# Bias in Commitment Space Semantics: Declarative Questions, Negated Questions, and Question Tags[1]

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## 1 A Framework for Illocutionary Acts

Basic assumptions:

- Illocutionary acts change the social relations and obligations of the interlocutors. (cf. Searle 1969, Alston 2001)
- Such changes are functions from world/time pairs to world/time pairs, hence they have a semantic type (cf. Szabolcsi 1982, Singh 1993, Krifka 2014).

Formal model of such changes, based on Cohen & Krifka (2014).

- Inspired by model of common ground change (Stalnaker 1974)
- Captures not only the commitments that have accrued up to the current point in conversation, but also their licit future developments.
- This component will be crucial for the modeling of questions, of negation of questions, and of question tags.

Fundamental notion: **commitment state**,

- Modeled as the set of commitments publicly shared by the participants.
- Contains information: which participant is committed to which proposition.
- The basic function of a speech act is to change a commitment state, typically by adding new commitments.

(1) Update of commitment state c with speech act $\mathfrak{A}_\varphi$
$c + \mathfrak{A}_\varphi = c \cup \{\varphi\}$,
where φ: the commitment introduced by speech act $\mathfrak{A}_\varphi$.

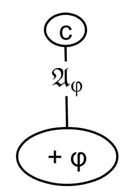


Figure 1: Update of commitment state

Requirements for pragmatically licit updates:

- The proposition φ is **not entailed** by c, otherwise, φ would be redundant.
- The proposition φ should be **consistent** with the propositions in c; e.g. should not contain φ and ¬φ.

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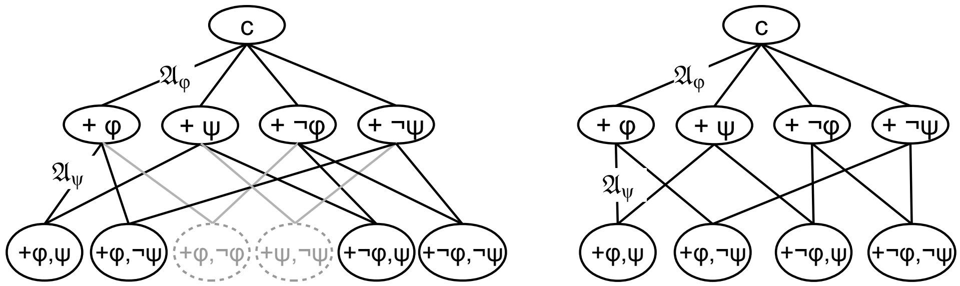


Figure 2: Possible updates of commitment state c with the propositions φ, ψ and their negations. Inconsistent commitment states are grayed out (left) or eliminated (right)

Notion of Commitment Spaces (CS):

- Commitment State plus the possible legal continuations
- $\cap$C, written $\surd$C: The **root** of a CS, its bsic commitment state.

(2) C is a Commitment Space iff
a. C is a set of commitment states
b. $\cap C \neq \varnothing$
c. $\cap C \in C$

(3) Update of a commitment space with an illocutionary act $\mathfrak{A}$, where $\mathfrak{A}$ is defined for commitment states:
$C + \mathfrak{A} = \{c \in C \mid \surd C + \mathfrak{A} \subseteq c\}$

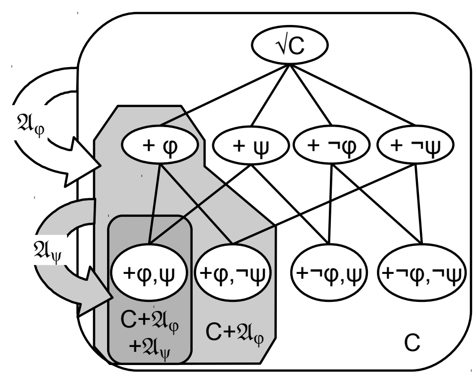


Figure 3:
Updates of commitment space

Modeling future development of a commitment state as "common ground management", cf. Krifka 2008.

Example for use of CS: Denegation (Searle 1969, Hare 1990).

(4) *I don't promise to come*
($\neq$ *I promise not to come*).

(5) Update of a commitment space with the denegation of $\mathfrak{A}$:
$C + {\sim}\mathfrak{A} = C — [C + \mathfrak{A}]$

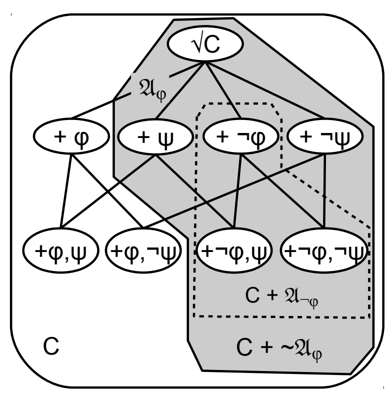


Figure 4:
Denegation of φ

Denegation does not change the root of the commitment space, but prunes its legal developments.

Speech acts that do not change the root:
**Meta speech acts** (Cohen & Krifka 2014).

Further combinations of speech acts (Cohen & Krifka 2014).

(6) Speech act conjunction: $C + [\mathfrak{A} \,\&\, \mathfrak{B}] = [C + \mathfrak{A}] \cap [C + \mathfrak{B}]$
$\approx C + \mathfrak{A} + \mathfrak{B}, \approx C + \mathfrak{B} + \mathfrak{A}$

(7) Speech act disjunction: $C + [\mathfrak{A} \vee \mathfrak{B}] = [C + \mathfrak{A}] \cup [C + \mathfrak{B}]$

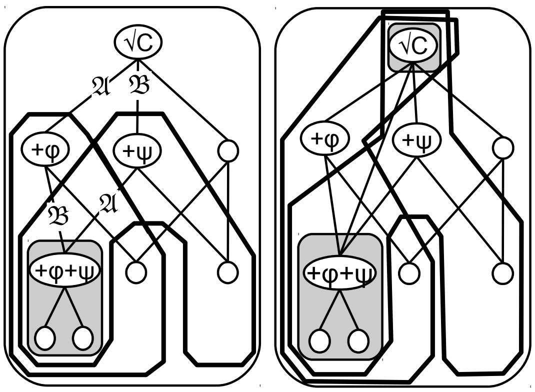

Figure 5:
Conjunction of basic and meta speech acts.

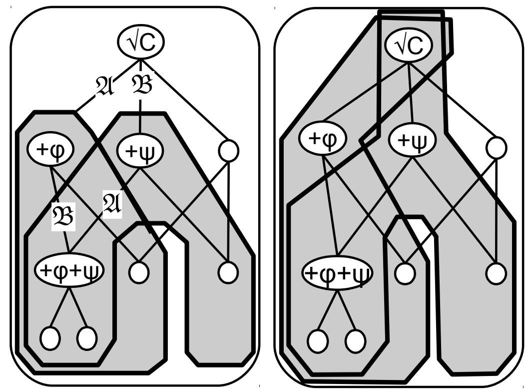

Figure 6:
Disjunction of basic and meta speech acts.

Notice: Disjunction of basic speech acts does not lead to a proper CS, hence is not defined. Why then do we have disjunction of root clauses that presumably denote speech acts (Gärtner & Michaelis 2008)? Possible operation of re-rooting by finding the immediately preceding commitment state of the minimal commitment states, here: $+ [\varphi \vee \psi]$.

**Commitment Space Developments** (**CSD**):

- Capture the development of the CSs in conversation
- Modeled by a sequence: $\langle C_0, C_1, \dots C_n\rangle$
- Indication of the actor of a change of the CS:

(8) Update of a commitment space development with speech act $\mathfrak{A}$ by actor S:
$\langle ..., [C]_{S'}\rangle +_S \mathfrak{A} = \langle ..., [C]_{S'}, [C + \mathfrak{A}]_S\rangle$

CSDs are necessary for the operation of **rejection** of a move.

(9) $\langle ..., [C]_{...}, [C']_{...}\rangle +_S \mathfrak{R}$
$= \langle ..., [C]_{...}, [C']_{...}, [C]_S\rangle$

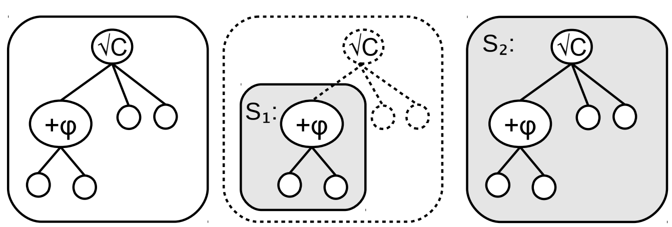

Figure 7: Rejection of a speech act

Cf. the notion of a "Table" in Farkas & Bruce 2010; conversational moves consists in putting a proposition or a set of proposition on the table, which then has to be accepted or rejected by the other participant.

Note that + is just shorthand for functional application:

(10) a. $c + \mathfrak{A}_{\varphi} = \mathfrak{A}_{\varphi}(c)$, where $\mathfrak{A}_{\varphi} = \lambda c[c \cup \varphi]$
  b. $C + \mathfrak{A} = \mathfrak{A}(C)$, where $\mathfrak{A} = \lambda C\{c \in C \mid \surd C + \mathfrak{A} \subseteq c\}$
  c. $\langle ..., [C]_{...}\rangle +_S \mathfrak{A} = \mathfrak{A}_S(\langle ..., [C]_{...}\rangle)$, where $\mathfrak{A}_S = \lambda\langle ..., [C]_{...}\rangle\ \langle ..., [C]_{...}, [\mathfrak{A}(C)]_S\rangle$
  d. $\langle ..., C\rangle +_S \mathfrak{R} = \mathfrak{R}_S(\langle ..., [C]_{...}\rangle)$,
  where $\mathfrak{R}_S = \lambda\langle ...,[C']_{...}, [C]_{...}\rangle, \langle ..., [C]_{...}, [C']_{...}, [C]_S\rangle$

Notice: Modeling of speech acts inspired by **modal logic,** with the process of update as a new kind of accessibility relation. A kind of "**conversational modality**".

## 2 Assertions

Assertion:

- S undertakes responsibility for what is claimed, by **committing** oneself to the truth of that proposition.
- Not: S wants A to believe a proposition (cf. Bach & Harnish 1979).

(11) a. *Believe it or not, I won the race.*
  b. *I know you won't believe me, but just for the record: I did not kill Beth.*

Hence: The wish of S that A believes the asserted proposition

- is not the main point of the illocutionary act of assertion
- is a conversational implicature of the act of assertion (can be cancelled)
- is a (likely) perlocutionary act associated to assertion.

Public commitments to truth of propositions come with social sanctions, e.g. loss of face, that are the reason for addressees to believe the proposition.

> "(...) the assuming of responsibility, which is so prominent in solemn assertion, must be present in every genuine assertion. For clearly, every assertion involves an effort to make the intended interpreter believe what is asserted, to which end a reason for believing it must be furnished. But if a lie would not endanger the esteem in which the utterer was held, nor otherwise be apt to entail such real effects as he would avoid, the interpreter would have no reason to believe the assertion" (CharlesSanders Peirce, CP 5.546, 1908).

The following examples express different commitments; argue against idea that assertion of φ expresses a commitment to belief φ (Lauer 2013).

(12) a. *I won the race.*
  b. *I believe that I won the race.*

Moore's paradox: It is self-defeating to commit to the truth of a proposition and at the same time commit to the proposition that one believes that it is not true.

Expression of public commitment by speaker $S_1$ to a proposition φ, using Frege's "Urtheilsstrich": $S_1 \vdash \varphi$. Notice: This is a proposition.

The conversational implicature that is generated by $S_1 \vdash \varphi$ arises as a second step from this public commitment of $S_1$.

(13) $\langle ..., [C]_{...} \rangle +_{S_1} S_1 \vdash \varphi \ +_{S_1} \varphi$
$= \langle ..., [C]_{...}, [C + S_1 \vdash \varphi]_{S}, [C + S_1 \vdash \varphi + \varphi]_{S_1} \rangle$

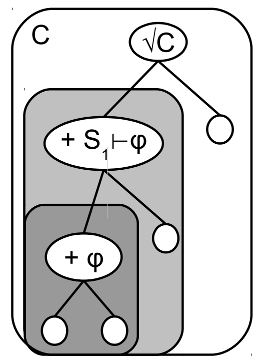

Figure 8: Assertion of φ, followed by conventional implicature

Proposal for syntactic realization:

- The operation $S_1 \vdash \varphi$ is represented in syntax by an "Evidential Phrase" (cf. Speas 2004);
  here: Commitment Phrase; Head of CmP: $\vdash$
- There is another head for assertion (in contrast to question), which I call ActP (cf. Speas 2004).

(14) $[_{\text{ActP}} [[_{\text{Act}^\circ} \, . \,] \, [_{\text{CmP}} [[_{\text{Cm}^\circ} \vdash ] \, [_{\text{TP}} \textit{I won the race}]]]]]$

With possible head and specifier movement:

(15) $[_{\text{ActP}} \textit{I} \, [[_{\text{Act}^\circ} \, . \, \textit{won}] \, [_{\text{CmP}} [t_I \, [_{\text{Cm}^\circ} \vdash t_{\textit{won}}] \, [_{\text{TP}} t_I \, t_{\textit{won}} \, \textit{the race}]]]]]$

Interpretation is with respect to a function $[\![...]\!]^{S_1S_2}$ that specifies the speaker $S_1$, the addressee $S_2$; additional parameters suppressed here.

(16) $[\![ [_{\text{ActP}} [[_{\text{Act}^\circ} \, . \,] \, [_{\text{CmP}} [[_{\text{Cm}^\circ} \vdash ] \, [_{\text{TP}} \textit{I won the race}]]]]] ]\!]^{S_1S_2}$
$= [\![ [_{\text{Act}^\circ} \, . \,] ]\!]^{S_1S_2}([\![ [[_{\text{Cm}^\circ} \vdash] \, [_{\text{TP}} \textit{I won the race}]] ]\!]^{S_1S_2})$
$= [\![ [_{\text{Act}^\circ} \, . \,] ]\!]^{S_1S_2}([\![ [_{\text{Cm}^\circ} \vdash] ]\!]^{S_1S_2}([\![ [_{\text{TP}} \textit{I won the race}] ]\!]^{S_1S_2}))$
with $[\![ [_{\text{TP}} \textit{I won the race}] ]\!]^{S_1S_2} =$ '$S_1$ won the race'
$[\![ [_{\text{Cm}^\circ} \vdash] ]\!]^{S_1S_2} = \lambda p \lambda S[S \vdash p]$
$[\![ [_{\text{Act}^\circ} \, . \,] ]\!]^{S_1S_2} = \lambda R \lambda \langle ..., C_{...} \rangle [\langle ..., C_{...}, [C + R(S_1)]_{S_1} \rangle]$
$= \lambda \langle ..., C_{...}, \rangle \, [\langle ..., C_{...}, [C + S_1 \vdash$ '$S_1$ won the race'$]_{S_1} \rangle]$

A function that updates the last CS of a CSD:

(17) (16)($\langle ..., C_{...} \rangle) = \langle ..., C_{...}, [C + S_1 \vdash$ '$S_1$ won the race'$]_{S_1} \rangle$
$= \langle ..., C_{...} \rangle +_{S_1} \mathbf{S_1} \vdash \varphi$, for short.

Example for speechact-related operator:

(18) $[_{\text{ActP}} \textit{I} \, [[_{\text{Act}^\circ} \, . \,] \, [_{\text{CmP}} \textit{honestly} \, [_{\text{CmP}} [t_I \, [_{\text{Cm}^\circ} \vdash \textit{won}] \, [_{\text{TP}} t_I \, t_{\textit{won}} \, \textit{the race}]]]]]]$

## 3 Reactions to Assertions

Typical reaction: Acknowledgement.

(19) $\langle ..., C_{S_1} \rangle$ + acknowledgement by $S_2 = \langle ..., C_{S_1}, C_{S_2} \rangle$

Reaction *yes*: $S_2$ also asserts this proposition, becomes responsible for its truth. The particles *yes* and *no* are sentential anaphors that pick up recently introduced propositions (Krifka 2013).

(20) $\langle ..., C_{...}, [C + S_1 \vdash \varphi]_{S_1}, [C + S_1 \vdash \varphi + \varphi]_{S_2}\rangle + S_2$: *Yes*.
$= \langle ..., C_{...}, [C + S_1 \vdash \varphi]_{S_1}, [C + S_1 \vdash \varphi + \varphi]_{S_1}, [C + S_1 \vdash \varphi + \varphi + S_2 \vdash \varphi]_{S_2}\rangle$

Reaction *no*: $S_2$ asserts the negation of φ. As a commitment state that would both contain φ and $S_2 \vdash \neg\varphi$ is incoherent, previous retraction necessary:

(21) $\langle ..., C_{...}, [C + S_1 \vdash \varphi]_{S_1}, [C + S_1 \vdash \varphi + \varphi]_{S_2}\rangle + S_2$: *No*.
$= \langle ..., C_{...}, [C + S_1 \vdash \varphi]_{S_1}, [C + S_1 \vdash \varphi + \varphi]_{S_2}\rangle + \mathfrak{R}_{S_2} + S_2 \vdash \neg\varphi$
$= \langle ..., C_{...}, [C + S_1 \vdash \varphi]_{S_1}, [C + S_1 \vdash \varphi + \varphi]_{S_2}, [C + S_1 \vdash \varphi]_{S_2}, [C + S_1 \vdash \varphi + S_2 \vdash \varphi]_{S_2}\rangle$

The resulting commitment space contains the information that $S_1$ is committed to φ, and that $S_2$ is committed to ¬φ (not a contradiction, in the logical sense).

Notice: In this setting, *no* requires a more complex change than *yes*, due to the necessity of retraction. But retraction is not an inherent feature of *no*:

(22) $S_1$: *I didn't win the race.*
$S_2$: *No, you didn't.*

The truth commitment by the first speaker $S_1 \vdash \varphi$ can be targeted by comments like *Don't say that!* or *Don't be a fool:* no grammaticized way to confirm or refute it.

## 4 Polar Questions and Reactions to Polar Questions

Questions as meta speech acts, modeling the legal continuations.

(23) $\langle ..., C_{...}\rangle + S_1$ to $S_2$: *Did I win the race?*
$\langle ..., C_{...}, [\{\surd C\} \cup C + S_2 \vdash \varphi \cup C \cup S_2 \vdash \neg\varphi]_{S_1}\rangle$

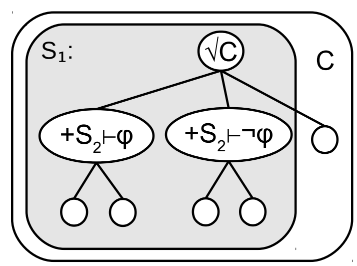

Figure 9: Bipolar question

Answers *yes* and *no*: No retraction required.

(24) a. (23) + $S_2$: *Yes*. = (23) + $S_2 \vdash \varphi$
b. (23) + $S_2$: *No*. = (23) + $S_2 \vdash \neg\varphi$

Non-congruent answers like *I don't know* or *I don't tell you* can be expressed if we assume a prior retraction of the last move.

(25) (23) + $\mathfrak{R}_{S_2}$ + $S_2$: *I don't know.* =
$\langle ..., C_{...}, [\{\surd C\} \cup C + S_2 \vdash \varphi \cup C \cup S_2 \vdash \neg\varphi]_{S_1}$,
$C_{S_2}, [C + S_2 \vdash$ '$\neg S_2$ knows whether $\varphi$'$]_{S_2}\rangle$

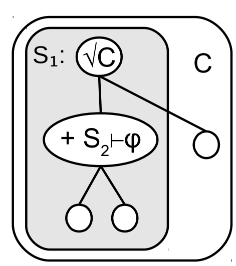

Figure 10: Monopolar (biased) question

In addition to such **bipolar** questions, we also can assume **monopolar** questions that offer just one option – e.g. for declarative questions (Gunlogson 2002).

(26) $\langle ..., C_{...}\rangle + S_1$, to $S_2$: *I won the race?*
$= \langle ..., C_{...}, [\{\surd C\} \cup C + S_2 \vdash \varphi]_{S_1}\rangle$

Answer *yes* straightforward, *no* requires a prior rejection, reflecting the bias.

(27) a. (26) + $S_2$: *Yes*. = (26) + $S_2 \vdash \varphi$

b. (26) + $S_2$: *No.* = (26) + $\mathfrak{R}_{S_2}$ + $S_2$: *No.* =
$\langle ..., C_{...}, [\{\sqrt{C}\} \cup C + S_2 \vdash \varphi]_{S_1}, [C]_{S_2}, [C + S_2 \vdash \varphi]_{S_2}\rangle$

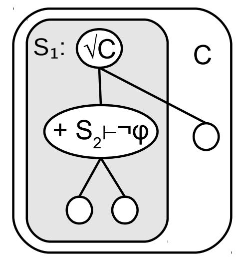

Figure 11: Monopolar negated question

Evidence that standard English polarity questions have a biased reading: Questions with propositional negation.

(28) $\langle ..., C_{...}\rangle$ + $S_1$, to $S_2$: *Did Ed not win the race?*
$\neq$ (23)
$= \langle ..., C_{...}, [\{\sqrt{C}\} \cup C + S_2 \vdash \neg\varphi]_{S_1}\rangle$

Derivation of question meanings:

- Same evidential phrase as for assertions (for information questions).
- The speaker requests commitment to the proposition by the addressee; This is expressed by an operator $[_{\mathrm{Act}^\circ}$ ? ].

(29) $[\![ [_{\mathrm{ActP}} [[_{\mathrm{Act}^\circ}\ ?\ \textit{Did}\ ]\ [_{\mathrm{CmP}}\ [[_{\mathrm{Cm}^\circ} \vdash \mathrm{t}_{\mathrm{did}}\ ]\ [_{\mathrm{TP}}\ \textit{I}\ \mathrm{t}_{\textit{did}}\ \textit{win the race}]]]]] ]\!]^{S_1S_2}$
$= [\![ [_{\mathrm{Act}^\circ}\ ?\ ] ]\!]^{S_1S_2}([\![ [[_{\mathrm{Cm}^\circ} \vdash]\ [_{\mathrm{TP}}\ \textit{I did win the race}]] ]\!]^{S_1S_2})$
$= [\![ [_{\mathrm{Act}^\circ}\ ?\ ] ]\!]^{S_1S_2}([\![ [_{\mathrm{Cm}^\circ} \vdash] ]\!]^{S_1S_2}([\![ [_{\mathrm{TP}}\ \textit{I did win the race}] ]\!]^{S_1S_2}))$
with $[\![ [_{\mathrm{TP}}\ \textit{I won the race}] ]\!]^{S_1S_2}$ = '$S_1$ won the race'
$[\![ [_{\mathrm{Cm}^\circ} \vdash] ]\!]^{S_1S_2} = \lambda p \lambda S[S \vdash p]$
$[\![ [_{\mathrm{Act}^\circ}\ ?\ ] ]\!]^{S_1S_2} = \lambda R \lambda\langle ..., C_{...}\rangle[\langle ..., C_{...}, [\{\sqrt{C}\} \cup C + R(S_2)]_{S_1}\rangle]$
$= \lambda\langle ..., C_{...}\rangle\ [\langle ..., C_{...}, [\{\sqrt{C}\} \cup C + S_2 \vdash \text{'}S_1 \text{ won the race'}]_{S_1}\rangle]$

This is the monopolar question meaning. What about bipolar questions?

- Verum operator introduced Falsum operator as alternative
- Bipolar question as **disjunction** of the two questions.

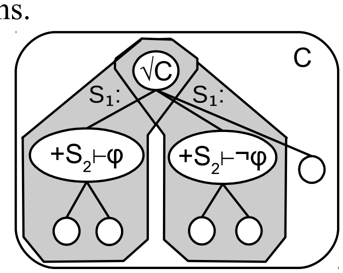

Figure 12: Disjunction of two monopolar questions

(30) *I DID win the race*.
Of the two propositions $\{\varphi, \neg\varphi\}$,
the proposition $\varphi$ is the true one.

(31) $[\![ [_{\mathrm{ActP}}\ [?\ \textit{did}]\ [_{\mathrm{CmP}} [\vdash][_{\mathrm{TP}}\ \textit{I}\ \mathrm{t}_{\textit{did}}\ \textit{win the race}]]] ]\!]^{S_1S_2}$
$\vee\ [\![ [_{\mathrm{ActP}}\ [?\ \textit{didn't}][_{\mathrm{CmP}} [_{\mathrm{TP}}\ \textit{I}\ \mathrm{t}_{\mathrm{didn't}}\ \textit{win the race}]]] ]\!]^{S_1S_2}$

$= \lambda\langle ..., C_{...}\rangle[\langle ..., C_{...}, [\{\sqrt{C}\} \cup S_2 \vdash \varphi \cup S_2 \vdash \neg\varphi]_{S_1}\rangle]$

Similar to the formation of an alternative question:

(32) *Did Ed win the race, or not? / or did he not win the race?*

But differences in yes/no answers:

- Alternative question (32) introduces **two** TP meanings of equal saliency, φ and ¬φ, consequently *yes* and *no* cannot be used, unclear which proposition.
- In (29), there is only one TP that introduces just one proposition, φ, as possible antecedent.

Natural treatment of alternative questions:
Disjunction of monopolar questions

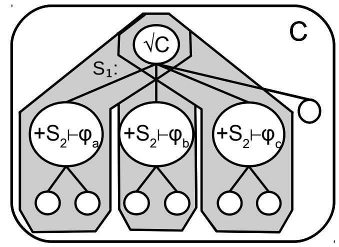


Figure 13: Alternative question / constituent question as disjunction of monopolar questions

(33) a. *Did Ed meet Ann, Beth, or Carla?*
b. *Who did Ed meet?*

Treatment of constituent questions as generalized disjunctions induced by wh-constituents, which have a basic indefinite reading.

(34) $[\![[_{\text{ActP}}\ \textit{who}\ [[_{\text{Act}^\circ}\ ?\ \textit{did}]\ [_{\text{CmP}}\ [[_{\text{Cm}^\circ}\vdash]\ [\textit{Ed}\ t_{\text{did}}\ \textit{meet}\ t_{\text{who}}]]]]]\!]^{S_1S_2}$
$= \bigvee_{x\in\text{PERSON}} \lambda\langle...,C_{...}\rangle[\langle..., C_{...}, [\{\surd C\}\cup C{+}S_2\vdash\text{'Ed met x'}]_{S_1}\rangle]$

Remark: In the current framework, questions are not essentially linked to disjunctions, different from Inquisitive Semantics. This provides for a natural way to account for question bias (Inquisitive Semantics, e.g. Farkas & Roelofseon 2015, needs extraneous means, like highlighting).

## 5 Negated questions

Questions with propositional or "low" negation, e.g. (28) and questions with high negation (cf. Ladd 1981, Han & Romero 2004, Romero 2006, Repp 2012).

(35) *Didn't Ed win the race?*

Boolean negation over the ComP:

(36) $[\![[_{\text{ActP}}[[_{\text{Act}^\circ}\ ?\ \textit{Did}]\ [_{\text{EvP}}\textit{n't}\ [[_{\text{Cm}^\circ}\vdash]$
$[_{\text{TP}}\ \textit{I}\ t_{\text{did}}\ \textit{win the race}]]]]]\!]^{S_1S_2}$
$= [\![[_{\text{Act}^\circ}\ ?]]\!]^{S_1S_2}([\![\textit{not}]\!]^{S_1S_2}([\![\vdash]\!]^{S_1S_2}$
$([\![[_{\text{TP}}\ \textit{I did win the race}]]\!]^{S_1S_2})))$
$= \lambda\langle..., C_{...}\rangle[\langle..., C_{...}, [\{\surd C\}\cup\neg S_2\vdash\varphi]_{S_1}\rangle]$

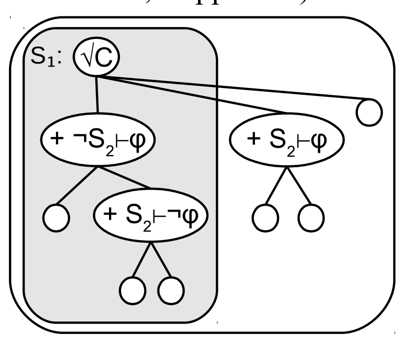


Figure 14: High negation question

$S_1$ proposes an update of C in which $S_2$ **excludes a commitment** for the proposition '$S_1$ won the race'.

Notice: $\neg S_2\vdash\varphi$ is weaker than $S_2\vdash\neg\varphi$, hence it does not constitute a bias of $S_1$ towards ¬φ, and neither a bias of $S_1$ towards φ. This explains that such questions can be used in contexts in which a bias towards ¬p should be avoided.

Cf. discussion in Büring & Gunlogson 2000; here my own examples.

(37) a. $S_1$ looks at the yellow pages of a small town, finds a restaurant "V-Day"
b. $S_1$ has no information but considers eating in a vegetarian restaurant.
c. $S_1$ looks at the yellow pages of a small town, only finds restaurants like "Meateaters delight", "The Big T-Bone", etc.

i. $S_1$: a, b, c: *Is there a vegetarian restaurant around here?*
ii. $S_1$: #a, b, #c: *Is there no vegetarian restaurant around here?*
iii. $S_1$: #a, b, c: *Isn't there a vegetarian restaurant around here?*

| Contextual evidence | i: no negation | ii: low negation | iii: high negation |
|---|---|---|---|
| a: There is a vegetarian restaurant | ok (mono) | # | # |
| b: neutral | ok (bi) | # | ok |
| c: There is no vegetarian restaurant | (#) | ok | ok |

- Büring & Gunlogson 2000: questions with no negation either have a bias towards the proposition, or have no bias.
- Here: this is due to the ambiguity between a monopolar and a bipolar reading.
- Questions with low (propositional) negation have a bias towards the negated proposition. This is evident from their monopolar interpretation.
- Questions with high negation can be used with a bias towards the negated proposition, but it also can be used if there is no (strong) bias.
- Can be attributed to the weaker demand that such questions put on the addressee, a non-commitment towards the proposition. Different from the use of non-negated questions in the "neutral" case, which asks the addressee to commit to either the proposition or its negation. Hence such questions can also be used if $S_1$ does not presuppose that $S_2$ knows the answer.
- With high negation questions, either answer, *yes* or *no*, requires reject first.

## 6 Question Tags

Question Tags come in two varieties (Cattell 1973):

- "a **matching** tag question means that the host clause is not put forward as the point of view of the speaker, but as one that is possibly that of the listener."

(38) *You are tired, are you?*

- **Reverse** question tags that have the opposite polarity of the host clause; "the speaker seems to be offering his own opinion and asking for agreement"

(39) a. *I have won the race, haven't I?* b. *I haven't won the race, have I?*

There are additional differentiations coming from different kinds of prosody (cf. Reese & Asher 2008, Dehé & Brown 2013), which will be disregarded here.

Analysis of **matching** question tags by **speech act conjunction** of an assertion and a monopolar question.

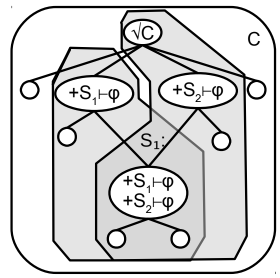

Figure 15: Matching question tag

(40) *I have won the race, have I?*

(41) $C +_{S_1} [⟦[_{\text{ActP}}\ [\ .\ ]\ [_{\text{CmP}} [\vdash]\ [_{\text{TP}}\ \textit{I have won the race}]]]⟧^{S_1 S_2}$ &

$⟦[_{\text{ActP}}\ [\ ?\ ]\ [_{\text{CmP}} [\vdash]\ [_{\text{TP}}\ \textit{I have won the race}]]]⟧^{S_1 S_2}]$

$= [C + S_1 \vdash \varphi] \cap [\{\surd C\} \cup C + S_2 \vdash \varphi]$

Overall effect of this move:

- The speaker $S_1$ proposes to $S_2$ that both $S_1$ and $S_2$ are committed to the proposition $\varphi$.
- That is, $S_1$ proposes dark central area in Figure 15 as new commitment space.
- $S_1$ can propose $S_2 \vdash \varphi$ because $\varphi$ is understood as a commitment that $S_2$ has already anyway.
- If $S_2$ does not react, then the proposed commitments obtain.
- If $S_2$ asserts $\neg\varphi$, this requires a previous reject operation, which will also reject that $S_1$ is committed to $\varphi$.

Analysis of **reverse** tag questions by speech act **disjunction**.

(42) *I have won the race, haven't I?*

$C +_{S_1} [⟦[_{\text{ActP}}\ [\ .\ ]\ [_{\text{CmP}} [\vdash]\ [_{\text{TP}}\ \textit{I have won the race}]]]⟧^{S_1 S_2} \vee$

$⟦[_{\text{ActP}}\ [\ ?\ \textit{have}\ ]\ [_{\text{CmP}}\ \textit{n't}[\vdash]\ [_{\text{TP}}\ \textit{I}\ t_{\text{have}}\ \textit{won the race}]]]⟧^{S_1 S_2}]$

$= [C + S_1 \vdash \varphi] \cup [\{\surd C\} \cup C + S_2 \vdash \varphi]$

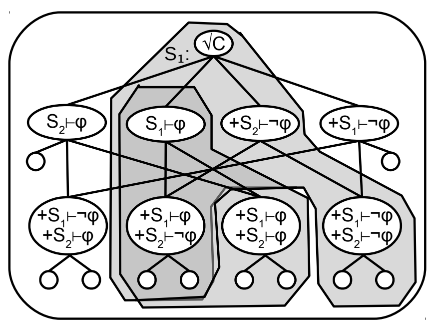

Figure 16: Reverse question tag

Overall effect of this move:

- Excludes that $S_1$ is committed to $\neg\varphi$ and $S_2$ is committed to $\varphi$.
  This means that if $S_2$ commits to $\varphi$, then $S_1$ is committed to $\varphi$ as well.
- If $S_2$ commits to $\neg\varphi$, then $S_1$ is not automatically committed to anything.
  $S_1$ has not achieved the intended backing of $\varphi$ by getting $S_2$ to be committed to $\varphi$ as well.
- This might be reason for $S_1$ to retract, by now asserting $\neg\varphi$ as well, or $S_1$ might stick with the commitment towards $\varphi$.
- The disjunctive interpretation is evident in languages that use a disjunction in question tags, as in Alemannic varieties of German, which use just disjunction *oder* as a question tag.