Factive islands from necessary blocking

1. Introduction. [17] discovered a type of *factive island* effect where question-forming wh-movement from the complement of a factive predicate can be rendered unacceptable by the complement's content. On [13]'s account, fleshed out in [15], factive islands are due to the *necessary conflict* between two felicity conditions. We present new data from multiple questions to argue that this account undergenerates factive islands, and we propose an account in terms of *necessary blocking* that applies correctly to both classic instances of the effect ([17]) and factive islands with multiple questions. This finding informs the general discussion of the meaning-based unacceptability of semantically interpretable sentences (e.g., [1],[2],[5],[6],[12],[13],[15]), where factive islands have been considered as an important test bench ([1],[5],[13],[15]).

2. Factive islandhood. The unacceptability of (1) (reading *where* as binding the place of Caesar's murder) instantiates a type of factive island effect discovered in [17]. Question-forming wh-movement originates within the complement of a factive embedding predicate (such as *know*) leaving a gapped complement that expresses a uniquely applying property – one that cannot hold of more than one argument (such as the property of being the place where Caesar was murdered). The contrast between (1) and (2) confirms that factive islandhood is indeed dependent on both factivity – see (2a) – and uniqueness – see (2b).

(1) *Where did they know that Caesar was murdered __ ?

(2) a. Where did they think that Caesar was murdered __ ?
b. Where did they know that Caesar had sent troops __ ?

3. Necessary conflict. Under the analysis of [13] and [15], the content of (1) guarantees that (at least) one of two felicity conditions is violated. The analysis assumes a question semantics ([8],[11]) under which (1) denotes the set of "Hamblin answers" in (3) (L = the set of locations); using [10]'s notation, it is shown that each Hamblin answer carries, for some place l, the factive presupposition that Caesar was murdered in l. The *answerability condition* (cf. [7]) says that, if c is any context set (in the sense of [16]), to be felicitous in c, a wh-question must have a Hamblin answer felicitous in c – an answer whose presupposition c entails, and that is informative in c; the *existence presupposition* ([3]) demands that a context set for a felicitous wh-question entail that the question has a true Hamblin answer. Suppose now that (1) meets the answerability condition in c; then c entails the presupposition of some member of (3); for concreteness, suppose that c entails the presupposition of (4), i.e. that Caesar was murdered in Rome; because of uniqueness (of the place of murder), c will entail that the presupposition of any Hamblin answer other than (4) is false. Now, to satisfy the existence presupposition, c would need to also entail that for some place l, they knew that Caesar was murdered in l; given that c entails the presupposition of (4), and given uniqueness, it would follow that c entails (4) as a whole; but this would mean that (4), the unique Hamblin answer whose presupposition c entails, is uninformative in c; hence (1) would violate the answerability condition in c. What emerges is that, assuming uniqueness, there cannot be a context set in which (1) meets both the answerability condition and the existence presupposition. [13] and [15] attribute factive islandhood to this necessary conflict.

(3) $\{[\lambda w$: Caesar was murdered in l in w. they believe in w that Caesar was murdered in l$] \mid l \in L\}$

(4) $[\lambda w$: Caesar was murdered in Rome in w. they believe in w that Caesar was murdered in Rome$]$

4. Necessary blocking. The existence presupposition of wh-questions that the "necessary conflict" analysis rests on is debatable ([4]). On an alternative analysis that makes do without this premise, (1) is unacceptable because of *necessary blocking*. Suppose again (1) meets the answerability condition in c, so that c entails the presupposition of some member of (3); for concreteness, suppose again that this member is (4), so that c entails that Caesar was murdered in Rome. We propose that (1) is then blocked by the polar question in (5).

(5) Did they know that Caesar was murdered in Rome?

(6) $\left\{ \begin{array}{l} [\lambda w$: C. murdered in Rome in w. they believed in w that C. was murdered in Rome$]$, \\ $[\lambda w$: C. murdered in Rome in w. they did not believe in w that C. was murdered in Rome$]$ \end{array} \right\}$

That (1) is blocked by (5) in c is made plausible by the following observations. First, assuming (5) denotes (6), the use of (5) in c should have no less pragmatic utility than the use of (1): the lone felicitous Hamblin answer to (1) in c, viz. (4), is also a member of (6), hence a felicitous answer to (5) in c; so a questioner

will gain no less information from a response to (5) than from a response to (1). Second, (5) is presuppositionally stronger than (1), as only (5) carries the presupposition (shared by the members of (6)) that Caesar was murdered in Rome; since c by assumption entails this presupposition, the principle of Maximize Presupposition ([9],[14]) demands that (5) be used in c instead of (1). More generally, assuming that (1) meets the answerability condition in a context set c, there will be some polar question that can be argued to block the use of (1), viz. a polar question where *where* is replaced by an expression that denotes the place that c entails to be the place of Caesar's murder. This polar question solicits no less information than (1), while being presuppositionally stronger than (1), in virtue of carrying a presupposition that c entails; this polar question is therefore expected to block the use of (1), as Maximize Presupposition dictates its use instead of (1). We propose that the unacceptability of (1) can be credited to this necessary blocking.

5. Factive islands with multiple questions. The study of factive islands has so far confined attention to single wh-questions. Yet, as the unacceptability of (7) illustrates, it is also found with multiple wh-questions. (7) differs from (1) in that the matrix agent is questioned (with *who*) in addition to the embedded event location (with *where*; which therefore remains in situ). The contrast between (7) and (8) parallels the one between (1) and (2), suggesting that (1) and (7) indeed instantiate the same factive island effect.

(7) *Who knew that Caesar was murdered where?

(8) a. Who thought that Caesar was murdered where?
b. ?Who knew that Caesar had sent troops where?

6. The "necessary conflict" analysis does not extend. As is, the "necessary conflict" analysis fails to predict the factive islandhood in (7). The denotation of (7) ([8],[11]) is shown in (9). Consider again a context set c that entails that Caesar was murdered in Rome. Suppose for illustration that D = {Al,Bo}. In that case, the presupposition of *two* answers in (9) is entailed by c, viz. (10a) and (10b). Therefore, the existence presupposition of (7) can be met by c in virtue of c entailing that either Al or Bo knows that Caesar was murdered in Rome – without entailing either (10a) or (10b). Hence either answer can be informative in c. So (7) can simultaneously satisfy the answerability condition and the existence presupposition. There is no necessary conflict to which the factive islandhood attested in (7) could be attributed.

(9) {[λw: Caesar was murdered in l in w. x believed in w that Caesar was murdered in l] | l∈L & x∈D}

(10) a. [λw: Caesar was murdered in Rome in w. Al believed in w that C. was murdered in Rome],
b. [λw: Caesar was murdered in Rome in w. Bo believed in w that C. was murdered in Rome]

7. The "necessary blocking" analysis extends. In contrast, the "necessary blocking" analysis applies to (7) in much the same way it applies to (1). Suppose (7) meets the answerability condition in a given context set c; as before, suppose for concreteness that c entails that Caesar was murdered in Rome. In this context, (7) is expected to be blocked by the single wh-question (11), assuming the denotation in (12).

(11) Who knew that Caesar was murdered in Rome?

(12) {[λw: Caesar was murdered in Rome in w. x believed in w that C. was murdered in Rome] | x∈D}

The use of (11) in c should have no less pragmatic utility than the use of (7), since the set of Hamblin answers to (7) felicitous in c coincides with the set of Hamblin answers to (11) felicitous in c; and (11) is presuppositionally stronger than (7), as only (11) carries the presupposition (shared by the members of (12)) that Caesar was murdered in Rome; so Maximize Presupposition demands that (11) be used in c instead of (7). More generally, assuming the answerability condition is met, (7) can be argued to be blocked in any context set c, viz. by single wh-question where *where* is replaced by an expression that refers to the place that c entails to be the place of Caesar's murder. Hence, just like the unacceptability of (1), the unacceptability of (7) can be understood as due to necessarily blocking. So the analysis correctly extends to multiple questions.

8. Conclusion. Although the reliance on the existence presupposition is a potential weakness of the "necessary conflict" analysis, we have not actually argued against the presence of necessary conflict in factive islands with single wh-questions. A question we have left open, therefore, is whether [13] and [15] are correct in proposing that *those* factive islands suffer from unacceptability-inducing necessary conflict.

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