Two accounts of factive islands

Introduction. (1) illustrates the observation ([11, 7, 1]) that wh-movement from under a factive predicate like know is unacceptable if the gapped complement clause (here: _ won the race) denotes uniquely, describing a property that cannot hold of more than one entity (here: winning the race).

(1) #Which of these Canadians does Kate know _ won the race?

We compare two semantic-pragmatic approaches to this factive island effect: (i) the contradiction analysis, proposed in [1], excludes factive island questions by virtue of assigning them contradictory presuppositions; (ii) under the triviality account, sketched in [7], factive island cases are bad by virtue of lacking informative semantic answers relative to any context where they are otherwise felicitous. We present evidence in favor of the triviality account.

Islands by contradiction. [1] proposes to derive the factive island effect from the assumption that presupposition projection in wh-questions has universal force ([8]). Projection in (1) then delivers the contradictory presupposition that each of these Canadians finished first. [1] credits the factive island effect to contradictory presuppositions so derived.

Missing contradictions. However, universal projection derives contradictory presuppositions for certain examples that are actually judged neither unacceptable nor contradictory. For the acceptable (2), universal projection derives the unattested contradictory presupposition that each of these five Canadians finished in the top three.

(2) Which of these 5 Canadians does Kate know _ finished in the top 3?

We conclude that uniqueness is an essential ingredient of the factive island effect, a fact that the contradiction account does not predict without further assumptions.

Tacit domain restriction? A conceivable elaboration of the contradiction account allows for tacit restriction of the domain of the wh-determiner (e.g. [4]). In (2), domain restriction by presupposed content carves out the subset of top-3 finishers from the set of those 5 Canadians. This trivializes the effect of universal projection, which now delivers a tautology. Analogous domain restriction can be argued to be unavailable in (1) because it would yield a uniquely denoting restrictor, carving out the empty set or singleton set of Canadians who won. However, as (3) illustrates, wh-questions do not allow for restrictor uniqueness.

(3) #Which {father of the candidate/duration of the match} bothered you?

The contrast between (1) and (2) would then arise from a contrast in the availability of tacit domain restriction by presupposed content.

Against the domain restriction account. Tacit domain restriction is indeed attested in wh-question. For example, Which students complained? can be a question about the students in a particular class. The tacitly restricted domain is then accessible for anaphoric reference. For example, the answer All but Sam can convey that all of the students in the class other than Sam complained. This diagnostic can be used to establish the absence of tacit domain restriction in (2). As an answer to (2), All but Sam can only be interpreted as entailing that 4 Canadians are such that Kate knows them to have finished in the top 3 – it cannot be read as making a claim about the restricted set of Canadians who actually finished in the top 3.

Question triviality. H(amblin)/K(arttunen) semantics. We describe the denotation of a wh-question as a function of three properties: the asserted content of wh-phrase’s restrictor, R; the asserted content of wh-phrase’s scope, A; the presuppositional content of the wh-phrases scope, P. For (1), for example, R = λx.λw.x is one of these Canadians, P = λx.λw.x won in w, and A = λx.λw. Kate believes in w that x won. In a H/K semantics ([5, 6]), these properties form a question intension, a function from worlds to sets of propositions, as in (4).

(4) H/K semantics: λw. { [λv: P(x)(v). A(x)(v)] | R(x)(w)}
The ingredients. (i) The key ingredient of the triviality account sketched in [7] is a felicity condition requiring that the context set [(10)] not entail all of the H/K answers whose presupposition it satisfies. In terms of R, P, and A, this non-triviality condition on the context set c can be stated as in (5-a). (ii) The non-triviality condition is taken to conspire with an existence presupposition (e.g. [6, 3]). (5-b) states the existence presupposition as a condition on the context set c in terms of R, P, and A. So (1) is predicted to presuppose that at least one of these Canadians finished first and Kate knows it. (iii) Uniqueness of P has been shown to be a crucial element of the factive island effect that (1) illustrates. Uniqueness, too, can be encoded as an assumption about the context set, as in (5-c).

\begin{enumerate}
\item non-triviality: $c \not\subseteq \{w \mid \forall x[R(x)(w) \& c \subseteq P(x) \rightarrow c \subseteq A(x)]\}$
\item existence presupposition: $c \subseteq \{w \mid \exists x[R(x)(w) \& P(x)(w) \& A(x)(w)]\}$
\item uniqueness: $c \subseteq \{w \mid \forall x,y[P(x)(w) \& P(y)(w) \rightarrow x=y]\}$
\end{enumerate}

Inconsistency. The conditions in (5) can be shown to be logically inconsistent, as they have the two transparently inconsistent consequences in (6).

\begin{enumerate}
\item consequence of uniqueness, non-triviality: $c \not\subseteq \{w \mid A(\lambda y.P(y)(w))(w)\}$
\item consequence of uniqueness, existence presup.: $c \subseteq \{w \mid A(\lambda y.P(y)(w))(w)\}$
\end{enumerate}

Less formally, if a context allows for only one felicitous answer (uniqueness) but also guarantees that some answer is true (existence presupposition), then that context is guaranteed to already entail the truth of that unique felicitous answer, in violation of non-triviality.

Given this inconsistency, the triviality account excludes factive island cases like (1) on the grounds of being infelicitous in all possible context sets.

Lifting inconsistency. Improving on the contradiction account, the triviality account correctly captures the contrast between (1) and (2). This is because in the absence of uniqueness, the existence presupposition and the non-triviality condition are consistent. To establish this, let $w_{X,Y,Z}$ be a possible world w where \{x: R(x)(w)\} = X, \{x: P(x)(w)\} = Y, and \{x: A(x)(w)\} = Z, and consider the two-membered toy context set in (7).

\begin{equation}
\centering
\begin{array}{c}
\{w_{a, b, c, d, e}, \{a\}, \{a\},
\{w_{a, b, c, d, e}, \{a, b\}, \{b\}\}
\end{array}
\end{equation}

This context set fails to entail uniqueness of P (which in one world determines a doubleton), but it satisfies both the existence presupposition and non-triviality: c entails the existence presupposition as the sets determined by the three properties overlap in each world in c; c satisfies non-triviality in virtue of entailing P(a) but not A(a).

Conclusion. Unlike the contradiction account, the triviality account derives the finding that uniqueness in the content of the factive presupposition is a necessary ingredient to the factive island effect. Notably, the non-triviality condition central to the account also has applications other than factive islands. [9] analyzes referential island cases such as (8) (for which a contradiction analysis is not a contender). [9] effectively proposes that the directly referential semantics of the complex demonstrative guarantees constancy of A, stated in (9) as a property of c. (Here D is the set of possible individuals.) Like uniqueness, (9) is provably inconsistent with the existence presupposition and non-triviality. So the non-triviality condition allows for referential islands, too, to be excluded as necessarily infelicitous.

\begin{enumerate}
\item \#Which town do you admire that composer from \_
\item constancy: $c \subseteq \{w \mid \{x: A(x)(w)\} = \emptyset \lor \{x: A(x)(w)\} = D\}$
\end{enumerate}