Speech Acts:
Dynamic Force and Conversational Update
Lecture 3: Questions

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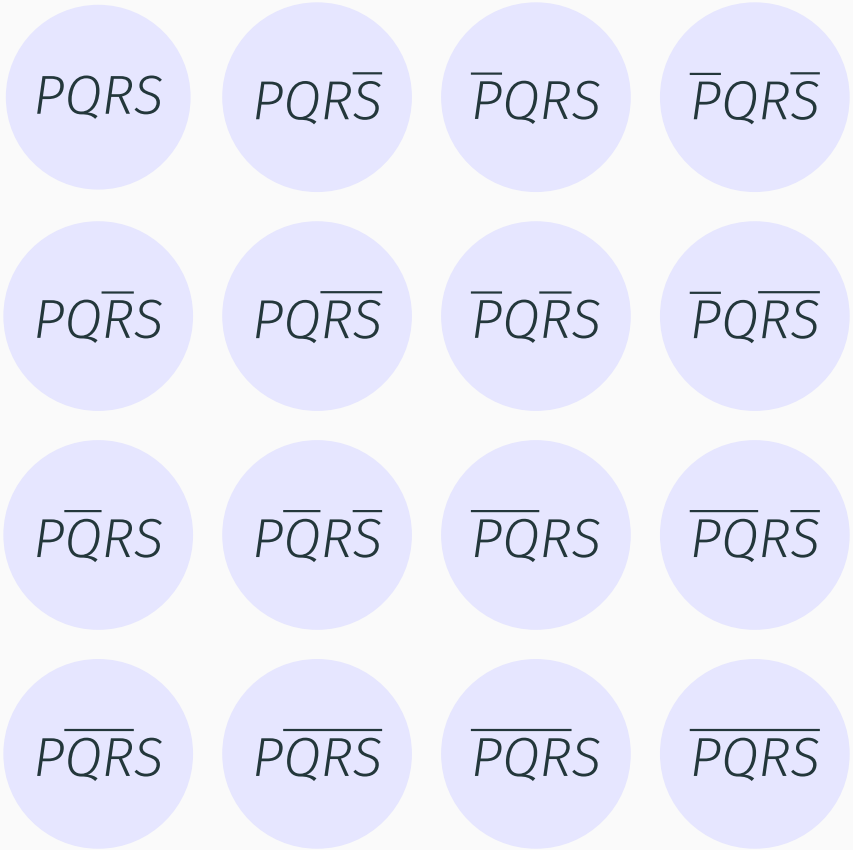
Inquiry

Refresher: Inquiry

Inquiries are conversations focused on the cooperative exchange of information about the actual world.

The basic conversational move in a game of inquiry is proposing to update the common ground via the essential dynamic effect of assertion.

These moves are made by uttering declarative sentences like ‘Lithium batteries are delicious’.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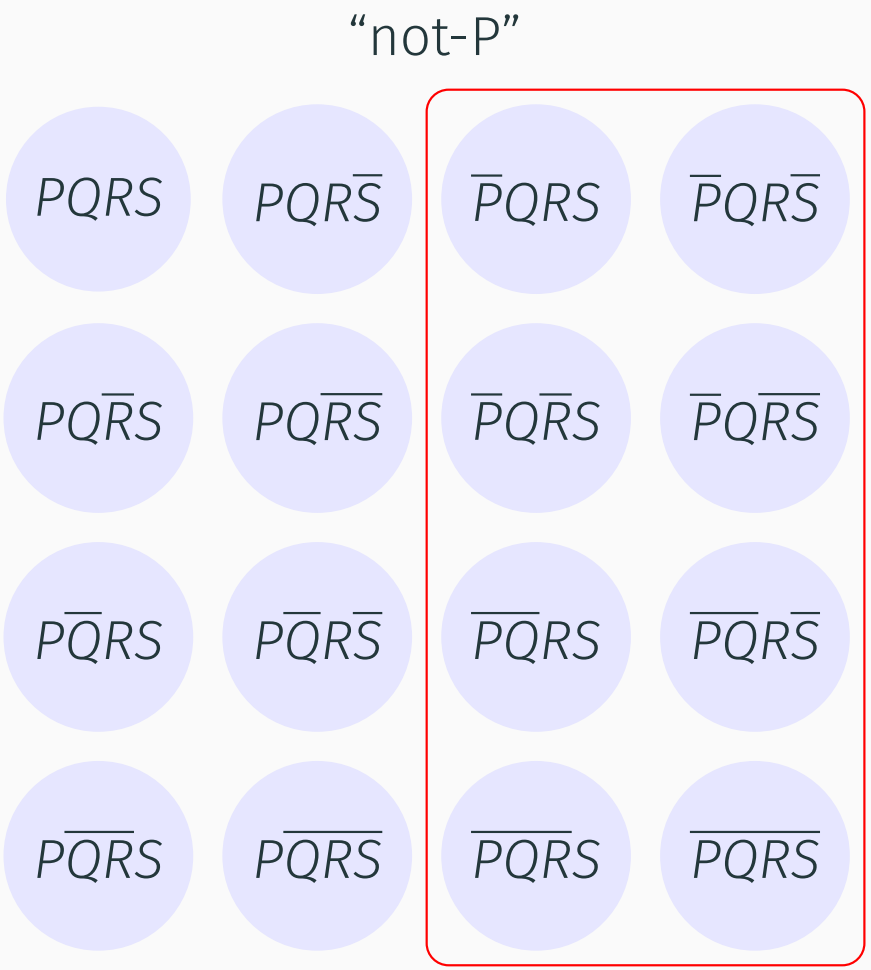
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Questions in Inquiry

Some reasons to expand our picture of inquiry to include questions:

- We're trying to account for what happens in inquiry and people ask questions in the course of inquiry.
- The aim of inquiry is to figure out "the way things are" in the actual world (Stalnaker 1978), and this aim can be conceived in terms of a question: What is the way things are like? This is what Craige Roberts (1996) calls The Big Question.

Asking Questions

Let's expand our BS model of conversation so that it now includes two basic moves: setup moves and payoff moves.

Setup moves are questions asked with interrogative clauses and payoff moves are assertions made with declarative clauses. We already have a model of how payoff moves alter the context:

- The speaker proposes to update CS_w^c with p.
- If accepted, CS_w^c is updated with p intersectively.

The question is whether or not adding a set of setup moves is a merely superficial expansion.

We can start by thinking about the kinds of conversational effects that questions have.

Relevance

Setup moves appear to place constraints on the kinds of payoff moves that are conversationally possible.

(1) a. What are you doing tonight?
    b. I'm going to the cinema.

(2) a. Is dad ever coming back?
    b. ? I'm going to the cinema.

(3) a. Do you want to get a drink tonight?
    b. I'm going to the cinema.

Intuitively, the only payoff moves that are appropriate in light of some question are those that address the question.

Interpretation

Sometimes questions are what render sentences interpretable / intelligible in the first place:

(4) a. ? He's home.

b. Where's Archie? He's home.

c. Where's Garfield? He's home.

This has even lead some philosophers to claim that questions play a constitutive role in determining assertoric content (Schoubye & Stokke 2016) and assertoric commitments (Hoek 2019).

(Buchanan & Schiller (2022, 2023) dispute this but acknowledge that there is an interpretive effect.)

Interpretation

This is especially pronounced when it comes to focus:

(5) Who is coming to the picnic?

a. JOHN is coming to the picnic.

b. # John is coming to the PICNIC.

Intuitively, the speakers of (6a) and (6b) are addressing the questions 'Where is Bogdan going?' and 'Who is going to the barbecue?' respectively.

(6) a. Bogdan is going to the BARBECUE.

b. BOGDAN is going to the barbecue.

Inquisitive Force

Finally, questions appear to put some demand on us to address them. A dialogue like (7) is very unnatural and awkward, and the respondent appears to be evasive.

(7) a. Hey are you coming to my birthday party?

b. It's awfully nice out today.

This has lead many to claim that questions are a type of directive.[1]

[1] See Lewis's (1969) *Convention*. Craige Roberts takes up this claim in some of her influential work on Questions Under Discussion.

Questions and Update

How do we make sense of this effect? Let's consider two options:

- BS. Conversational moves are governed by the interaction of linguistic conventions, static background norms of cooperative conversation and a dynamic information state (CG). Questions contribute information to the CG, and in conjunction with operative background norms this constrains the possible moves that can subsequently be made.
- QUD. There is some special conversational register that questions directly update (i.e., by proffering semantic objects whose type matches the type of object contained in that conversational register). This register also bears on what is conversationally possible.

BS Questions

BS Questions

On the next few slides we'll try to motivate a BS account of questions, however what we'll see is that this is very difficult.

We'll see that intuitively questions do not contribute truth-conditional information, but rather make some other kind of at-issue contribution to a discourse.

Moreover, even if we assume that questions function by contributing truth-conditional information, it will be difficult to locate any particular content for them that eliminates wh-clauses but nevertheless explain their conversational effects.

wh-Questions and Polar Questions

Polar interrogatives are yes/no questions like?

(8) Is Archie here?

(9) Are we having tofu?

wh-questions, meanwhile, include a wh-clause:

(10) Who is here?

(11) What are we having for dinner?

But wh-questions can decompose into lists of polar questions:

(12) Who is here?

a. Is Betty here?

b. Is Veronica here? ...

Inappropriate Answers

On the BS account, the conversational effect of a question is determined by the propositional content it contributes to the CG.

If this is the case, then how do we explain the following infelicity?

(13) a. Where do you want to go to dinner?

b. # That's false.

As we saw last time, there's a lot of content that makes its way into the CG without being the possible target of anaphora:

(14) a. Maggie quit smoking. (Presupposes she smokes$_i$)

b. # That's$_i$ false.

(15) a. Barack Obama, my sister's boyfriend, is here.

b. # I love her!

Inappropriate Answers

But questions can be targeted for anaphora:

(16) a. When did Maggie$_i$ quit smoking?

b. She$_i$ didn't.

(17) a. Are propositions sets of possible worlds?

b. How apt!

So a BS account of questions faces the awkward problem of explaining why, given that questions proffer propositional contents for addition to the CG, they are targetable by anaphora but do not seem truth-apt.

Questions and Attitudes

What could the propositional content expressed by a question be? Questions express a desire to know (van Elswyk 2023). Consider the question 'Will Jenny come to dinner?' uttered by some speaker S. The propositional content might be:

- $\mathrm{Des}_S(\mathrm{K}_S[\text{Jenny comes to dinner}])$

But this is very unintuitive, unless we assign to the desire a wh-clause as compliment (Drucker 2020), in which case we have an irreducible inquisitive content in our psychosemantics.

Alternatively, perhaps the question expresses something like:

- $\mathrm{Des}_S(\mathrm{K}_S[\text{Jenny comes to dinner}] \vee \mathrm{K}_S\neg[\text{Jenny comes to dinner}])$
- Des_S:

$$((\text{[Jenny comes to dinner]} \rightarrow \mathrm{K}_S\text{[Jenny comes to dinner]}) \wedge (\neg\text{[Jenny comes to dinner]} \rightarrow \mathrm{K}_S\neg\text{[Jenny comes to dinner]}))$$

Questions and Attitudes

But attitude ascriptions lack the attested strength of questions when it comes to constraining future conversational behavior.

Note that the following sequence appears to be felicitous:

(18) I really want to know who won the game. But don't tell me.

Whereas (19) appears to be a contradiction or retraction:

(19) Who won the game? # Don't tell me.

Desire ascriptions like (18) are clearly related to questions, but they make different conversational contributions.

Questions as Answers

Maybe we can locate a conversational difference between questions and assertions in the nature of the proposal to update.

First note that BS accounts draw a distinction between the information we update on and the proposal to update on that information. One way to account for this is to say that when someone asserts p, you automatically update on the proposition that they propose a p-update, and there are various rules about what to do when such information enters the common ground.

Now let's say that a polar question proposes that the CG be updated with whichever of the propositions constitutes its answer, and what it is to accept such a proposal is to update the CG with the correct answer. Such a proposal has different rules of response, but still updates CS^c_w via intersective function.

Questions as Answers

CS_w^c at t_i is the set of worlds compatible with everything the participants in c for the purposes of c in w at t_i.

Now suppose someone asks a question by uttering the sentence 'Is Lithium a gas?'. Let's say that to accept 'Yes' is to update on the proposition p and to accept 'No' is to update on its negation $\neg p$.

On the account under consideration, this question is a proposal to update CS_w^c with whichever of p or $\neg p$ is true. Such a proposal is then carried out via the rule of assertion.

If the proposal is not rejected, CS_w^c is updated with p intersectively...

On the account under consideration, then, to ask a polar question is to propose to update the context via the essential dynamic effect of assertion with whichever of that question's possible answers is true.

Questions as Answers

This view has two serious problems:

- The first is that, intuitively, there is an intermediate step between asking a question and answering it, during which time we engage in inquiry about the question. Accepting a question, then, cannot just be the same thing as updating on the proposition that constitutes its answer.
- The second is that we can give false answers to a question, and still thereby answer the question (and have a discourse that proceeds as normal) which makes it hard to assign a particular propositional content to a question.

One might suggest that a polar question proposes to update the CG with the disjunction of propositions that constitute an answer.

But it's hard to explain how this could compel inquiry without involving some kind of discourse-level commitment.

Semantics for Questions

Semantics for Questions

Informally, we can say that the meaning communicated by a question is a set of possible answers.

If we think of these possible answers as propositions (sets of possible worlds) then questions are sets of sets of possible worlds.

- Assertions proffer semantic objects of type type $< s, t >$.
- Questions proffer semantic objects of type $<< s, t >, t >$.

This gives us an intuitive way of explaining how questions – conceived as setup moves – constrain assertions qua payoff moves: the meaning proffered by a question is equivalent to a set of possible payoff moves.

A Simple Alternative Semantics

The set of alternatives for any clause is the set of propositions you get from (a) abstracting on the *wh*-elements of the clause, and (b) applying the resulting abstract to every entity in the domain that is of the same type as the *wh*-phrase denotes.

(20) a. Who did Mary invite?

b. ? (who(λx. Mary invited x))

The meaning of a *wh*-question Q is the set of propositions you get from abstracting on that question's *wh*-elements (q-alt(Q)):

(21) Who is here?

a. $\{\{w|\text{Betty is here in } w\}, \{w|\text{Veronica is here in } w\}\ldots\}$

(22) What time is it?

a. $\{\{w|\text{It's 12:00 in } w\}, \{w|\text{It's 12:30 in } w\}\ldots\}$

Questions and (Partial) Answers

An answer to a question is a proposition; to answer a question is to put forward a proposition to update the CG via the assertion rule.

A partial answer to a question Q is a proposition that entails an evaluation to at least one alternative in q-alt(Q), or alternatively answers at least one of Q's polar subquestions.

A complete answer to a question Q is a proposition that entails an evaluation to every alternative in q-alt(Q), or alternatively answers every one of Q's polar subquestions.

Partial and Complete Answers: Examples

Let's assume a domain with Betty, Veronica, and Archie.

Partial answers:

(23) Who is coming to dinner?

a. Betty is.

b. Someone is.

c. Archie is not.

d. Either Betty or Veronica is.

Complete answers:

(24) Who is coming to dinner?

a. Only Betty.

b. Betty and Veronica are, Archie is not.

c. Everyone.

Questions and Entailment

"A question $q1$ entails another question $q2$ iff answering (i.e., giving an answer to) $q1$ yields a complete answer to $q2$."

(Roberts 1996/2012: 12; cf. Groenendijk & Stokhof 1984: 16)

"A question $q1$ contextually entails another $q2$ iff answering $q1$ in a discourse context with common ground [CG] (a set of propositions) is such that [CG] $\cup$ Ans ($q1$) entails a complete answer to $q2$."

(Roberts 1996/2012: 12)

Entailment: Examples

Let's assume a domain with individuals Betty, Veronica, and Archie and the foods bagels, tofu.

(25) Who is eating what?
   a. What is Archie eating?
   b. What is Betty eating?
      i. Is Betty eating bagels?
      ii. Is Betty eating tofu?
   c. Who is eating tofu?

The roots entail their branches. If it's CG that everyone eats one and only one thing, then an answer to (b_{ii}) contextually entails an answer to (b_i) and (b).

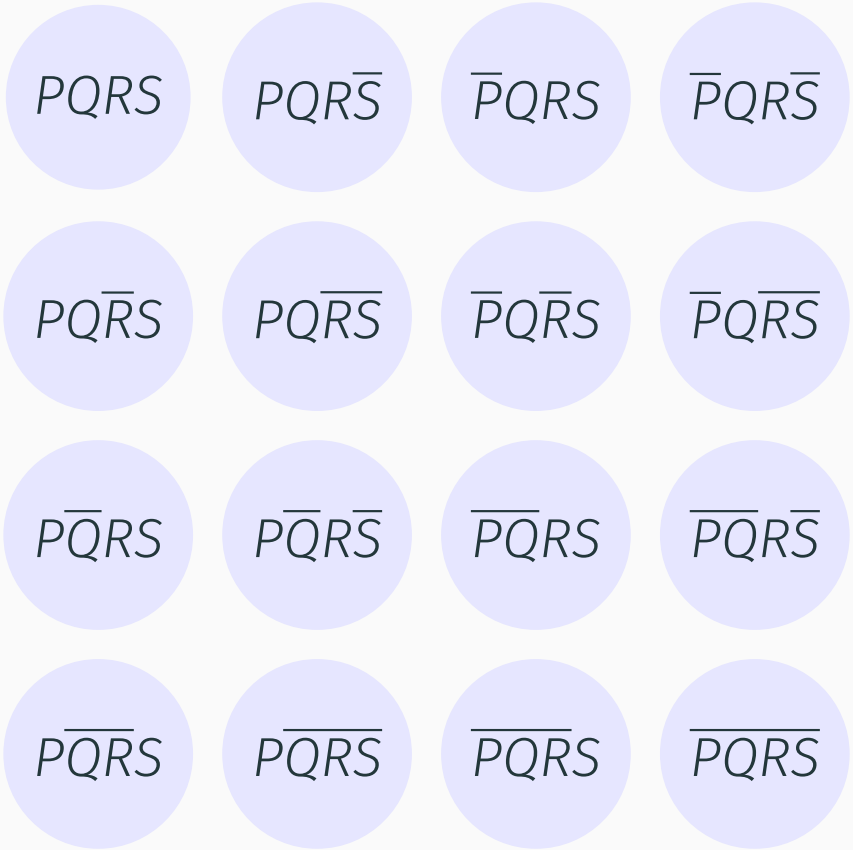
Strategies of Inquiry

When we engage in inquiry we are trying to answer questions about the world; either the Big Question or some question that is entailed by the big question.

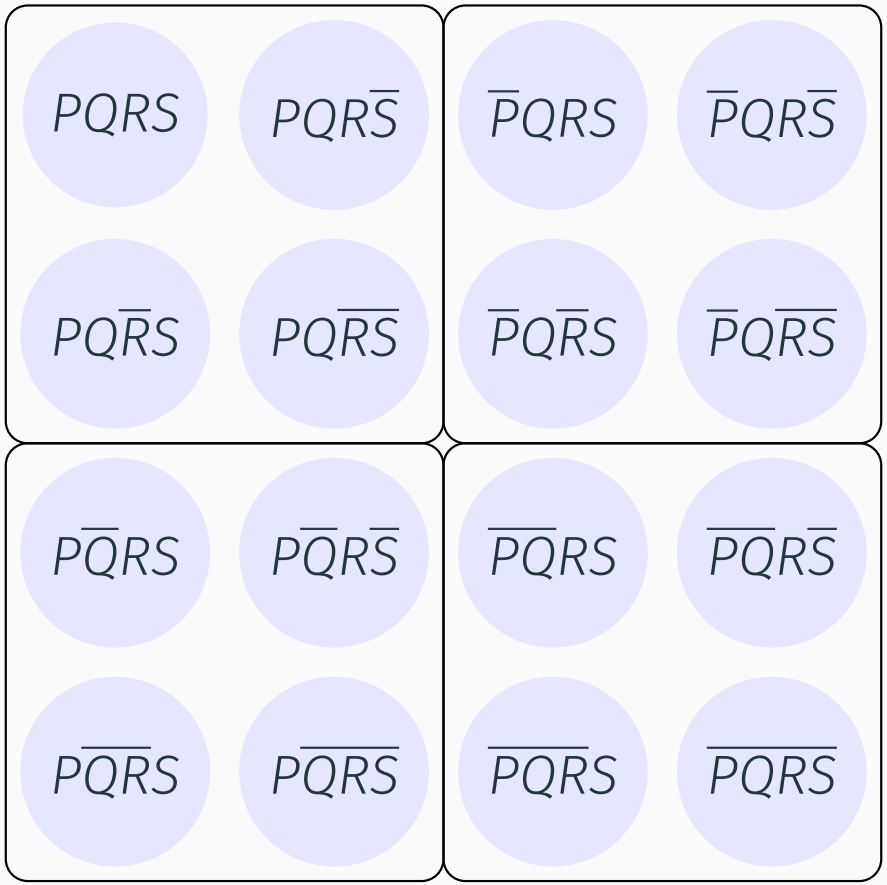
If we think of questions as communicating sets of possible answers, then what questions do is (at least) establish what proposals to update the context are relevant or appropriate (e.g., by indirectly conveying something about the information we would like to have).

Considering the logical relations between questions that we just established, it also provides us with some guidance about what sorts of subquestions are appropriate to put forward when we can't answer the question under discussion: those that provide us with partial answers to the question under discussion.

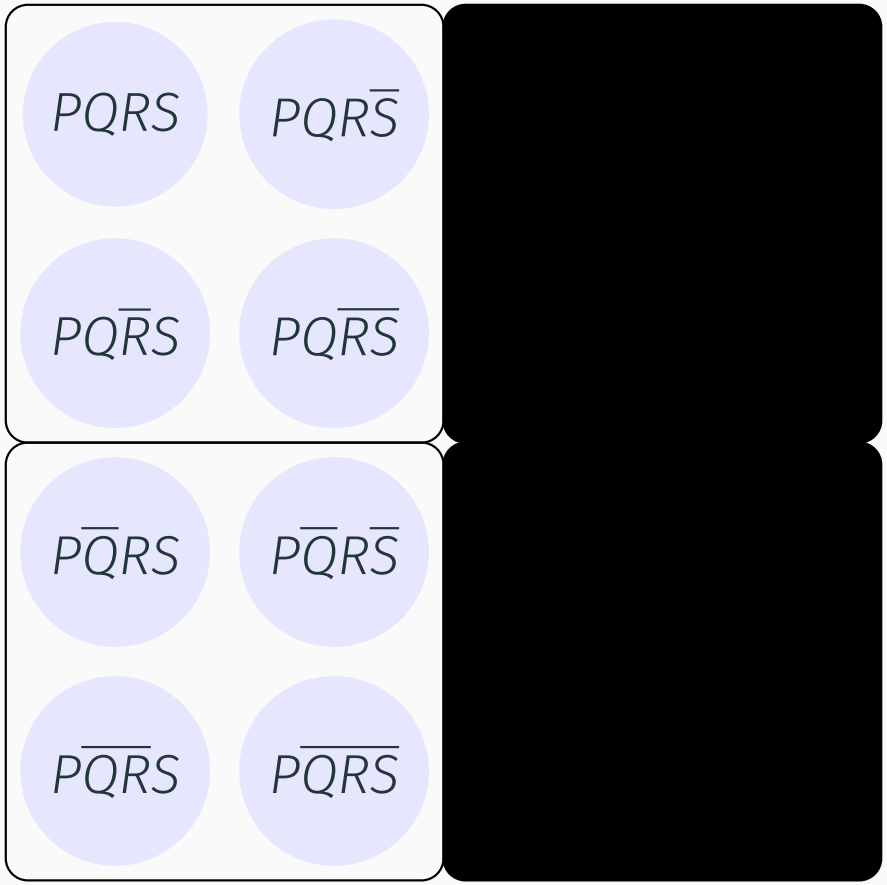
P = Betty eats meat; Q = Veronica eats meat; R = We have meatloaf



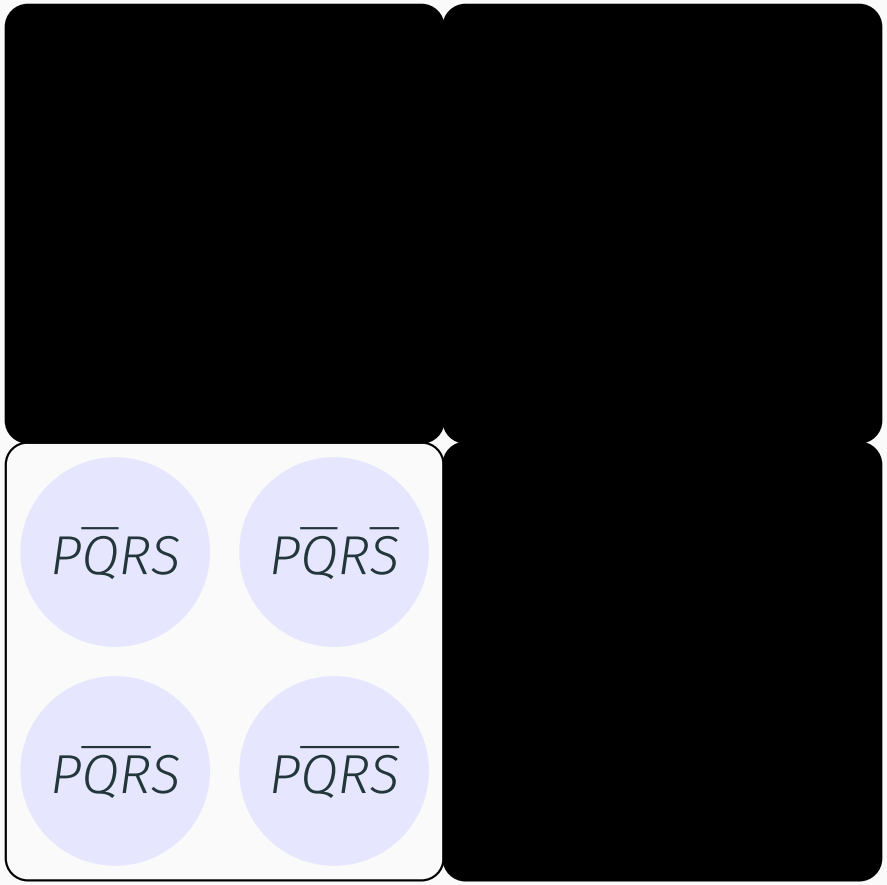
“Who eats meat?”



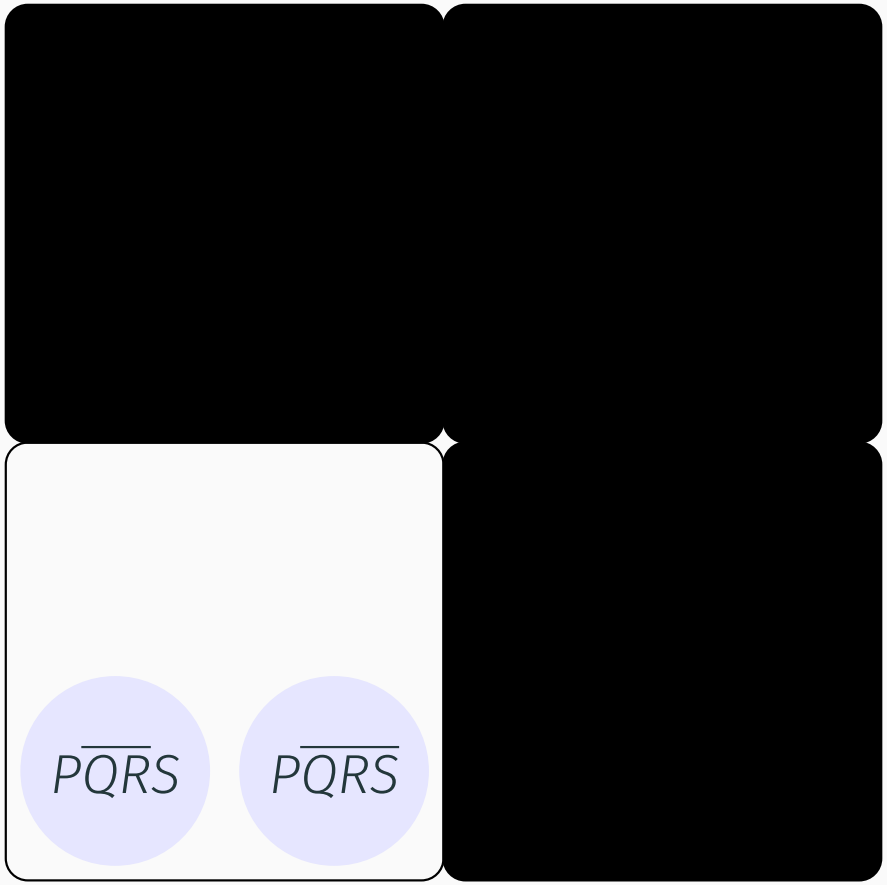
“Betty eats meat” (partial answer)



“Only Betty eats meat” (complete answer)



“Only Betty eats meat” (complete answer)



Questions Under Discussion

The Question Stack

Let's consider a detailed but informal gloss of the QUD framework:

Remember that the Common Ground (CG) is a collection of propositions accepted for the purpose of inquiry. (CS^c_w is the set of possible worlds that the CG leaves open.)

We'll posit list of questions: objects of type $<< s, t >, t >$ (sets of propositions), which we'll call the QUD. A question in the QUD is resolved when a complete answer to the question is entailed by the information in CS^c_w.

When a question is at the 'top' of this list, it becomes our conversational goal to answer the question by updating the CG (and thereby driving changes to the discourse context).

When a question that is put forward is accepted, we just add it to the top of the list. This question stays on the list until it is resolved.

The Question Stack

When you ask a question, this question gets added to the top of the question 'stack'. A question is only appropriate to ask if it is relevant to prior questions, and obeys the logic of the stack.

The question at the top of the stack at any given time is the current question under discussion, and when that question is completely answered we take it off of the stack and move on to the next question.

So in conversation we keep track of two things: the information we take for granted, and the question under discussion. Our goal in conversation is to answer these questions by updating the common ground.

Strategies of Inquiry Revisited

[One] interrogative q1 entails another q2 iff every proposition that answers q1 answers q2 as well. For example: What do you like? entails What food do you like?. An answer to the Big Question, What is the way things are?, entails the answer to any other possible question. We might call q1 in such a relation the superquestion, and any q2 which it entails we might call a subquestion. [. . .] Given the ultimate aim of discourse and the rationality of the participants, these types of relations are the principal factors that structure our moves. (Roberts 1996/2012: 6; cited in Schoubye & Stokke 2016: 770)

Information Structure

Let's expand our BS conception of a discourse context to the information structure of a discourse D:

$\text{InfoStr}_D = < M, Q, A, <, Acc, CG, QUD >$

- M. Set of setup and payoff moves in D.
- Q. Set of questions in M.
- A. Set of assertions in M.
- $<$. Order on M: $m_i < m_k$ iff m_i is made before m_k in D.
- Acc. Set of accepted moves in M.
- CG. Function from M to sets of propositions.
- QUD. Function from M to ordered subsets of Q∩Acc.

Information Structure

The QUD is a 'stack' of questions; for any given move $m \in M$ let's say that QUD(M) is the QUD up to the point at which m was uttered; given some question q s.t. $q \in Q \cap Acc$, $q \in QUD(m)$ iff:

- $q < m$.
- $CG(m)$ fails to entail an answer to q.

For any two questions q and q' in the QUD, if $q < q'$ then a complete answer to q' contextually entails a parial answer to q.

Intuitively, QUD yields the ordered set of all as-yet unanswered but answerable, accepted questions in Q at the time of utterance of q. When we accept a question, we add it to the top of the stack (we can refer to this with last(QUD(m))).

Relevance

Earlier we said that you can only make a move (assert something or add a question to the top of the question stack) if it is relevant to the current question at the top of the stack.

(26) “A move m is Relevant to the question under discussion q, i.e., to last(QUD(m)) iff m either introduces a partial answer to q (m is an assertion) or is part of a strategy to answer q (m is a question). ”(Roberts 2012: 21)

Simple Illustration (from Roberts)

(27) Who ate what?

a. What did Tina eat?

i. Did Tina eat bagels?

ii. Did Tina eat tofu?

b. What did Tony eat?

i. Did Tony eat bagels?

ii. Did Tony eat tofu?

The entailment relations between questions are as follows:

- $\vDash(27) = \{a, a_i, a_{ii}, b, b_i, b_{ii}\}$
- $\vDash(\text{a}) = \{a_i, a_{ii}\}$
- $\vDash(\text{b}) = \{b_i, b_{ii}\}$

$Ans(a_i) \cap Ans(a_{ii}) = Ans(a)$

$Ans(b_i) \cap Ans(b_{ii}) = Ans(b)$

$Ans(a) \cap Ans(b) = Ans(27)$

Simple Illustration (from Roberts)

This structure realizes a successful strategy for answering (27) partly in virtue of the fact that these questions stand in the entailment and partial-answer relations to one another that they do.

As each question gets asked, it's added to the stack, and when one of the subquestions gets answered (i.e., when the answer is added to the CG) it's taken off the stack.

When e.g., a_i and $a_i i$ are answered the CG will entail an answer to a, which will then be taken off the stack as well, etc. until the QUD is empty.

The Psychology of QUDs

If the CG tracks something like a common state of acceptance, then what does the QUD track?

One possibility: whatever collective attitudes support collaborative or joint decision making.

If we're on a walk together and we come to a crossroad, then we face a decision about which path to take. We can think of this in terms of mutual awareness of some set of options. This opens a host of questions:

- What is having or considering a question?
- What is it to have an option?
- Are there genuinely inquisitive attitudes?
- If so, how can these attitudes become common / mutual?

Recommended Reading

Craige Roberts (1996/2012) “Information structure in discourse”

Lauri Carlson (1982) *Dialogue games*

Charles Hamblin (1973) “Questions in Montague English”

Groenendijk & Roelofsen “Inquisitive semantics and pragmatics”

Daniel Hoek (2019) “Conversational exculpature”

Peter van Elswyk (2023) “Asking expresses a desire to know”