Questions and Answers in Context

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Thanks in Advance to . . .
Michelle Dionisio Greg Kierstead Yusuke Kubota Scott Martin Vedrana Mil- halicek Andy Plummer E. Allyn Smith Craige Roberts Judith Tonhauser Chris Worth Murat Yasavul

and

members of the Pragmatics discussion group, past and present

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Introduction

• The project this talk belongs to is to analyze the syntax, semantics, prag- matics, and prosody of questions and answers in the framework of DyCG.

• I’ll start with some basic background about discourse information struc- ture, mostly adapted from Roberts 1998/2004.

• Then we’ll look at an array of facts from Tagalog and K’iche’ (which are similar in many relevant respects), and from English (which is quite different from Tagalog and K’iche’).

• Next, I’ll propose a set of research questions about these facts which we hope to answer.

• I’ll sketch some proposed extensions/revisions to Roberts’ discourse information structure framework that I hope will help with answering these questions.

• Finally, I’ll sketch the outlines of a theory.
Dynamic Categorial Grammar (DyCG)

- Started out in 2009 as an effort to integrate Pollard’s work on syntax and semantics in categorial grammar (CG) with Roberts’ formal theory of discourse context.
- Pollard-Roberts TIE seminar Winter and Spring 2011
- Some current related work:
  - E. Allyn Smith: typology of projective meaning
  - Scott Martin: integrating projective meaning into DyCG
  - Andy Plummer: fine-grained possible worlds semantics
  - Chris Worth: integrating English intonation
  - Murat Yasavul: Answer Focus and Negation in K’iche’
  - Greg Kierstead: Projectivity with Tagalog evidential daw
  - Jungmin Lee: topic and focus in Korean
  - Alex Wein: free choice disjunction

This Talk

- How do we analyze the meanings of questions and their answers into their nonprojective (or proffered) and projective components (such as presuppositions and conventional implicatures)?
- How do we formalize our analysis in DyCG?
- This talk is just to get the conversation going.
- Specifically: we’ll start by reconsidering past proposals about the meaning of questions from the perspective of agnostic semantics.

A View of Discourse Context: Roberts 2004 (1/3)

- Following Stalnaker (1978), the primary goal of discourse is communal inquiry—the intention to discover with other interlocutors “the way things are”.
- Drawing on Stalnaker’s notion of common ground (CG) and the related context set (i.e. the set of worlds in which all the propositions in CG are true), our goal is to reduce the context set to a singleton, the actual world.
- The linguistic counterpart of an inquiry is a question.
- Thus we might take questions to be the formal objects that reflect interlocutor’s intentions in conducting discourse.
- Interlocutors’ discourse goals and intentions are encoded as a poset of questions under discussion (QUDs).
A View of Discourse Context: Roberts 2004 (2/3)

- So the discourse context includes both the CG and the QUDs, along with other information, e.g.:
  - the discourse referents (DRs)
  - A totally ordered set of moves, recording the assertions and (as-yet un-resolved) questions made so far.

A View of Discourse Context: Roberts 2004 (3/3)

- Pragmatics of Assertions (Stalnaker 1978)
  If an assertion is accepted, the proposition it asserts is added to the CG.
  Technically, the added proposition is a set of worlds, and ‘adding’ it means set-theoretically intersecting it with the current context set.

- Pragmatics of Questions
  - If a question is accepted, it is added to the QUDs.
  - Acceptance of a question commits the interlocutors to the common goal of answering it.
  - A QUD is removed when either (1) its answer is entailed by the CG, or (2) it is determined to be unanswerable.

C.I. Lewis (1923) on Knowledge Growth (1/3)

- Lewis views one’s knowledge state at a given time to be what he calls a system of propositions.

- Confusingly, Lewis uses the term ‘facts’ for what we call propositions and ‘actual facts’ for what we call facts, but we won’t adopt his usage.

- Propositions are not analyzed as sets of worlds.

- Algebraically, a Lewis system would nowadays be called a proper filter, i.e. it is
  - closed under entailment (Lewis says ‘requires’ for ‘entails’)
  - closed under conjunction (Lewis says ‘joint fact’ for ‘conjunction of two propositions’)
  - consistent, i.e. never contains both a proposition $p$ and its negation (not $p$) (Lewis calls the negation of a proposition its ‘contradictory’)
C.I. Lewis (1923) on Knowledge Growth (2/3)

- Lewis defines a (possible) world to be a system which is maximal in the sense that, for each proposition $p$, either $p$ or ($\text{not } p$) is in it.

- A given system may be contained in more than one world.

- The relation of a system to any world which includes it is important because it is the relation of knowledge to reality.

- The propositions which are accepted as belonging to the actual world at any given moment determine a system, but we can hardly suppose that they determine a world.

- The advance of empirical knowledge enlarges our system by the addition of new propositions which may be independent of previous knowledge.

C.I. Lewis (1923) on Knowledge Growth (3/3)

- We approach the world of reality by means of such an ever-growing system.

- But we never reach the point of discovering which of various equally possible completion of our system of known propositions the actual world is.

- So as far as we are concerned, the real world is always merely one of the many which must be viewed as equally possible.

- When we infer from our previous experience, instead of turning to new data, we make an addition to our knowledge which is trustworthy simply because the conclusion will be true of any possible world which contains the propositions stated in the premisses.

A Slight Simplification of Discourse Context

- We forget about Stalnaker’s notion of context set and simply treat the CG as a set of propositions, more specifically a Lewis system.

- Acceptance of an assertion just adds a new, independent proposition to the CG.

- As before, acceptance of an asking (a nonce name for a speech act of asking a question) adds the question asked to the QUDs.
Some Basic Issues

- What is a question?
- Is an indirect question the same thing as a direct question?
- How should questions be analyzed into what is proffered, what is presupposed, what is conventionally implicated, etc.?
- What are the differences among polar questions, constituent questions, and alternative questions?

Tagalog Basics

In a ‘canonical’ declarative sentence (one without fronting for focalization or contrastive topicalization):

- the predicate is clause-initial
- arguments and adjuncts are more or less freely ordered after the predicate, except that
- pronominal and discourse ‘particles’ are second-position (2pos) clitics, i.e. they encliticize to the first prosodic word:

  Natutulog=siya sa=opisina. IMPERF-sleep=he OBL=office ‘He sleeps at the office.’

  N.B. We write ‘=’ for cliticization, after Kroeger (1998).

Tagalog Negation

- Sentences are negated with hindi at the left periphery.
- Hindi is a full prosodic word, so can host 2pos clitics:

  Hindi=siya natutulog sa=opisina. not=he IMPERF-sleep OBL=office ‘He doesn’t sleep at the office.’

Tagalog Oblique (OBL) Focus

- In answers to wh-questions, the answer-focus can be fronted. For modifiers and oblique arguments, focus fronting is effected by placement at the left periphery.
- In oblique focus, the focused material still counts as ‘within the clause’ for placement of 2pos clitics:

  [Context: Where does he sleep?]

  Sa=opisina=siya natutulog. OBL=office=he IMPERF-sleep ‘He sleeps at the OFFICE.’
Tagalog OBL Focus with Negative Questions

In this example, the question being answered is negative.

[Context: Where doesn’t he sleep?]  
Sa=opisina=siya hindi natutulog. OBL=office=he not IMPERF-sleep ‘He doesn’t sleep at the OFFICE.’

This is a positive answer to a negative question.

Tagalog: Negating OBL Focus

• An oblique-focus sentence is negated like any other:

[Context: Where does he sleep?]  
Hindi=siya sa=opisina hindi natutulog. not=he OBL=office not IMPERF-sleep He doesn’t sleep at the OFFICE.

This is a negative answer to a positive question.

• Note for future reference that the English sentence (with the focal accent on OFFICE as shown) is ambiguous between a negative answer to a positive question and a positive answer to a negative question.

• This ambiguity does not arise in Tagalog.

Tagalog: Negating OBL Focus with Negative Questions

• In this example the question is negative:

[Context: Where doesn’t he sleep?]  
Hindi=siya sa=opisina hindi natutulog. not=he OBL=office not IMPERF-sleep Not at the OFFICE.

This is a negative answer to a negative question.

• It’s translated here by a short answer, because it is hard to give a long answer in English:

?? He doesn’t not sleep at the OFFICE.

• A cleft, though acceptable, is not a good translation because it has an exhaustivity presupposition not present in the Tagalog answer:

It’s not at the OFFICE that he doesn’t sleep.
Tagalog: Short Answers to Positive Questions
[Context: Where does he sleep?]

- The short positive answer looks like the long positive one with the continuation (the part that is congruent with the non-wh part of the presupposed question) ellipsed:
  Sa=opisina. OBL=office ‘At the OFFICE.’
- The short negative answer also looks like its long counterpart with the continuation ellipsed:
  Hindi sa=opisina. not OBL=office ‘Not at the OFFICE.’

Tagalog: Short Answers to Negative Questions
[Context: Where doesn’t he sleep?]  

- The short positive answer looks like the long positive one with the continuation ellipsed:
  Sa=opisina. OBL=office ‘At the OFFICE.’
- The short negative answer also looks like its long counterpart with the continuation ellipsed:
  Hindi sa=opisina. not=he OBL=office ‘Not at the OFFICE.’

K’iche’ Basics
In a ‘canonical’ declarative sentence (one without fronting for focalization or contrastive topicalization):

- the predicate is clause-initial.
- Absolutive and ergative arguments are morphologically cross-referenced on the predicate.
  X-∅-war-ik. CMP-A3-sleep-STAT ‘S/he slept.’

K’iche’ Negation

- Negation is indicated by encliticization of ta(j) to the first prosodic word of the predicate (and optionally by clause-initial man).
  (Man) x-∅-war=taj. (NEG) CMP-A3-sleep=NEG ‘S/he didn’t slept.’

K’iche’ Focus
In answers to wh-questions, the answer-focus can be fronted immediately to the left of the predicate.

[Context: Who slept?]
A Raul x-∅-war-ik. male Raul CMP-A3-sleep-STAT ‘RAUL slept.’
This is a positive answer to a positive question.
K’iche’ Focus with Negative Questions
In this example, the question being answered is negative.

[Context: Who didn’t sleep?]
A Raul x-∅-war=taj. male Raul CMP-A3-sleep=NEG ‘RAUL didn’t sleep.’
This is a positive answer to a negative question.

K’iche’: Negating Focus

• A focus sentence is negated like any other, except that if the focus has multiple prosodic words, the ta(j) can encliticize to any one of them):

[Context: Who slept?]
A Raul=taj x-∅-war-ik. male Raul-NEG CMP-A3-sleep-STAT ‘RAUL didn’t sleep.’
This is a negative answer to a positive question.

• Note for future reference that the English sentence (with the focal accent on RAUL as shown) is ambiguous between a negative answer to a positive question and a positive answer to a negative question.

• This ambiguity does not arise in K’iche’.

K’iche’: Negating Focus with Negative Questions

• In this example the question is negative:

[Context: Who didn’t sleep?]
A Raul=taj x-∅-war=taj. male Raul=NEG CMP-A3-sleep=NEG ‘Not RAUL.’
This is a negative answer to a negative question.

• It’s translated here by a short answer, because it is hard to give a long answer in English:
  ?? RAUL didn’t not sleep.

• A cleft, though acceptable, is not a good translation because it has an exhaustivity implication not present in the K’iche’ answer:
  It’s not RAUL who didn’t sleep.
K’iche’: Short Answers to Positive Questions
[Context: Who slept?]

- The short positive answer looks like the long positive one with the continuation (the part that is congruent with the non-wh part of the presupposed question) ellipsed:
  A Raul. male Raul ‘RAUL.’

- The short negative answer also looks like its long counterpart with the continuation ellipsed:
  A Raul=taj. male Raul=NEG ‘Not RAUL.’

K’iche’: Short Answers to Negative Questions
[Context: Who didn’t sleep?]

- The short positive answer looks like the long positive one with the continuation ellipsed:
  A Raul. male Raul ‘RAUL.’

- The short negative answer also looks like its long counterpart with the continuation ellipsed:
  A Raul=taj. male Raul=NEG ‘Not RAUL.’

Answer Focus in English (1/3)
Positive Question
[Context: Who’s going to Salt?]

- Positive answers:
  JUDITH(’s going to Salt) H% (maybe it’s of interest whether anyone else is)
  JUDITH(’s going to Salt) L% (she’s the only one, or asker only needs one driver)

- Negative answers:
  JUDITH isn’t H% (maybe it’s of interest whether anyone else is)
  Not JUDITH H% (likewise)
  # JUDITH isn’t L%
  # Not JUDITH L%
**Answer Focus in English (2/3)**

**Negative Question**

[Context: Who isn’t going to Salt?]

- Positive answers:
  - JUDITH (isn’t) H% (maybe it’s of interest whether anyone else isn’t)
  - JUDITH (isn’t) L% (she’s the only one, or asker only needs one catsitter)

- Negative answers:
  - # JUDITH isn’t H%/L% (hard for this to mean ‘Judith isn’t not going’)
  - Not JUDITH H% (DOES mean ‘Judith isn’t not going’)
  - # Not JUDITH L%

**Some Research Questions**

- Why are Tagalog and K’iche’ so similar, and so different from English?
- What is the meaning difference between a negative question to a negative question and a positive answer to the corresponding positive question? They seem to proffer the same proposition.
- How should we analyze the ambiguity of JUDITH isn’t (going).
  - First reading: negative answer to ‘Who’s going?’ (‘negation outscopes focus’)
  - Second reading: positive answer to ‘Who isn’t going?’ (‘focus outscopes negation’)

  Relatedly, how come Not JUDITH can have the first meaning of ‘JUDITH isn’t’, but not the second?

**Background: The DyCG Framework (1/2)**


- Dynamic categorial grammar (DyCG) is LG equipped with a specific kind of dynamic semantics (Martin and Pollard in press, in preparation).

- This dynamic semantics is built on top of agnostic semantics (Plummer and Pollard 2012), which in turn is written in standard higher order logic.
Background: The DyCG Framework (1/2)

- Utterance meanings are context changes, partial functions from contexts to contexts broadly analogous to to Heim’s (1982) context change potentials.

- Our contexts elaborate on Roberts’ (1998/2004) information structures, which in turn are inspired by Stalnaker’s (1978) notion of communal inquiry and Lewis’s (1979) ‘scoreboard’ metaphor.

- Context changes are described in terms of moves, which are basic operations on contexts.

- To handle questions and answers, we need to take into account different kinds of moves and different aspects of utterance meanings.

Review of Contexts
Recall that a context consists of at least:

- the common ground (CG), modelled as a Lewis system, i.e. a consistent set of propositions closed under conjunction and entailment.
  
  N.B. This is an idealization: actually only the entailments which can be practically inferred by the interlocutors in real time are relevant.

- a set of discourse referents (ignored in this talk)

- the stack of questions under discussion (QUD)
  
  N.B. If a question is under discussion, the interlocutors have incurred a joint commitment to try to answer it, until it is dismissed (see below).

Enriching Contexts
We add two new components to contexts in order to handle acceptance and rejection:

- the stack of propositions under consideration (PUC)
  
  N.B. The notion of being under consideration seems closely related to what is often called being at issue.

  N.B. Caveat: propositions under consideration have not been added to the CG, they are merely candidates for being added.

- the stack of questions under consideration (QUC)
  
  N.B. Caveat: questions under consideration are not under discussion, they are merely candidates for being under discussion.
Kinds of Moves I: Proposals

A proposal is a speaker’s suggested contribution to the communal inquiry, including:

- **assertions**, which push a proposition (the assertion’s *proffered content*) onto the PUC stack
- **inquiries**, which push a question (the inquiry’s *proffered content*) onto the QUC stack
- **dismissals**, which are proposals to pop the current QUD.

Technically, we can handle dismissals by adding to contexts a new component, the **dismissal toggle (DT)**; the dynamic meaning of a dismissal is the partial function on contexts that switches DT from F to T.

N.B. Grounds for dismissing a question include:

- it has been sufficiently answered
- It has been deemed unanswerable
- The goal that would have been served by answering it has been abandoned

Kinds of Moves II: Acceptances and Rejections

- An **acceptance** is a speaker’s consent to:
  - pop the current PUC and add it to the CG
  - pop the current QUC and push it onto the QUD stack
  - pop a dismissed question from the QUD stack (and reset DT to F)

- A **rejection** is like an acceptance, but with ‘consent’ replaces by ‘refusal’.

N.B. An utterance can effect multiple moves of different kinds.

Assertions Close Up

- An assertion proffers a proposition for the purpose of enlarging the CG, by pushing it onto the PUC stack.
- Typically, assertions are the meanings of main-clause declarative sentences.
- But we’ll see that the meanings of **short answers**, though not sentential in form, are also assertions.
- Typically, embedded declarative clauses *express*, but do not *assert*, propositions.
Inquiries Close Up

- An inquiry proffers a question for the purpose of (temporarily) constraining what propositions are to be subsequently asserted, by pushing it onto the QUC stack.
- Typically, inquiries are the meanings of main-clause interrogative clauses, but that is not the only way they come about.
- Typically, embedded interrogative clauses express a question, without making it the object of an inquiry.
- We want to disentangle what questions are semantically from the pragmatics of inquiries, and how the former figures in the latter.

Aspects of Utterance Meanings: Proffered Content

- The proffered content of a proposal is what it presents for acceptance or rejection (for assertions, a proposition; for inquiries, a question).
- For assertions, proffered content seems similar to what is captured by the terms truth-conditional meaning, literal meaning, or the main point.
- For propositions, being presented for acceptance or rejection seems closely related to various notions of being at issue. To put it another way: to proffer a proposition is to make an issue of it.

Aspects of Utterance Meanings: Warrants

- Warrants (Pollard and Smith 2011) are conventional but non-proffered public commitments.
- Warrants are similar (identical?) to what Roberts calls conventionally triggered suppositions.
- Here the term ‘warrant’ is in the sense of ‘guarantee’: they are not proffered because the speaker does not intend to make an issue of them and does not expect the interlocutors to do so either.
- Two subtypes of warrants:
  - presupposition, in the sense of (generalized) anaphora. We’ll use these terms interchangeably.
  - We’ll call nonpresuppositional warrants conventional implicatures (CIs). This includes what Potts calls CIs, but is more general.
Presupposition/Anaphora

- Examples: definite pronominal anaphora; too-anaphora; VP-ellipsis.
- What is waranted is the addressee’s ability to retrieve the intended discourse referent from the context.
- A more general concept of presupposition is possible: any condition on contexts that constrains the domain of definition of a context change.
- For example, dismissals are presuppositional in this extended sense because they are only defined for contexts where the DT is set at F.
- Another example: the dynamic meanings of the short answers yes and no presuppose that the current QUD is a polar question.

Conventional Implicatures (CIs)

- Examples: expressives, appositives, nonrestrictive relatives, honorifics; descriptive content implication of names, definite pronouns, and demonstratives.
- Although CIs are not anaphoric, some kinds of anaphora also trigger CIs. For example definite pronouns (e.g. she) conventionally implicate that the antecedent satisfies the descriptive content (here, being female).
- Below we’ll consider some aspects of short answer meanings that seem to CIs in our extended sense.

Some Notational and Terminological Conventions

- Remember our basic meaning types are e (individuals) and p (propositions).
- For any type \( A \), \( A \rightarrow p \) is the type of \( A \)-properties.
- We recursively define the types of \( n \)-ary (individual) relations by
  \[
  p_0 =_{def} p \\
  p_{n+1} =_{def} e \rightarrow p_n
  \]
  so that a nullary relation is a proposition and a unary relation is an individual property (type \( p_1 = e \rightarrow p \)).
Before tackling the dynamic meanings of inquiries, we need a theory of what questions themselves are.

In our agnostic reformulation of Karttunen, the type for questions is \( k = \text{def} \ p \rightarrow p \) (properties of propositions).

Because of time constraints, we only consider polar questions and unary \( wh \)-questions.

We’ll assume that, e.g. the question proffered by the inquiry \( \text{is it raining} \) is the same as the question expressed by the embedded interrogative \( \text{whether it’s raining} \).

Most of the work is assigning correct meanings to the \( wh \)-complementizer \( \text{whether} \) and the \( wh \)-determiner \( \text{which} \).

Here we only consider the \( \text{which} \) that occurs in ‘\( wh \)-moved’ \( wh \)-expressions. (For multiple \( wh \)-questions, we need a separate lexical entry for the \( which \) that occurs in \( in \text{ situ} \) \( wh \)-expressions.)

The meaning of \( \text{whether} \) is

\[
\text{whether} = \text{def} \ \lambda_{pq} \ q \ \text{and} \ ((q \ \text{equals} \ p) \ \text{or} \ (q \ \text{equals} \ (\text{not} \ p)))
\]

Example: the question expressed by \( \text{whether it’s raining} \) is

\[
\text{whether rain} = \lambda_{q} \ q \ \text{and} \ ((q \ \text{equals rain}) \ \text{or} \ (q \ \text{equals} \ (\text{not} \ \text{rain})))
\]

At world \( w \), this denotes

\[
\lambda_{q} \ q@w \ \text{and} \ ((q = \text{rain}) \ \text{or} \ (q = (\text{not} \ \text{rain})))
\]

i.e. the singleton of \( \text{rain} \) or \( \text{not} \ \text{rain} \), whichever is true at \( w \).

This is the direct agnostic counterpart of the Karttunen semantics.

The meaning of \( \text{which} \) is

\[
\lambda_{PQp} \ a \ P \ (\lambda_{x} \ \text{whether} \ (Q \ x) \ p)
\]

E.g. the question expressed by \( \text{which donkeys brayed} \) is

\[
\text{which donkey bray} = \lambda_{p} \ a \ \text{donkey} \ (\lambda_{x} \ \text{whether} \ (\text{bray} \ x) \ p)
\]
• At world \( w \), this denotes

\[
\lambda_p. \exists x. (\text{donkey } x)@w \land p@w \land ((p = (\text{bray } x)) \lor (p = (\text{not } (\text{bray } x))))
\]

i.e. the set of \( w \)-facts of form \((\text{bray } x)\) or \(\text{not } (\text{bray } x)\) for some \( w \)-donkey \( x \).

• This modifies the Karttunen semantics for \( wh \)-questions by including both positive and negative true answers (on a par with polar questions).

**Question-Resolving Knowledge**

• What’s the difference between knowing that it’s raining and knowing whether it raining?

• The meaning of the first \( \text{know} \) is \( \text{know} \), of type \( e \rightarrow p \rightarrow p \).

• The meaning of the second, \( \text{question-resolving, know} \) is \( \text{know}_q \), of type \( e \rightarrow k \rightarrow p \).

• We can relate these by the meaning postulate

\[ \vdash \text{know}_q \equiv \lambda_{xk}. \text{every } k (\text{know } x) \]

• This amounts to knowing all the positive and negative answers to the question.

• E.g. if Pedro knows which donkeys brayed, and Chiquita did and Burrita didn’t, then he knows that Chiquita did and he knows that Burrita didn’t.

**Wondering**

• We assume that wondering is wanting to know the true answers.

• We capture this assumption with the meaning postulate

\[ \vdash \text{wonder} \equiv \lambda_{xk}. \text{want } x (\lambda_y. \text{know}_q y k) \]

Here we follow Chierchia in assuming that \( \text{want} \) takes a property argument.

• So if Pedro wonders whether it’s raining, then he wants it to be the case that he knows that it’s raining if in fact it is, and that he knows it isn’t if in fact it isn’t.
Short Answers to Polar Questions (1/2)

• If I come in from the barn and you wonder whether it’s raining, it would be reasonable for you to delimit our communal inquiry by asking: is it raining?

• Since the CG is a Lewis system and the proposition rain is independent of it, the addition to the CG of rain or not rain is equally informative to you.

• This is the motivation behind the Karttunenesque (static) semantics for is it raining?ː whether rain -= det

  \( \lambda_p. p \) and \((p \text{ equals } \text{rain}) \lor (p \text{ equals } \text{not rain}))\)

• The denotation of this at the actual world \( w \) is

  \( \lambda_p. p^{\forall w} \land ((p = \text{rain}) \lor (p = \text{not rain})) \)

  i.e. the singleton of \( \text{rain} \) or \( \text{not rain} \), whichever is factual.

Short Answers to Polar Questions (2/2)

• So we want the grammar to be such that the short answer yes in this context will proffer (push onto the PUC stack) rain, and the short answer no will proffer not rain.

• Moreover, for all this to work, you have to be able to retrieve the question I answered (granted, this is not very hard, since you just asked it).

• My answer is anaphoric to, or presupposes, that question, in the sense that it commits me to your being able to perform that retrieval.

• The dynamic meaning of yes (resp. no) is the context change whose domain is the set of contexts in which

  – the current QUD has the form whether \( p \)

  – the DT is set to F

  and which changes the context by proffering \( p \) (resp. not \( p \)) and resetting DT to T.

Short Answers to Unary Wh-Questions (1/3)

• If I come back from the barn and you wonder which donkeys brayed, it would be reasonable for you to delimit our communal inquiry by asking: Which donkeys brayed?

• Since the CG is a Lewis system and the proposition bray c is independent of it, the addition to the CG of bray c or not (bray c) is equally informative to you.
• This is basic motivation behind the plus-or-minus Karttunenesque (static) semantics for Which donkey brayed?: which donkey bray = def \\
\[ \lambda_p. \text{a donkey } (\lambda_x.(\text{whether } (\text{bray } x) p)) \]

• The denotation of this at the actual world \( w \) is \\
\[ \lambda_p. p@w \land \exists_x. (\text{donkey } x) \land ((p = (\text{bray } x)) \lor (p = (\text{not } (\text{bray } x)))) \]

i.e. the set of all facts which are of either of the forms (bray \( x \)) or \( \text{not } (\text{bray } x) \), for some \( w \)-donkey \( x \).

**Short Answers to Unary Wh-Questions (2/3)**

• So we want the grammar to be such that the short answer Chiquita in this context will proffer (push onto the PUC stack) \( \text{bray c} \), and the short answer not Chiquita will proffer \( \text{not (bray c)} \).

• Again, for all this to work, you have to be able to retrieve the question I answered; and my answer is anaphoric to, or presupposes, that question, in the sense that it commits me to your being able to do so.

• But (and this is a feature the polar question lacked), either way you also learn that (donkey c) if you didn’t already know it.

• Thus this proposition should be added directly to the CG if it is not already there. According to our terminology, this is a conventional implicature.

**Short Answers to Unary Wh-Questions (3/3)**

To summarize: the dynamic meaning of a short answer of the form \( a \) (resp. \( \text{not } a \)) is the context change whose domain is the set of contexts in which

• the current QUD has the form which \( P \ Q \) (anaphora)

  Here we call \( P \) and \( Q \) the domain restriction and the continuation of the question, respectively.

• DT is set to F (generalized presupposition)

and which changes the context by

• adding \( Q a \) (resp. \( \text{not}(Q a) \)) to PUC (proffered content)

• adding \( (P a) \) directly to the CG (conventional implicature)
Wrong about Lieberman, Two Ways

1. A: Which Democrats are moderate? B: JOE LIEBERMAN (for one). C: LIEBERMAN?! HE’s not moderate! He’s not even a Democrat!

2. A: Which Democrats are moderate? B: JOE LIEBERMAN (for one). C: LIEBERMAN?! HE’s not a Democrat! # He’s not even moderate.

Explanation: Not only is what’s PROFFERED false, even what’s WARRANTED, which is the last thing you’d expect me to be taking issue with, is false!

Comparison with Conventional Wisdom (1/3)

- Short answers to *wh*-questions are essentially like long answers with the portion of the answer congruent to the continuation “ellipsed”, that is they are (rhematic) foci.
- ‘Focus evokes alternatives’. There is no clear sense in which this is the case. By answering Chiquita or not Chiquita to which donkeys brayed, I do conventionally implicate donkey c, but nothing is added to the account by saying that this ‘evokes’ Burrita, Eeyore, etc.

Comparison with Conventional Wisdom (2/3)

- ‘Negation targets at-issue meaning’. This seems essentially right, at least for answers.
- In languages like K’iche’ and Tagalog, focus-fronted sentences are negated in the same way that non-focus sentences are, and the negated short answers have the same dynamic meaning as the negated long answers whose continuations were not “ellipsed”.
- In other words: the dynamic meaning of *not S* is the same as the dynamic meaning of *S* except for the (propositional!) negation of the proffered content: they have the same presupposition and the same CI.

Comparison with Conventional Wisdom (3/3)

- ‘Negation can associate with focus’. There is nothing in languages like K’iche’ and Tagalog that relates to this.
- To address it, we need a precise analysis of English negative answers (such as he didn’t beat CHIQUITA) to positive *wh*-questions (such as which donkeys did Pedro beat).
- This should result in the same dynamic meaning as the one for the short answer not Chiquita to the same question: to put it informally, the negation immediately outscopes the operator formed by focussing Chiquita.
• There should be another analysis of the same string, with the same intonation, as a positive answer to the negative question which donkeys didn’t Pedro beat, in which the negation only scopes over the continuation. (This analysis is much more straightforward.)

Coming Attraction: Alternative Questions (1/2)

• Alternative questions, e.g. is it sleetiing↑ or hailing↓ ‘suggest’ that exactly one of alternatives is true.

• We might call this a CI: it is conventionally triggered (by the boundary tones, falling on the last alternative, rising on the others), but not proffered, and not presupposed.

• But there can be embedded alternative questions, such as Pedro wondered whether it was sleetiing↑ or hailing↓.

Coming Attraction: Alternative Questions (2/2)

• This is reminiscent of old debates about projection of (putative) presuppositions (e.g. clefts and pseudoclefts) through propositional attitudes: the implication is not an exclusive disjunction, but Pedro’s belief in one.

• Maybe this is an instance of a CI being anchored not to the speaker, but to an embedded POV?

• Or should we instead say that wondering whether S↑ or S’↓ entails believing the exclusive disjunction?

• What would have to be the proffered content of the alternative question in order for that to be the case?