

The QUD Model of Discourse

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Discourse contexts

Foundations

- ▶ Some basic concepts (from Stalnaker (1978)):
 - (1) **Common Ground:** Set of mutually assumed background information.
 - ▶ Often modeled as a set of propositions, i.e. a set of sets of possible worlds.
 - (2) **Context Set:** Set of live options for what the world is like, given the CG.
 - ▶ Modeled as set of possible worlds.
- ▶ Note that the CS can be defined in terms of the CG:
- (3) $CS := \cap CG$

What is discourse?

A dynamic perspective

- ▶ Purpose of (many) discourses: cooperative inquiry, i.e. to determine what the world is like.
 - ▶ i.e. to enrich the CG ...or equivalently ...to reduce the CS.
- ▶ An exhaustive characterization of how the world is – what Roberts (1996/2012) dubs “The Big Question” – is too big a task!
 - ▶ Not all information is equally useful at a given moment!
 - ▶ What makes certain issues more important to us than others has to do with our *goals*.
 - ▶ Therefore, we establish certain subgoals, which take the form of issues to be resolved or Questions Under Discussion (QUDs).

QUDs introduced

Informal definitions

- (4) **QUDs:** A **QUD** is a partially structured set of questions which discourse participants are mutually committed to resolving at a given point in time.
- (5) **Questions:** A **question** is a set of alternative possibilities (corresponding in some way to the possible answers to the question).

More on QUDs

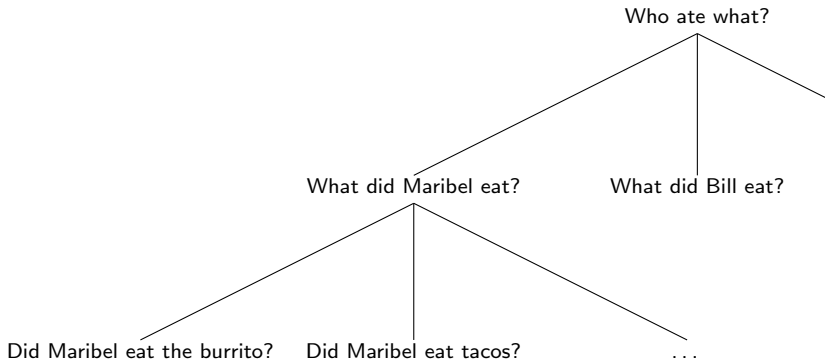
Explicit and implicit QUDs

- ▶ The QUD can be an overt question, but can also be implicit:
- (6) **Scenario:** We arrive and the classroom door is locked.
Likely QUDs: Why is the room locked? Who has the key?
Does Stefanie have the key? Is there another class in the room?
...
- ▶ Some Qs have inherent relationships, e.g. **subquestion** and **superquestion**.
 - ▶ e.g. “Does Stefanie have the key?” is a sub-question of “Who has the key?”
 - ▶ The most salient QUD at any point is called the **immediate QUD** or, more simply, **the QUD**.
- ▶ A worry: how do speaker track the QUD when implicit?

Discourse-trees

- ▶ Often we can get pretty far just with the immediate QUD.
- ▶ In cases where more structure becomes important, it can be helpful to think about these relationships as Büring (2003)'s **D(iscourse)-trees**:

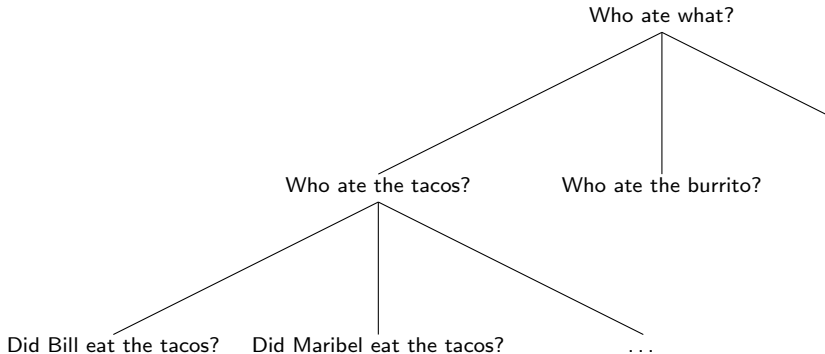
(7) Who ate what?



Discourse Strategies

- Note that there are often different *strategies* that can be pursued to arrive at an answer to a given QUD:

(8) **Who ate what?**



Questions and Assertions

What do Questions and Assertions do?

- ▶ Questions: uttering a question explicitly establishes a new QUD, while indicating that the speaker is not able to resolve this QUD.
- ▶ Assertions: Stalnakerian view generally treats their main effect as updating the CG/CS, Stalnaker (1978) himself says:

“to make an assertion is to reduce the context set in a particular way, provided that there are no objections from the other participants in the conversation. . . this effect is avoided only if the assertion is rejected.”.

- ▶ Ginzburg (1996) and other recent works (e.g. Farkas & Bruce (2010), Gunlogson (2001)): assertions are *proposals* to update CG/CS.

Questions and Assertions again

An inquisitive perspective

- ▶ Inquisitive semantics (e.g. Groenendijk & Roelofsen (2009), AnderBois (2012)) extends this view:
 - ▶ Questions and assertions are both potentially alternative-rich proposals to update the CG/CS.
 - ▶ Consider an assertion with a disjunction “*It’s raining or snowing right now.*”
 - ▶ Like a question, it puts forth multiple alternative ways the world might be.
 - ▶ Unlike a question, it is potentially informative (e.g. since it may rule out the possibility it is sunny).
- ▶ N.B. disjunction and indefinites (e.g. ‘a’, ‘some’, ‘one’) signal potential implicit QUDs in this view.

QUD effects in language

Answer the question ... or not

- ▶ Beyond providing a theory of discourse, many linguistic phenomena have been claimed to be driven by QUDs
 - ▶ See also Craige Roberts' (somewhat) annotated bibliography:
<http://www.ling.ohio-state.edu/~croberts/QUDbib/>
- ▶ Recently hot topic: linguistic content which is marked as being *orthogonal* to the QUD.

Intonational focus in English

Focus and QUD-congruence

- ▶ The sensitivity of focus to the QUD is most easily seen in Question-Answer pairs:

- (9) What did Karen eat?
- a. She ate the PASTA.
 - b. #She ATE the pasta
- (10) What did Karen do with the pasta?
- a. #She ate the PASTA.
 - b. She ATE the pasta

This can effect truth-conditional meaning if we add in *only*:

- (11) a. Karen only ate VEGETABLES.
b. Karen only ATE vegetables.

Focus w/ implicit QUD

- ▶ This also true with an implicit QUD:
 - (12) **Context:** A and B find the door to the classroom locked.
A: Oh, JONES has the key.
 - (13) Last year, Jones' father recommended Smith for the job.
This year, he recommended JONES
 - (14) Bill likes Mary.
No! He likes JANE!
- ▶ 'Focus-by-specification' cases with an indefinite/disjunction as antecedent aren't clearly implicit or explicit:
 - (15) Someone came to the party.
BILL came to the party

Focus across languages

- ▶ Prosody: English, Japanese, ...
- ▶ Movement: Hungarian, Yucatec Maya and many other Mayan languages
- ▶ Clefting: Northern Sotho, Malagasy and many other Austronesian languages
- ▶ Morphology: Gurune, K'ichee'

(16) **Yucatec Maya** (movement)

Ja' t-u yuk'aj Juan
water PFV-A3 drink Juan
≈ 'Juan drank water_F.'

(17) **Gurune** (morpheme /a)

Adongo zaã nyε la Atia maʔa
Adongo yesterday see FOC Atia only
≈ 'Adongo saw only Atia_F yesterday.'

- ▶ Differences in what can be focused in these languages (e.g. no sub-word focus or attributive adjective focus in YM).

Relevance implicatures

- ▶ QUD congruence gives us a way to formalize Grice (1975)'s Maxim of Relevance/Relation:

(18) a. Is Bill fixing the sink right now?

b. He went to the store.

(19) a. $x =$ He went to the store.

b. $y =$ He is not fixing the sink.

c. $y =$ He went for supplies as part of fixing the sink.

d. $y = \dots$

(20) a. A: Smith doesn't seem to have a girlfriend these days.

b. B: He has been paying a lot of visits to New York lately.

B's utterance violates RELEVANCE by not addressing the QUD.

- ▶ A assumes that B is (globally) cooperative, despite this.
- ▶ Therefore, B's intended meaning must indeed be relevant.
- ▶ $\therefore$ A infers that Smith's NY trips do in fact help resolve the QUD.

Other inferences

- ▶ Quantity implicatures (e.g. van Kuppevelt (1996), Zondervan et al. (2008))

(21) Harry brought bread or chips.

a. QUD 1: "What did Harry bring?"

b. QUD 2: "Who brought bread or chips?"

- ▶ Granularity of answers for certain domains (e.g. Malamud (2006), Potts (2012))

(22) A: Where do you live?

B: New England // Downtown // 222 Baker St. ...

- ▶ Exhaustivity, "mention-some" readings for questions (e.g. van Rooij & Schulz (2006))

(23) A: Who has got a light?

B: Mary does // (Only) Mary, Billy, and Jane do.

(Not)-at-issue content

Not addressing the QUD

- ▶ Above: assumption of QUD congruence, i.e. **at-issue**.
- ▶ Parts of utterances are construed as being **not-at-issue**:

Pragmatically not-at-issue

- (24) a. A: Why didn't Louise come to the meeting yesterday?
b. B: I heard that she's out of town.

Semantically not-at-issue

- (25) Louise is out of town, I heard.

- ▶ NB. also important for coordinating what the QUD is

Projection

The semantics of not-at-issueness

- ▶ Not at-issue content “*projects*” past other operators (Simons et al. (2011)).
- ▶ This property is easiest to illustrate with appositive relative clauses:

(26) John thinks that Bill, who is originally from Texas, secretly owns cowboy boots.

- a. **John thinks:** “Bill secretly owns cowboy boots.”
 - b. **Speaker claims that:** “Bill is originally from Texas” and “John thinks that Bill secretly owns cowboy boots.”
- ▶ The appositive fails to interact semantically with “think”, where at-issue content does (e.g. (26a)).

Appositives

- ▶ AnderBois et al. (in press): content of appositive RCs like (27-28) presented as orthogonal to the QUD.
- ▶ Simons et al. (2011): all “projective content” ($\approx$ appositives + presuppositions) is orthogonal to the QUD.
- ▶ (Though they have a somewhat different view of to what extent this is semantic)

- (27) a. Who had prostate cancer?
b. #Tammy's husband, who had prostate cancer, was being treated at the Dominican Hospital.
- (28) a. Who was being treated at the Dominican Hospital?
b. Tammy's husband, who had prostate cancer, was being treated at the Dominican Hospital.
- ▶ Recent experimental work by Syrett et al. (2012) claims to provide experimental support for this view.

Presuppositions

- ▶ Presuppositions give ‘background’ information, i.e. information that is taken to already be in the CG:

(29) a. Alejandro stopped smoking.

PRESUP: Alejandro used to smoke

b. Marie knows that Alejandro is a smoker.

PRESUP: Alejandro is a smoker

c. John saw the King of France.

PRESUP: There is a King of France

d. Oliver went running again.

PRESUP: Oliver went running before

- ▶ Like appositives, presupposed content is orthogonal to the QUD.
- ▶ It also “projects” past operators like negation:

(30) Marie doesn’t know that Alejandro is a smoker.

PRESUP: Alejandro is a smoker

Attitude Reports

- ▶ English attitude reports can respond to either QUDs about (1) the mental state itself or (2) its content (Simons (2007))

(31) Why isn't Louise coming to our meetings these days?

- a. Henry thinks/believes/said/heard/is convinced she left town.
- b. I thinks/believes/said/heard/is convinced she left town.

(32) What does Henry think/do you think?

- a. Henry thinks/believes/said/heard/is convinced she left town.
- b. I thinks/believes/said/heard/is convinced she left town.

- ▶ Are English attitude reports *ambiguous*?

Attitude Reports in Yucatec Maya

- ▶ In YM, I argue in new work that the two functions are (more or less) regularly distinguished:

(33) **QUD:** 'Is it going to rain?'

- a. K-in tukl-ik-e' yan u k'áax-al ja'.
IMP-A1 think-STAT-TOP will A3 fall-STAT water
'It's going to rain, I think.'
- b. # K-in tukl-ik yan u k'áax-al ja'.
IMP-A1 think-STAT will A3 fall-STAT water
'I think that it's going to rain.'

(34) **QUD:** 'Do you think it's going to rain?'

- a. #? K-in tukl-ik-e' yan u k'áax-al ja'.
IMP-A1 think-STAT-TOP will A3 fall-STAT water
'It's going to rain, I think.'
- b. K-in tukl-ik yan u k'áax-al ja'.
IMP-A1 think-STAT will A3 fall-STAT water
'I think that it's going to rain.'

Topics

- Topics in general in YM mark not-at-issue content:

- (35) a. Saamal-e' yan u k'áaxal ja'.
tomorrow-TOP will A3 fall water
'Tomorrow, it will rain.'
- b. Juan-e' p'u'uja'an.
Juan-TOP angry
'Juan is angry.'
- c. In nahil-e' yan u yaan-tal jun p'éel cha'an
A1 house-TOP will A3 exist-come one CL spectacle
sáamal-i'.
tomorrow-D4
'As for my house, there will be a party tomorrow'

- English is a bit more complicated, but translations with adjunct separated by comma intonation frequently also mark not-at-issue content.

Evidentials

- ▶ Evidentials are a grammatical category coding information source

(36) Cuzco Quechua evidentials

Faller (2002)

- Para-sha-n-chá
rain-PROG-3-CONJ
'It's raining' (EVID: I conjecture)
- Para-sha-n-si
rain-PROG-3-REP
'It's raining' (EVID: I was told)
- Para-sha-n-mi
rain-PROG-3-BPG
'It's raining' (EVID: I saw it)

- ▶ Other languages have different inventories of evidentials including: ego, visual, auditory, inferential, hearsay, and firsthand vs secondhand vs thirdhand reports.

Japanese Particles

- ▶ Japanese *Yo* indicates information which is new to the hearer and relevant for some decision problem the speaker faces (Davis (2009), Northrup (2012) *i.a.*)

- (37) Ame-ga futteiru (yo/ne/yo-ne).
rain-NOM falling YO/NE/YO-NE
'It's raining, (man/huh/right?)'
yo: Speaker is most authoritative on the matter.
ne Hearer is at least as authoritative as Speaker
yo-ne Hearer and Speaker are equally authoritative. (Northrup 2012)
- (38) **Context:** Souta sees Ayaka hasn't noticed that her train has arrived.
a. Densya kita {yo/#}.
train came {yo/∅}
'Your train is here!'

Summary

Today,

- ▶ We've reviewed the QUD model of discourse and seen:
 1. Intuitive picture of goal-driven nature of discourse
 2. Various semantic and pragmatic phenomena driven by QUD-congruence
 3. Content orthogonal to the QUD, sometimes conventionally so
- ▶ We've gotten a glimpse at the ways in which the encoding of (not-)at-issueness varies across languages.

Applications

1. Meaning which speakers intend to convey is enriched by assumption of shared knowledge about discourse (i.e. QUD and CG).
2. Much of the informational content of an utterance is found in not-at-issue content (background assumptions, what my evidence for things is, etc.)
3. Notions like evidentiality are crucial to helping resolve disagreements and other cases where speakers are not on the same page.
4. The ways in which speakers present information and divide up at-issue/not-at-issue content give clues as to what they take the goal of the discourse at a given point to be, what information they take for granted, etc.

Limitations

1. Needs more machinery to handle lower-level grounding (though see Ginzburg (2012))
2. Not equipped to handle imperatives since these are not really about the QUD or the CG in any obvious way.
3. How to integrate discourse goals (QUDs) with other participant goals?
4. Linguistic research in this area still in its infancy (Ginzburg and Roberts both in 1996)

QUD-driven Robots

- ▶ One robotics project integrating QUD models in some way:

SUBTLE (Situation Understanding Bot Through Language and Environment)

<http://www.seas.upenn.edu/~muri/index.html>

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