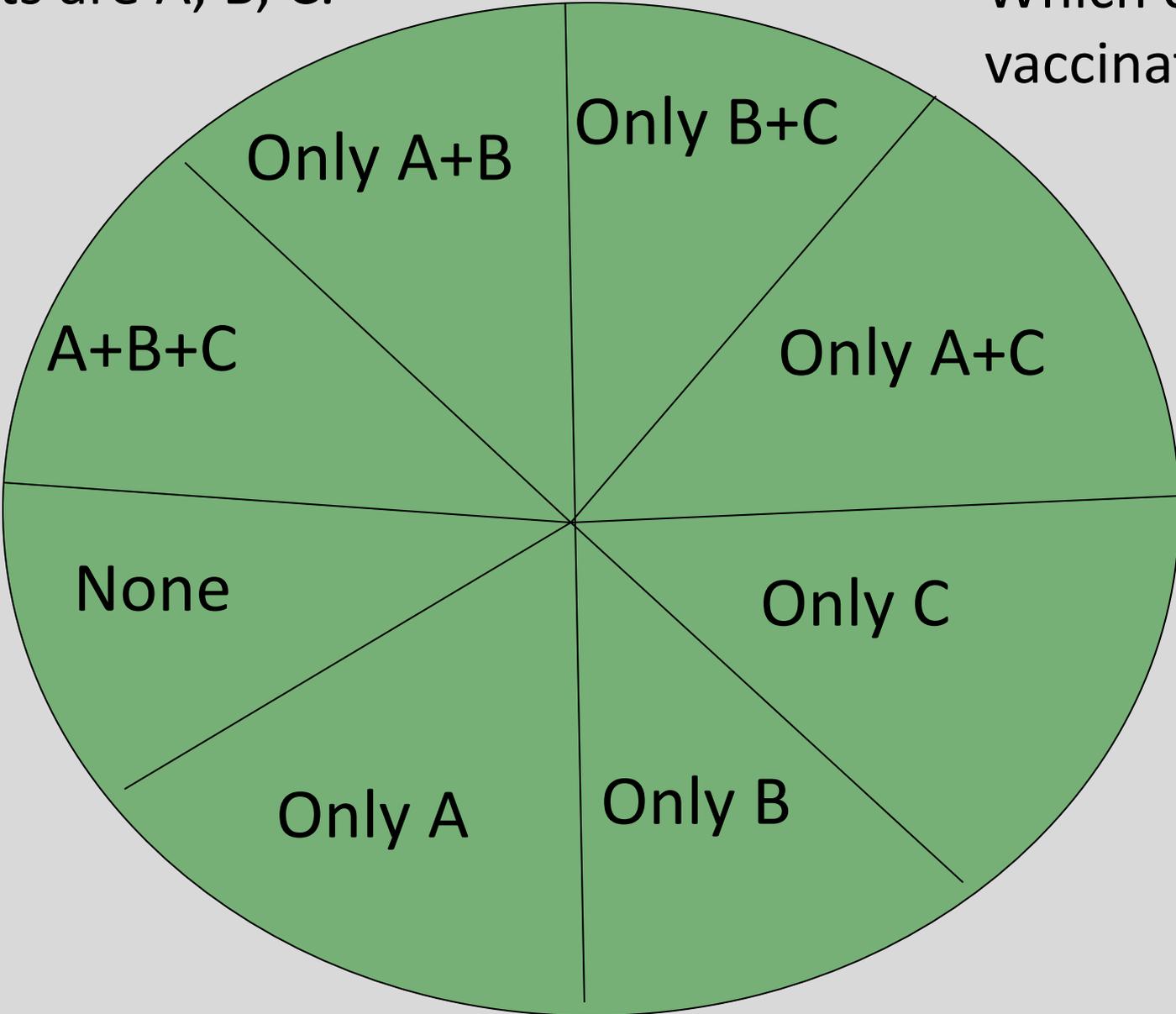
I wonder **which cats are vaccinated**.

$$\lambda w \lambda w' \forall x (\text{cat}(x)(w_0) \rightarrow (\text{vaccinated}(x)(w) \leftrightarrow \text{vaccinated}(x)(w'))))$$

A relation that holds between two worlds iff they determine the same complete answer to the question.

The cats are A, B, C.

Which cats were vaccinated?



Question extension

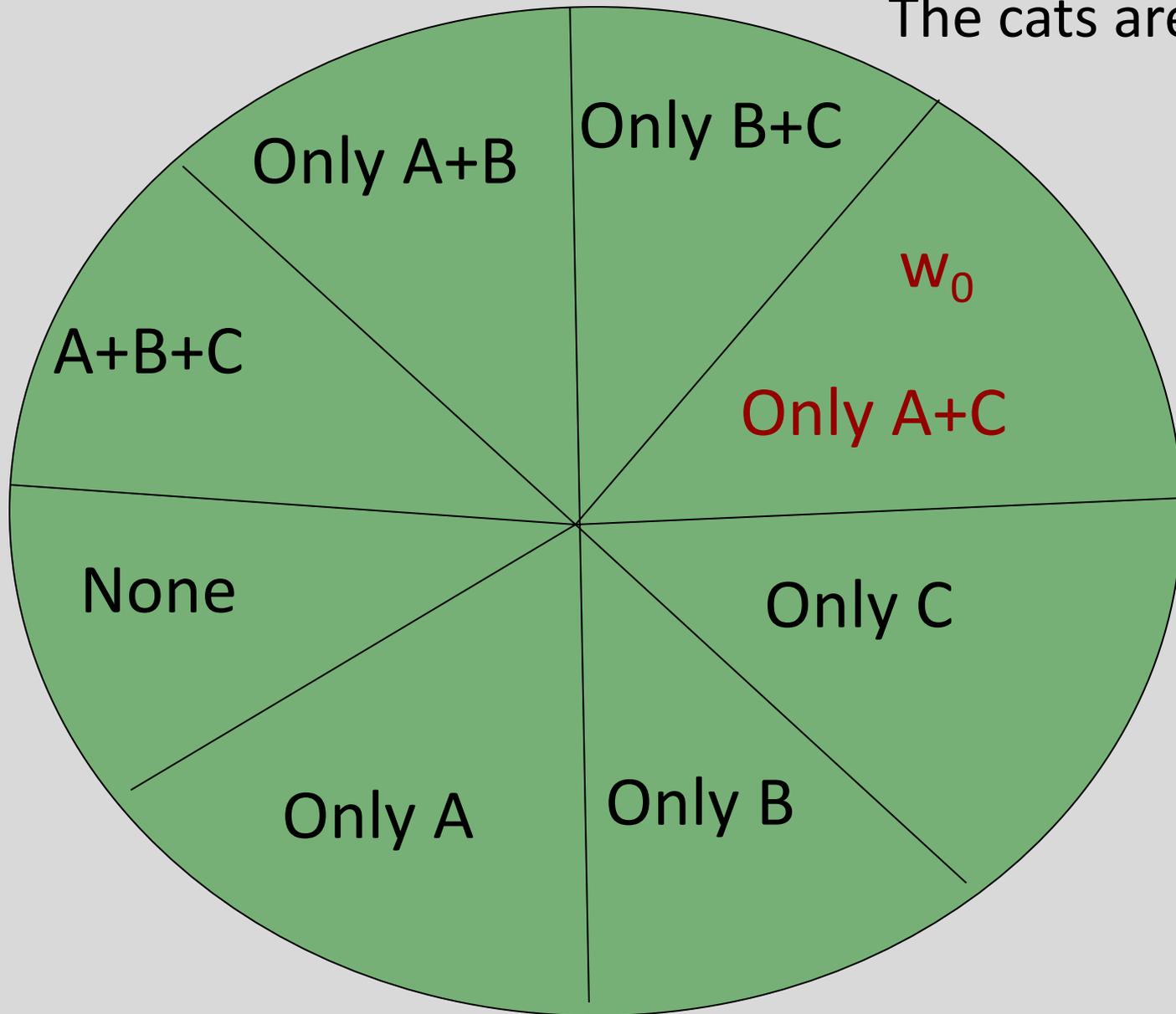
I know **which cats are vaccinated**.

You told me **which cats are vaccinated**.

$$\lambda w \forall x (\text{cat}(x)(w_0) \rightarrow (\text{vaccinated}(x)(w_0) \leftrightarrow \text{vaccinated}(x)(w)))$$

Describes possible worlds that determine the same complete answer to the question as the actual world.

The cats are A, B, C.



Trouble for Groenendijk & Stokhof

- (1) The checkmarks indicate which of those cats **got their rabies shot**.
- (2) The checkmarks indicate which of those cats **didn't get their rabies shot**.

The embedded questions in (1) and (2) have the same extension. But (1) and (2) have different truthconditions.

Illustration

The actual cats are Ally, Billy, Cilly.

Any world where just Ally and Billy got their rabies shot is a world where Cilly didn't get hers. And any world where just Cilly didn't get her rabies shot is a world where Ally and Billy did get theirs.

Show

- (1) The surveillance video shows which of those cars **were parked legally.**
- (2) The surveillance video shows which of those cars **weren't parked legally.**

Surprise

- (1) It surprised me which of my colleagues **spoke up**.
- (2) It surprised me which of my colleagues **didn't speak up**.

Berman 1991, Heim 1994, Beck & Rullmann 1999.

Predict

I was better at predicting which of my friends **would show up** than I was at predicting which of my friends **would not show up**.

After Beck & Rullmann 1999.

Scenario

I predicted of 10 of my friends that they would show up, and 8 of them actually did. And I predicted of 10 of my friends that they wouldn't show up, and only 5 of them actually didn't.

Beck & Rullmann 1999.

Mention, report, list

She mentioned / reported / listed which of my neighbors she **had talked to**.

She mentioned / reported / listed which of my neighbors she **hadn't talked to**.

Embedded questions

Still Groenendijk & Stokhof, but now
with situations

Question extension with situations

... which cats were vaccinated.

$$\lambda s \forall x (\text{cat}(x)(w_0) \rightarrow (\text{vaccinated}(x)(w_0) \leftrightarrow \text{vaccinated}(x)(s)))$$

Possible situations that determine the same complete answer to the question as the actual world.

Question extension with situations

... which cats weren't vaccinated.

$$\lambda s \forall x (\text{cat}(x)(w_0) \rightarrow (\neg \text{vaccinated}(x)(w_0) \leftrightarrow \neg \text{vaccinated}(x)(s)))$$

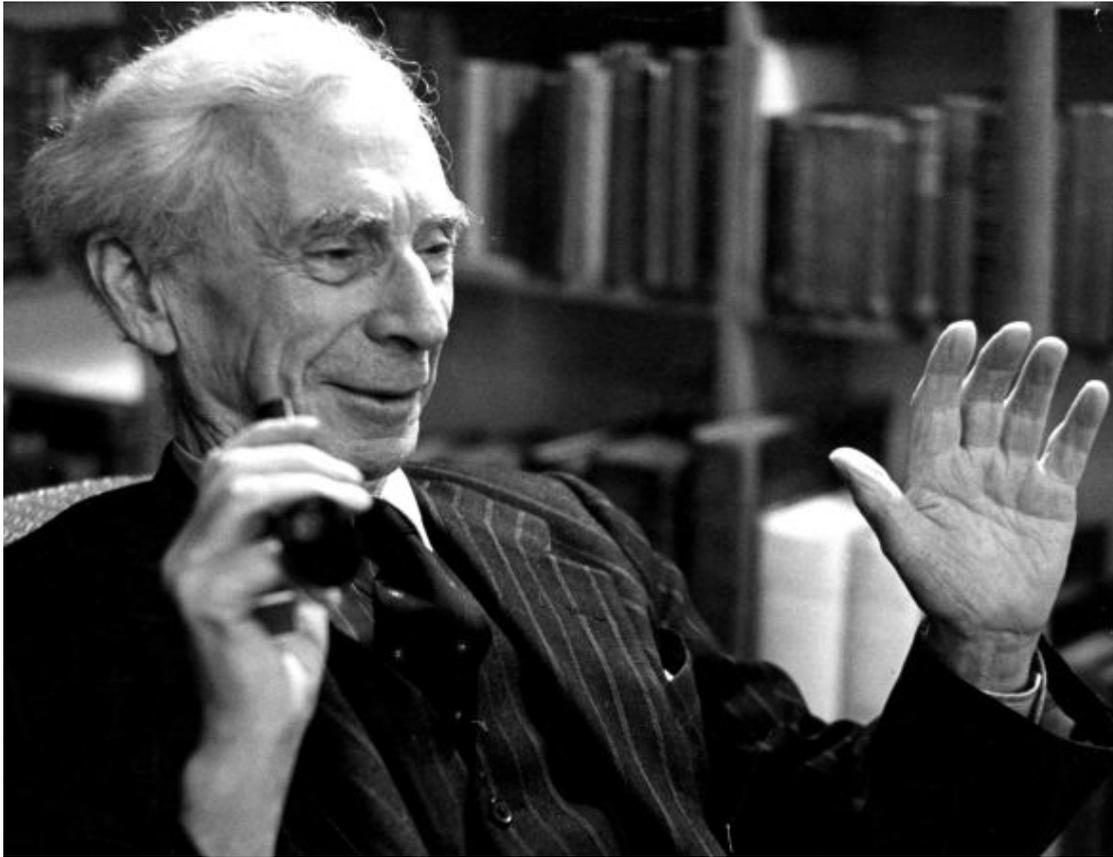
Possible situations that determine the same complete answer to the question as the actual world. **Contextual restrictions** needed.

Vaccinated



Not vaccinated





Russell on negative facts

“There is implanted in the human breast an almost unquenchable desire to find some way of avoiding the admission that negative facts are as ultimate as those that are positive.” OP, 4.

Russell on negative facts

“One has a certain repugnance to negative facts.... You have a feeling that there are only positive facts, and that negative propositions somehow or other got to be expressions of positive facts. When I was lecturing on this subject at Harvard I argued that there were negative facts, and it nearly produced a riot: the class would not hear of there being negative facts at all.” (PLA, 1972 edition, 41-42.)

Join the riot! Don't quench the desire!

Introducing negative facts or 'falsemakers' would deprive us from understanding the varied mechanisms natural languages employ to solve a conceptual problem the human mind actively tries to find solutions to: finding truthmakers for negative propositions.

The readings of embedded questions

Exhaustive interpretations

A note on the door

Candidates who passed

43792

11564

12369

10987

53980

Exhaustive reading

The note told us **which candidates passed**.

The note listed all candidates that actually passed. It didn't list any candidates that didn't pass. It indicated that the list was complete. And, of course, it listed the candidates who passed, not those who didn't pass.

Question intension

The note told us **which candidates passed**.

Question intension Q:

$$\lambda w \lambda s \forall x (\text{candidate}(x)(w_0) \rightarrow (\text{passed}(x)(w) \leftrightarrow \text{passed}(x)(s)))$$

A relation that holds between a world and a situation iff they determine the same complete answer to the question.

Exhaustive reading

(1) The note told us **which candidates passed**.

$Q(w_0) = \lambda s \forall x (\text{candidate}(x)(w_0) \rightarrow (\text{passed}(x)(w_0) \leftrightarrow \text{passed}(x)(s)))$.

(1) is true iff $Q(w_0)$ is true in all possible situations that are compatible with the content of the note.

Candidates who passed

10987

11564

12369

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43792

Compatible
situations

Situations where all of the listed candidates passed. None of those situations can be part of a situation where other candidates passed as well.

The readings of embedded questions

Gettier troubles

Surveillance cameras

Imagine a surveillance camera that reliably records who enters Chandler House at any given time, except for a unique one-time prank: its creator preprogrammed it to briefly stop recording at 5 PM yesterday and show me entering Chandler House with the time stamp for that time, wiping out any record of who actually entered then. Suppose that, by sheer coincidence, I (and only I) did enter Chandler House at 5 PM yesterday. After Kratzer 2012.

Surveillance cameras

The surveillance video revealed / documented/ recorded who entered Chandler House at 5 PM yesterday.

Seems false on the given scenario. But we predict it to be true.

Surveillance cameras

The surveillance video revealed / documented/recorded who entered South College at 5 PM yesterday.

$$Q(w_0) = \lambda s \forall x (\text{person}(x)(w_0) \rightarrow (\text{entered}(x)(w_0) \leftrightarrow \text{entered}(x)(s))).$$

De re about a truthmaker

The video revealed / documented / recorded who entered Chandler House at 5 PM yesterday.

True iff there is **an actual truthmaker s_0 of $Q(w_0)$** and in all situations compatible with the video there is a counterpart s of s_0 such that $Q(w_0)(s) = \text{TRUE}$.

$Q(w_0) = \lambda s \forall x (\text{person}(x)(w_0) \rightarrow (\text{entered}(x)(w_0) \leftrightarrow \text{entered}(x)(s)))$.

Assessment

When embedded under factive verbs in a content ascription, questions may pick out the *res* the content ascription is about.

The readings of embedded questions

Direct perception reports

A direct perception report

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

Epistemically neutral perception report.

Indirect perception report

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

Epistemically non-neutral perception report.

A direct perception report!

The librarian actually saw **who** stole the book, but she had no idea that she was witnessing a theft.

Epistemically neutral perception report.

A direct perception report!

The librarian actually saw **who** stole the book, but she had no idea that she was witnessing a theft.

True iff the librarian saw **an actual truthmaker of $Q(w_0)$** .

$Q(w_0) = \lambda s \forall x (\text{person}(x)(w_0) \rightarrow (\text{steal-the-book}(x)(w_0) \leftrightarrow \text{steal-the-book}(x)(s)))$.

The readings of embedded questions

Non-veridical interpretations

The notes agree on who passed

Candidates who passed

53980

11564

12369

43792

10987

Candidates who passed

10987

11564

12369

53980

43792

Non-veridical reading

The two notes agree on which candidates passed.

$$Q = \lambda s \lambda s' \forall x (\text{candidate}(x)(w_0) \rightarrow (\text{passed}(x)(s) \leftrightarrow \text{passed}(x)(s'))))$$

For all situations s and s' that are compatible with one or the other note, $Q(s)(s') = \text{TRUE}$.

Weaker question denotation

The two notes agree on which candidates passed.

$$Q_{\text{weak}} = \lambda s \lambda s' \forall x (\text{candidate}(x)(w_0) \rightarrow (\text{passed}(x)(s) \rightarrow \text{passed}(x)(s'))))$$

For all situations s and s' that are compatible with one or the other note, $Q(s)(s') = \text{TRUE}$.

Non-veridical reading

Sherlock merely guessed who was the murderer.
This one time he didn't get it right.

$$Q = \lambda s \lambda s' \forall x (\text{suspect}(x)(w_0) \rightarrow (\text{murderer}(x)(s) \rightarrow \text{murderer}(x)(s'))))$$

For all situations s and s' that are compatible with Sherlock's guess, $Q(s)(s') = \text{TRUE}$.

Non-veridical reading

I was better at predicting which of my friends **would show up** than I was at predicting which of my friends **would not show up**.

After Beck & Rullmann 1999.

The nurse was not credible when she told us which patients **slept through the night**.

The readings of embedded questions

Intermediate readings: Klinedinst & Rothschild 2011

Another note on the door

Candidates who passed

10987

11564

12369

53980

43792

There may be others.

Candidates who passed

10987

11564

12369

53980

43792

There may be others.

Compatible
situations

Situations where all of the listed candidates passed. Those situations could be situations where other candidates passed as well.

Intermediate reading

Klinedinst & Rothschild 2011.

The note told us which candidates passed.

Scenario: The note on the door was cautious in that it didn't promise to give us a complete list. But suppose that it so happened that it did, in fact, give us a complete list.

Intermediate reading

The note told us which candidates passed.

The note has to list all the candidates that actually passed, and it can't list any candidates that didn't actually pass. But it doesn't have to exclude the possibility that there **might** be other candidates that also passed.

Intermediate reading

The note told us **which candidates passed**.

$$Q(w_0) = \lambda s \forall x (\text{candidate}(x)(w_0) \rightarrow (\text{passed}(x)(w_0) \leftrightarrow \text{passed}(x)(s))).$$

$$Q_{\text{weak}}(w_0) = \lambda s \forall x (\text{candidate}(x)(w_0) \rightarrow (\text{passed}(x)(w_0) \rightarrow \text{passed}(x)(s))).$$

True iff $Q_{\text{weak}}(w_0)$ is true in all compatible situations, and $Q(w_0)$ is true in some compatible worlds.

THE END

Conclusion

- There are interpretations of questions that involve truthmakers.
- Groenendijk & Stokhof's semantics for questions provides a uniform format for the various denotations of questions: issues, propositions, truthmakers.