

Purver The Theory and Use of Clarification Requests in Dialogue

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Clarification forms

Non-reprise clarifications

- Cassie: You did get off with him?
Catherine: Twice, but it was totally non-existent kissing so
Cassie: What do you mean?
Catherine: I was sort of falling asleep.

Clarification forms

Reprise sentences

- Orgady: I spoke to him on Wednesday. I phoned him.
Obina: You phoned him?
Orgady: Phoned him.

Clarification forms

Reprise sentences with anaphora

- Anon 5: Oh he's started this other job.
Margaret: Oh he's started it?
Anon 5: Well, he he ... he works like the clappers he does.

Clarification forms

WH-substituted reprise sentences

- Unknown: He's anal retentive, that's what it is.
Kath: He's what?
Unknown: Anal retentive.

Clarification forms

Reprise sluices

- Sheila: No he's, he's being moved to troop 15.
Wendy: To where?
Sheila: Troop 15.
Wendy: Oh.

Clarification forms

Reprise fragments

- Lara: There's only two people in the class.
Matthew: Two people?
Unknown: For cookery, yeah.
- Ben: No, ever, everything we say she laughs at.
Frances: Who Emma?
Ben: Oh, yeah.

Clarification forms

Reprise gaps

- Laura: Can I have some toast please?
Jan: Some...?
Laura: Toast.

Clarification forms

Gap fillers

- Sandy: if, if you try and do enchiladas or
Katriane: Mhm.
Sandy: erm.
Katriane: Tacos?
Sandy: tacos.

Clarification forms

Conventional

- Unknown: You're making it up sir <unclear>
story.
Richardson: Pardon?
Unknown: You making that up?
Richardson: No.

Clarification readings

Clausal

- Source utterance is partially grounded
- Question asks about missing piece of interpretation

Example:

- Lara: There's only two people in the class.
Matthew: Two people?
Unknown: For cookery, yeah.

is it two people that you are asserting are in the class?

Clarification readings

Constituent

- Question asks about intended semantic content of a sub utterance.

- Frances: She likes boys called Leigh...B J.
Ben: B J.
Frances: She, she's writing a note
Ben: B J?
Frances: You know Ash, B J
Ben: What?
Frances: B J.
Ben: Don't mean nothing.
Frances: You know B J, it stands for blow job right.

Clarification readings

Lexical

- Asks what was uttered – asks about the surface form rather than the conversational move.
- Anon 6: here that sassafras has been named potentially unsafe for consumption, so don't put any in your mouth
Margaret: Saxa-what?
Anon 5: Saxa frall that's a plant!

Clarification readings

Corrections

- Frances: You know Amy?
Ben: Yeah.
Frances: Do you reckon that er is, her sister?
Her brother I mean?
Ben: Amy? Mm.

Typical patterns

Reprise sentence & clausal clarification

- You phoned him?

Reprise sluices & clausal clarification

- To where?

Reprise fragments & clausal clarification

- Two people?

Typical patterns

Non-reprise form & constituent clarification

- What do you mean?

Conventional form & constituent clarification

- What?

Conventional form & lexical clarification

- Pardon?

When clarification is requested

80% immediately after problem utterance

96% within 4 turns

- Elliptical requests only used close to source

Clarification, if made, is always done right away

What needs clarification

Within a sentence

- NPs and such: 94% of clarification
- Verb, Adj, Prep: just 6%
(doesn't follow from type or token frequency)

Or whole sentence

What happens afterwards

CRs are not answered 39% of the time

- Non-contradictory continuations should be taken as an implicit (yes) answer.
- When producing questions that require answers, a non-reprise form (what do you mean?) may help increase the likelihood of a response.

Clarification and context

Linguistic representation and grammar

- Describes phonology, syntax and semantics simultaneously
- Explicitly represent anaphoric presuppositions that need to be resolved and grounded
- Applies symmetrically to user and system utterances
- Applies even when words are unknown or unrecognized

Clarification and context

Information state and dialogue move engine

- Information state must include a record of utterances and their interpretations
- Process of presupposition resolution should either ground utterances or result in clarification

Dialogue management strategy

Init

Repeat (integrate or else
coerce or else
accommodate or else
clarify),

Manage agenda

Manage plan

Manage qnd

Dialogue management strategy

Init

- Push the parse output onto the PENDING stack
- Push the parse output onto the UTT stack

Dialogue management strategy

Integrate

- Resolve the presuppositions directly
- If that works, pop the parse output from PENDING and update the IS as directed
- Series of rules, ordered to maximize relevance

Dialogue management strategy

Coerce

- Revise the information state and ground that way – handles clarification questions

Accommodate

- Look forward to moves the user might want to make next – handles implicit confirmation and “mixed-initiative” dialogue

Clarify – fall through

Dialogue example 1

- S: Hi!
U: hello.
S: What do you want?
U: a ticket
S: How do you want to travel?
U: by plane to paris
S: Where do you want to go from?
U: london in march
S: the ticket will cost 50 pounds.
U: ok
S: goodbye!

Highlights

What do you want

$$\left[\begin{array}{l} \text{phon} \\ \text{cont} \\ c - \text{params} \end{array} \begin{array}{l} \langle \text{what do you want} \rangle \\ \left[\begin{array}{l} \text{ask} \\ \text{spkr} \quad \text{sys} \\ \text{addr} \quad \text{usr} \\ \text{msg-arg} \quad ?x.p(\text{usr}, x) \end{array} \right] \\ \{ \text{sys} : \text{spkr}(\text{sys}) \quad \text{usr} : \text{addr}(\text{usr}) \quad p : \text{name}(p, \text{want}) \} \end{array} \right]$$

Highlights

A ticket

$$\left[\begin{array}{l} \text{phon} \\ \text{cont} \\ \text{cxt} \\ \text{cparams} \end{array} \begin{array}{l} \langle a \text{ ticket} \rangle \\ \left[\begin{array}{l} \text{ask} \\ \text{spkr} \quad s \\ \text{addr} \quad a \\ \text{msg-arg} \quad \left[\begin{array}{l} \text{quants} \quad \{ [x : R(x, P)] \} \\ \text{nucl} \quad \#1 \end{array} \right] \end{array} \right] \\ \left[\begin{array}{l} \text{max-qud} \quad \#3 [\text{prop} \mid \text{nucl} \quad \#1] \\ \text{sal-utt} \quad \#4 [\text{index} \quad x] \end{array} \right] \\ \left\{ \begin{array}{l} s : \text{spkr}(s) \quad u : \text{addr}(u) \\ R : R = \text{exist} \quad P : \text{name}(P, \text{ticket}) \end{array} \right\} \\ \#3 : \text{max-qud}(QUD) \quad \#4 : \text{sal_utt}(UTT) \end{array} \right]$$