

Predicates of relevance and theories of question embedding

Patrick D. Elliott¹, Nathan Klinedinst¹, Yasutada Sudo¹ and Wataru Uegaki²

¹University College London and ²Keio University/Institut Jean-Nicod/JSPS

Lahiri (2002) classifies question embedding predicates into two major types, *rogative* and *responsive predicates*. Rogative predicates like *wonder* are only compatible with interrogative complements, while responsive predicates like *know* are also compatible with declarative complements.

The traditional view on question embedding holds that responsive predicates semantically always select for propositions and that both declarative and interrogative complements to them denote propositions (Karttunen 1977, Groenendijk & Stokhof 1984, Heim 1994, Dayal 1996, Lahiri 2002, Spector & Egré 2015). Uegaki (2015) proposes an alternative approach where responsive predicates semantically always select for question denotations, i.e. sets of propositions, and declarative complements to them are type-lifted to meet this selectional requirement (see also Roelofsen et al. 2015 for a similar idea).

We claim that predicates of relevance (PoRs), e.g. *matter*, *care*, *relevant*, favor the alternative approach over the traditional approach. PoRs are compatible with both declarative and interrogative complements, as shown in (1).

- (1) a. It matters to John which girl left.
b. It matters to John that Mary left.

Notice that the declarative embedding use in (1b) presupposes that the complement clause is true, and that John knows it. In contrast, (1a) does not presuppose that John believes any answer to the embedded question. This difference between (1a) and (1b) is hard to capture under the traditional approach. It would analyze (1a) as meaning it matters to John that p , where p is a possible answer to the embedded question. There are several theoretical choices as to which notion of answerhood to use here (e.g. a Hamblin-Karttunen answer, a weakly exhaustive answer, or a complete/strongly exhaustive answer), but regardless of this question, (1a) is wrongly predicted to presuppose that John believes p , for some answer p .

The factive inference of (1b) also poses a potential problem for the traditional approach. Suppose that the only thing that matters to John is whether his girlfriend Sue left, and that only Mary left. Then, (1a) is true, but (1b) does not seem to be true (Lahiri 2002:41). If the embedded question of (1a) denoted a weakly exhaustive answer, i.e. that x left, for some girl x , then given the factivity of declarative-embedding *matter*, (1a) should mean the same thing as (1b) in this context, and thus should not be true. In order to save the traditional approach, one could assume that the embedded clause in (1a) is a strongly exhaustive answer, i.e. that only x left, for some girl x . This accounts for the difference between (1a) and (1b) in the context described above, but it runs into a different problem; namely, it fails to account for the contrast between (2a) and (2b):

- (2) a. #It matters to John that Mary left, but it doesn't matter to him which girl left.

- b. It matters to John that Mary left, but it doesn't matter to him that Mary and only Mary left.

If the embedded question in (2a) had a strongly exhaustive reading, (2a) should be as felicitous as (2b).

These observations suggest that the embedded question in (1a) is not reducible to an answer to it, and thus that PoRs resist the traditional analysis of responsive predicates.¹ On the other hand, if PoRs are grouped with rogative predicates, the possibility of declarative embedding will call for an independent explanation. But it would be undesirable to postulate two independent lexical entries for (1a) and (1b). In particular such an analysis would have difficulty explaining the fact that an interrogative and declarative complement can be coordinated, as in (3).

- (3) It matters to John which girl came and that she wore a dress.

If the complement clauses here are really coordinated, *matter* must have a meaning that is compatible with both interrogative and declarative complements. Furthermore, even if (3) is somehow derived from two occurrences of *matter*, as in (4), it needs to be explained why the second occurrence of *matter* can be elided, if the two occurrences have different lexical meanings.

- (4) It matters to John which girl came, and it matters to him that she wore a dress.

The alternative approach offers a better account of PoRs. According to Uegaki 2015 (for example), responsive predicates like *know* always embed questions, which are taken to denote sets of possible answers.

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

When it takes a declarative complement, the declarative complement is type-lifted by ID.

- (6) a. $\text{ID} := \lambda p_{\text{st}}. \{p\}$
 b. $[[\text{that Mary left}]]^w = \text{left}_w(\text{mary})$

We propose that the alternative framework gives a natural account of PoRs as a (type of) rogative predicate. Specifically, *matter* can be analyzed as (7).²

- (7) $[[\text{matter}]]^w = \lambda Q_{\langle \text{st}, t \rangle} \lambda x_e: \exists p \in Q[p(w)] \ \& \ \text{believe}_w(x, \lambda w'_s. \exists p \in Q[p(w')]). \text{matter}_w(x, Q)$

¹ Thus PoRs constitute an argument for what George (2011) calls *non-reducibility*, though the nature of the non-reducibility of PoRs is different from the cases discussed by George, which are largely characterized by the so-called "no-false-belief" condition.

² It is an analytical possibility that the presupposition $\text{believe}_w(x, \lambda w'_s. \exists p \in Q[p(w')])$ here is not triggered by *matter* itself, 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, but it is not clear to us whether it is tenable across all embedding predicates, given the existence of predicates like (*un*)*certain*, whose declarative use does not seem to have a belief presupposition.

With a declarative complement denoting proposition p , Q will be a singleton $\{p\}$, and the presupposition will be that p is true and x believes p . This accounts for the observed presuppositions of both (1a) and (1b), thereby achieving a uniform analysis.

As for canonical rogative predicates like *wonder*, the traditional view explains their inability to embed declaratives, by simply assuming they semantically select for questions. The alternative view, too, can explain this as matter of lexical semantics, but a more fine-grained one: the meaning of *wonder* — but not *matter* — is incompatible with singleton (i.e. resolved) questions. (See Uegaki 2015 for a specific proposal).

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.

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