

## Wh-restrictor plurality and question pragmatics

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**1. Introduction.** A conspicuous, yet seemingly unexplored, feature of wh-questions is that they often support an inference about the wh-restrictor: a *restrictor plurality* (RP) inference that the wh-restrictor applies to more than one entity. For example, (1) suggests that Group A contains more than one girl.

(1) Which [girl in Group A] complained?

Aligned with RP is the *restrictor non-uniqueness* effect (RN) exemplified by (2), the infelicity of wh-questions with uniquely denoting restrictors, i.e., restrictors that cannot hold of more than one individual.

(2) #Which [oldest member of the team] resigned?

This paper (i) proposes that RP/RN are not grammatically encoded, but follow from natural felicity conditions on the use of information seeking questions (including some previously invoked in the analysis of certain island effects; see [10]), and (ii) supports this view by identifying two types of correctly predicted exceptions to RN/RP, where a relevant felicity condition is independently observed to be suspended.

**2. The pragmatics of restrictor non-uniqueness.** In a H(amblin)/K(arttunen) semantics for questions, which is assumed here, a question of the form [*wh R(restrictor)*] *S(scope)*, has the denotation in (3) ([4],[7]), where the properties **R** and **S** are the denotations of *R* and *S*, respectively.

(3) Hamblin/Karttunen semantics  
 $\lambda w. \{ \mathbf{S}(x) \mid \mathbf{R}(x)(w) \}$

Suppose felicity conditions are construed as constraining the permissible relations that the speaker's (= questioner's) epistemic state *s* and context set *c* ([11]) bear to possible sentence denotations, writing  $s, c \succ X$  to indicate that the *X* is felicitous relative to *s* and *c*. The *answerability condition* in (4) (AC, cf. [10]), which naturally characterizes information seeking questions, constrains the felicity of a H/K denotation *Q* in terms of the felicity of the H/K answers of *Q*.

(4) Answerability condition (AC) (5) Informativity condition (IC)  
 $s, c \succ Q$  only if  $\exists p [ \forall w [ w \in c \rightarrow p \in Q(w) ] \ \& \ s, c \succ p ]$   $s, c \succ p$  only if  $s \not\subseteq p \ \& \ s \cap p \neq \emptyset$

AC states that *Q* is felicitous only if there is a felicitous H/K answer that is in *Q*'s extension in every world in *c*. The auxiliary *informativity condition* on H/K answers in (5) requires that a felicitous H/K answer not be settled (i.e., entailed to be true or entailed to be false) by the questioner's epistemic state *s*. Given (3) and (5), (4) can be shown to entail (6).

(6) consequence of AC and IC  
 $s, c \succ Q$  only if  $\exists x [ c \subseteq \mathbf{R}(x) \ \& \ s \not\subseteq \mathbf{S}(x) ]$

So, a felicitous wh-question requires existence of an individual that common knowledge entails to have the restrictor property but that the speaker does not know to have the scope property. Now, in RN violating cases like (2), the content of the wh-restrictor guarantees (7) for any context set *c*. Suppose now (with, e.g., [5],[2]) that questions carry an *existence presupposition*. This requires the existence of an individual who has both **R** and **S**, as in (8).

(7) Restrictor uniqueness (RU) (8) Existence presupposition (EP)  
 $c \subseteq \{ w : |\{ x : \mathbf{R}(x)(w) \}| \leq 1 \}$   $s, c \succ Q$  only if  $c \subseteq \{ w : \exists x [ \mathbf{R}(x)(w) \ \& \ \mathbf{S}(x)(w) ] \}$

The conditions in (7), (6), and (8) are logically inconsistent. In conjunction with (8), (7) entails (9), but in conjunction with (6), (7) entails (10): the unique individual described by the restrictor must yield a H/K answer that is entailed by the context set *c* but not by the speaker's epistemic state *s*. Since  $s \subseteq c$  by definition, (9) and (10) are inconsistent. We propose, then, that the RN effect arises from *necessary infelicity*, due to logically inconsistent requirements on the epistemic state *s* and context set *c* (cf. [8]).

(9) consequence of RU and EP (10) consequence of RU, AC, and IC  
 $s, c \succ Q$  only if  $c \subseteq \{ w : \mathbf{S}(ty. \mathbf{R}(y)(w))(w) \}$   $s, c \succ Q$  only if  $s \not\subseteq \{ w : \mathbf{S}(ty. \mathbf{R}(y)(w))(w) \}$

**3. Deriving restrictor plurality.** The proposed account of RN effectively delivers (11) as a *derived* felicity condition. However, an account of the RP inferences illustrated in (1) – as accommodated pre-suppositions – would require the stronger derived felicity condition in (12).

- (11) Restrictor non-uniqueness (RN)  $s, c \succ Q$  only if  $c \not\subseteq \{w: |\{x: \mathbf{R}(x)(w)\}| \leq 1\}$       (12) Restrictor plurality (RP)  $s, c \succ Q$  only if  $c \subseteq \{w: |\{x: \mathbf{R}(x)(w)\}| > 1\}$

To strengthen RN to RP, we propose an additional felicity condition as an auxiliary premise, viz. the *restrictor homogeneity* condition in (13). Restrictor homogeneity obtains in virtue of the speaker and hearer agreeing on the restrictor's extension, thereby agreeing on the set of individuals that the question is about. This appears to be a natural condition on felicitous use of an information seeking question, and in fact one that might help explain the need for tacit domain restriction in many cases (cf. [9]).

- (13) Restrictor homogeneity (RH)  $s, c \succ Q$  only if  $\forall w, w' \in c [\mathbf{R}(w) = \mathbf{R}(w')]$

Now, if the restrictor's extension has more than one member in some context set world (RN) and the restrictor's extension is the same in all context set worlds (RH), then it follows that the restrictor's extension has more than one member in all context worlds, deriving RP as intended.

**4. Predictions borne out.** Questions of course have a broad range of uses in discourse ([6]), some of which arguably fail to respect all of the felicity conditions posited above. For any question use that can independently be established to not respect one of those felicity conditions, it is predicted that the relevant inferences are absent as well. This prediction is borne out for two different types of question uses, labelled here *quiz questions* and *rhetorical questions*, illustrated in (14) and (15).

- (14) **quiz question** Which [Japanese mathematician] died yesterday at age 81?      (15) **rhetorical question** (So you think I'm not doing my share?) Which [member of the family] did all of the dishes?

As a quiz question, (14) surely does not require that the interlocutors agree on the members of any given set of Japanese mathematicians. Hence (14) is in violation of the homogeneity condition (RH), which therefore must be analyzed as suspendable under certain conditions. Similarly, the rhetorical question (15) suggests that the speaker considers herself the one and only family member who did the dishes. So (15) is in violation of the answerability condition (AC), which hence must be analyzed as suspendable as well. The suspension of AC or RH in such cases is predicted to preempt the derivation of the restrictor plurality effect. The correctness of this prediction is illustrated by the examples in (16) and (17).

- (16) **quiz question** Which [Japanese mathematician who won the Fields Medal in 1987] died yesterday at age 81?      (17) **rhetorical question** (So you think I'm not doing my share? After all,) which [tired female member of the family] did all of the dishes last night?

Used in a quiz show setting, (16) clearly does not invite the inference that more than one Japanese mathematician won the Fields Medal in 1987. That is, the restrictor plurality inference is expectedly absent. Similarly, (17), asked rhetorically in a context where it is common knowledge the speaker is the sole tired female in the family and did the dishes. So here the restrictor non-uniqueness effect is expectedly not attested.

**5. Conclusions.** The proposed account of restrictor non-uniqueness and plurality (i) adds to the broadly Gricean program of understanding how speakers draw inferences on the basis of pragmatic premises, and (ii) adds to the growing inventory of observed correlations between necessary violations of felicity conditions and judgments of unacceptability (e.g. [3], [8], [1], [10]).

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