

Predicates of relevance and theories of question embedding

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Background: Lahiri (2002) distinguishes two broad categories of question-embedding predicates: *responsive* and *rogative* predicates. Responsive predicates, such as *know*, *tell*, etc. tolerate both declarative and interrogative complements, whereas rogative predicates such as *wonder*, *ask*, etc. permit interrogative but not declarative complements.

- (1) a. Jeff knew {where Britta was | that Britta was outside}. *responsive*
b. Jeff wondered {where Britta was | *that Britta was outside}. *rogative*

There are two main theories of responsive predicates: (i) the standard analysis says that they semantically select for a *proposition*, which is taken to be the basic meaning of a declarative complement. Interrogative complements too denote (or come to denote) propositions (see e.g., Karttunen 1977, Groenendijk & Stokhof 1984, Heim 1994, Dayal 1996, Lahiri 2002, and Spector & Egré 2015). (ii) an alternative analysis has recently been proposed by Uegaki (2015) (see also Roelofsen et al. 2015), according to which responsive predicates semantically select for a *question*, which is taken to be the basic meaning of an interrogative complement. Declarative complements come to denote a (resolved) question, i.e., a singleton set containing a proposition. We argue that *Predicates of Relevance* (PoRs) favour the alternative approach.

Predicates of relevance: PoRs, which include *care*, *matter*, and *relevant*, are compatible with both declarative and interrogative complements, as illustrated in (2).

- (2) a. Abed cares which girl left. *interrogative embedding*
b. Abed cares that Annie left. *declarative embedding*

We observe two problems that examples like (2) pose for the standard theory.

i. Belief presupposition: (2b) presupposes that the complement clause is true, and that Abed believes it; in contrast, (2a) does not presuppose that Abed believes any answer to the embedded question. This is difficult to capture under the standard analysis, which would analyze (2a) as meaning *Abed cares p*, where *p* is an answer to the embedded question. There are several possible notions of answerhood which could be invoked under the standard approach here (e.g., a Hamblin-Karttunen answer, a weakly exhaustive answer, or a complete/strongly-exhaustive answer), but regardless of the notion of answerhood at issue, (2a) is incorrectly predicted to presuppose *Abed believes p*, where *p* is some answer to the embedded question.

ii. Factive presupposition: Consider a context in which the only thing Abed cares about is whether his girlfriend Rachel left, and that only Annie left. Then (2a) is true but (2b) is false. If the embedded question in (2a) denotes a weakly-exhaustive answer, i.e. *that x left, for some girl x*, then given the factive presupposition of (2b), (2a) and (2b) should mean the same thing in this context – both should be false. The only way out for the standard approach is to claim that the embedded question in (2a) denotes a strongly-exhaustive answer, i.e. *that only x left, for some girl x*. This however makes the wrong prediction in examples such as (3).

- (3) a. #Abed cares that Annie left, but he doesn't care which girl left.
b. Abed cares that Annie left, but he doesn't care that Annie and only Annie left.

If the embedded question in (3a) could get a strongly exhaustive meaning, it should be just as felicitous as (3b).

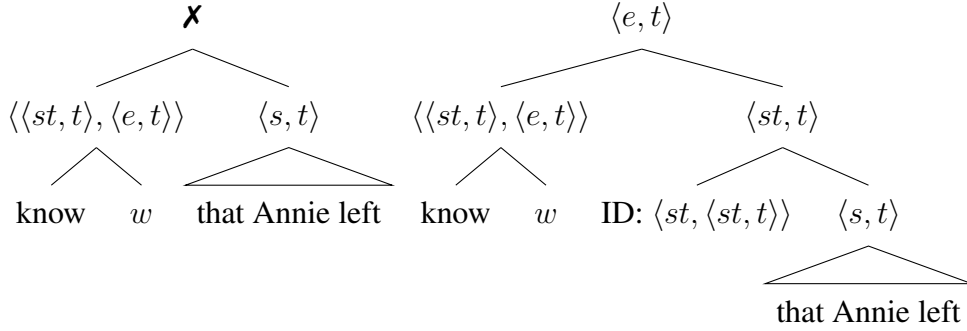
Analysis: given that the meaning of interrogative-embedding PoRs cannot be stated in terms of declarative-embedding PoRs, the only option left for the standard approach is to posit two independent lexical entries for PoRs such as *care*. Evidence from coordination suggests that this is not the right approach, as illustrated in (4).

(4) John cares which girl came and that she wore a dress.

The alternative approach allows us to maintain a single lexical entry for PoRs. We first illustrate how the alternative analysis works for a familiar responsive predicate such as *know*.

$$(5) \quad \llbracket \text{know} \rrbracket = \lambda w_s. \lambda Q_{\langle st, t \rangle}. \lambda x_e : \overbrace{\exists p \in Q[p(w)]}^{\text{presupposition}} . \overbrace{\forall p \in Q[p(w) \rightarrow \text{believe}_w(x, p)]}^{\text{assertion}}$$

When *know* embeds a declarative complement, there is a type-mismatch, since declarative complements denote propositions. Uegaki (2015) proposes that a declarative complement to a responsive predicate gets type-lifted by Partee’s (1987) ID to the (characteristic function of) the singleton set containing that proposition.



$$(6) \quad \text{ID} := \lambda x_\sigma. \lambda y_\sigma. [y = x]$$

$$(7) \quad \text{ID}(\llbracket \text{that Annie left} \rrbracket) = \lambda p_{\langle s, t \rangle}. [p = \lambda w'. \text{that Annie left in } w']$$

We adopt this framework, and propose that PoRs should be analyzed as a kind of *rogative* predicate:

$$(8) \quad \llbracket \text{care} \rrbracket = \lambda w_s. \lambda Q_{\langle st, t \rangle}. \lambda x_e : \overbrace{\exists p \in Q[p(w)] \wedge \text{believe}_w(x, \lambda w'_s. \exists p \in Q[p(w')])}^{\text{presupposition}} . \overbrace{\text{care}_w(x, Q)}^{\text{assertion}}$$

When *care* takes a declarative complement denoting a proposition p , Q will be the singleton set $\{p\}$, meaning that the presupposition will be that p is true, and x believes p . This achieves a uniform analysis for declarative-embedding and question-embedding PoRs.

In sum, the alternative approach can treat PoRs as a new class of semantically rogative predicates, which express relations that are irreducibly between individuals and questions, but still take declarative complements. Such predicates cannot exist under the traditional approach.

Further issues: In the talk, we investigate the possibility that the presupposition we gave as part of the meaning of *care* – $\text{believe}_w(x, \lambda w'_s. \exists p \in Q[p(w')])$ – is not triggered by the lexical item *care*, but is projected from a presupposition of the complement clause that there is a true proposition in the set of propositions. This is perhaps more attractive, given that all PoRs seem to have the same presupposition.

Selected References: SPECTOR, BENJAMIN, AND PAUL EGRÉ. 2015. A uniform semantics for embedded interrogatives: an answer, not necessarily the answer. *Synthese* 192(6). LAHIRI, UTPAL. 2002. *Questions and Answers in Embedded Contexts*. OUP. UEGAKI, WATARU. 2015. *Interpreting Questions under Attitudes*. Ph.D. dissertation, MIT.