NPI Licensing in Adjunct WH-Questions[*]

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1.   Introduction

Negative Polarity Items (NPIs) are known to be licensed in *wh*-questions. But not all *wh*-questions behave alike with respect to NPI licensing. As pointed out in Han and Siegel (1996), while all argument *wh*-questions with NPIs can have a RHETORICAL QUESTION reading, only a subset of them can have a true *wh*-question reading. In this paper, we point out that adjunct *wh*-questions with NPIs cannot have a true *wh*-question reading.[1] Questions with *why* and *how* have a SURPRISE READING, either a QUESTION SURPRISE reading or a RHETORICAL SURPRISE reading. Questions with *when* and *where* can have a question surprise, rhetorical surprise reading or rhetorical question reading. We define these readings in §2.

The purpose of the present paper is to investigate the full range of grammaticality and interpretational differences attested in adjunct *wh*-questions with NPIs. In §2, we describe the range of data. In §3, we account for the non-existence of a true question reading in adjunct *wh*-questions with NPIs. In §4, we provide an analysis of *when* and *where* questions with the rhetorical question reading. In §5, we relate the surprise readings of adjunct questions to the factive nature of reason and manner adverbials. In §6, we address the source of the surprise readings which are found in adjunct questions with NPIs and what is responsible for licensing NPIs in these questions under the surprise readings.

2.   The Data

Adjunct *wh*-questions with NPIs such as *ever* and *any* all behave alike in that this type of question always lacks a neutral information-seeking question reading. However, adjunct *wh*-questions with NPIs do not all behave the same way with respect to the readings that are available.

Adjunct questions which are formed with *why* or *how* are ambiguous. Examples of these questions are given in (1) and (2). One interpretation of these questions is as information-seeking questions but only with a strong presupposition that the speaker is surprised that the situation in question obtains. We call this the SURPRISE QUESTION reading. For example, the sentence in (1b) can be interpreted as a question paraphrasable with *There is no obvious reason for Bill to have voted for a Republican, so why did he do it?*

These *why* and *how* questions with NPIs can also be interpreted with a special kind of rhetorical question reading. Rhetorical questions are constructions which look like questions on the surface but are actually assertions. In the case of the RHETORICAL SURPRISE reading, this assertion carries the presupposition that the

speaker can think of no obvious reason or manner for the situation in question to obtain. For example, (1b) can be interpreted as a statement paraphrasable with *There is no obvious reason for Bill to have voted for a Republican.*

(1) a. Why did Casey agree with anyone?
    b. Why did Bill vote for any Republican?

(2) a. How did Sam solve any problems on the logic final exam?
    b. How did Max finish writing any papers?

Adjunct questions formed with *where* or *when* can also have either the rhetorical surprise reading or the question surprise reading described above. However, in these cases there is an additional rhetorical question reading in which the question is interpreted as a negative assertion with a sentential negation reading. We call this the RHETORICAL QUESTION reading. Examples of these questions can be seen in (3) and (4). For instance, the sentence in (3a) has the rhetorical question reading *Bill did not find evidence of ghosts anywhere.* It also has the readings analogous to the two described above: the surprise question reading paraphrasable with *There is no likely place for Bill to have found evidence of ghosts, so where did this happen?* and the rhetorical surprise reading paraphrasable with *It is surprising that Bill found evidence of ghosts because there is no obvious place for this to have happened.*

(3) a. Where did Bill find any evidence of ghosts?
    b. Where did John publish any of his papers?

(4) a. When did Chris ever have time to write any papers?
    b. When did Sam vote for any Republican?

Note that the rhetorical question reading of *when* and *where* questions is an assertion with sentential negation, whereas the rhetorical surprise reading is not. The question surprise reading is a question with a presuppostion that the speaker is surprised that the event in question happened in a certain location or time. While the event in question is negated in the rhetorical question reading, it actually took place in the question surprise and the rhetorical surprise readings.

The table in (5) summarizes the readings available in various kinds of adjunct *wh*-questions with NPIs. The possible readings are indicated with a check mark. Since the question surprise and rhetorical surprise readings do not partition the different adjunct *wh*-phrases, we will henceforth group them together with the name SURPRISE READINGS.

(5)   Summary of Readings Available in Adjunct *wh*-questions

	Neutral	Rhetorical Question	Surprise Readings	
			Question Surprise	Rhetorical Surprise
why	*	*	√	√
how	*	*	√	√
when	*	√	√	√
where	*	√	√	√

2.1 Previous Analyses

Ladusaw (1980a, 1980b) and Linebarger (1987) recognize that NPIs are licensed in questions, but they do not directly attempt to account for the phenomena discussed above. Progovac (1993) and Higginbotham (1993) do address the issue of NPI licensing in questions. However, Progovac (1993) wrongly predicts that all *wh*-questions with NPIs only have the rhetorical question reading available, and Higginbotham (1993) wrongly predicts that all argument *wh*-questions with NPIs have the *wh*-question reading available. He does not address NPI licensing in adjunct *wh*-questions at all.

3.   The Lack of the Question Reading in Adjunct *Wh*-Questions

Although adjunct *wh*-questions do not all behave the same way, they are all similar in that they lack the neutral information-seeking question reading. Han and Siegel (1996) show that this reading is available in some, but not all argument *wh*-questions.
    As pointed out in Han and Siegel (1996), not all argument *wh*-questions behave alike with respect to NPI licensing. Certain argument *wh*-questions, such as those in (6), are ambiguous between a true *wh*-question reading and a rhetorical question reading.

(6)   a.   Who has ever been to Moose Jaw?

       b.   Who said anything at the semantics seminar?

For instance, the question in (6a) can be interpreted as asking for information about visitors to Moose Jaw or it could be interpreted as an assertion about the speaker's belief that no one has ever been to Moose Jaw.
    However, not all argument *wh*-questions exhibit this ambiguity. The questions in (7) are not ambiguous. They are grammatical only with a rhetorical question reading.

(7)   a.   Who has Sam ever agreed with?

       b.   What did anybody say at the semantics seminar?

For instance, the question in (7a) can only be interpreted as expressing the speaker's belief that Sam never agreed with anyone.

Based on these data, Han and Siegel (1996) propose the generalization in (8).

(8)

C-COMMAND REQUIREMENT

When the trace of the *wh*-word c-commands the NPI (as in (6)), both the *wh*-question and the rhetorical question readings are available.

When this c-command relationship does not hold (as in (7)), only the rhetorical question reading is available.

Han and Siegel (1996) propose an analysis of NPI licensing in *wh*-questions, which uses the semantics of questions of Groenendijk and Stokhof (1984, 1985). According to Groenendijk and Stokhof (1984, 1985), a question is a function which partitions the set of all possible worlds. The partition contains the set of propositions which are possible answers. That is, each block of the partition corresponds to the set of possible worlds in which one of the semantically possible answers is true in those worlds. We propose that the negation present in the semantics of *wh*-questions is responsible for the licensing of NPIs. The negation is covert negation that is present in the negative answer returned by the partition. An NPI is licensed if it is in the scope of this negation. For instance, the question in (6a) returns the partition in (9):

(9)

| Nobody has been to Moose Jaw |
| John has been to Moose Jaw |
| John and Mary have been to Moose Jaw |
| ⋮ |
| Everybody has been to Moose Jaw |

According to Han and Siegel (1996), the NPI *ever* in (6a) on the *wh*-question reading is licensed due to the negation present in the semantics of the *wh*-question. The partition returned by the question contains the negative proposition *Nobody has been to Moose Jaw* which is one of the possible answers. The NPI *ever* is licensed because it is in the scope of the negative Quantifier Phrase (QP) *nobody*.

If we approach the issue of NPI licensing in adjunct *wh*-questions within the framework proposed in Han and Siegel (1996), the fact that NPIs are not licensed in adjunct *wh*-questions under the neutral information-seeking question reading can be explained. The partition returned by these questions simply does not contain a negative proposition in which the NPI is in the scope of a negative QP. For instance, in (1b), the only negative proposition contained in the partition returned by the question is *Sam voted for some Republican for no reason*. The NPI *any* is not in the scope of the negative QP *for no reason*. Similarly, in (3b), the only negative proposition contained in the partition returned by the question is *John published*

some of his papers nowhere. The NPI *any* is not in the scope of the negative QP *nowhere*.

4. Rhetorical Readings of *where* and *when* Questions

Han and Siegel (1996) propose an analysis of the rhetorical question reading of argument *wh*-questions with NPIs. On this account, rhetorical questions are analyzed as being syntactically and semantically analogous to neg-inversion constructions. Here, we provide a similar account of NPI licensing in rhetorical adjunct *wh*-questions.

4.1. Syntax and semantics of neg-inversion

Syntactically, neg-inversion refers to the phenomena in which a negative QP or negative adverbial moves to [SPEC, CP] position, accompanied by verb-movement to C. Semantically, the fronted negative QP or adverbial has sentential scope resulting in sentential negation (Liberman (1974)). The sentences in (10) exemplify neg-inversion.

(10) a. Never has anyone agreed with John.

  b. Nowhere did John find white asparagus.

The negative element in each of the sentences in (10) has sentential scope. The examples in (10) are interpreted as *John has not agreed with anyone* and *John was not able to find white asparagus* respectively.

 Although neg-inversion looks very much like *wh*-movement in that a phrasal movement to [SPEC, CP] accompanied by verb movement is involved, it is different from *wh*-movement in that it is clause-bounded:

(11) a. * Never did Mary believe that anyone agreed with John.

  b. * Nowhere did Mary say that John found any white
    asparagus.

Although the sentences in (11) are grammatical on the reading in which the negative element is extracted from the higher clause, they are ungrammatical on the relevant reading on which the negative element is extracted from the lower clause. So (11a) cannot have the reading *Mary believed that John never agreed with anyone.*

4.2 Rhetorical *wh*-question formation is similar to neg-inversion

Rhetorical *wh*-question formation is syntactically similar to neg-inversion in that a *wh*-phrase moves to the [SPEC, CP] postion accompanied by verb movement to C.

(12) a. When has anyone agreed with John?

  b. Where did John ever find any white asparagus?

The interpretation of rhetorical *wh*-questions also corresponds to the interpretation of sentences with neg-inversion. That is, the *wh*-phrase in rhetorical *wh*-question functions as negative QP that has sentential scope. Hence, (12a) means John has not agreed with anyone, and (12b) means John was not able to find any white asparagus. The rhetorical questions in (12a) and (12b) mean the same thing as the neg-inversion sentences in (10a) and (10b) respectively.

Moreover, rhetorical *wh*-questions are clause-bounded, just like neg-inversion.

(13) a. * When did Mary believe that anyone would ever agree with John?

    b. * Where did Mary say that John ever found any white asparagus?

The sentences in (13) are ungrammatical on the reading in which the *wh*-phrase is extracted from the lower clause.

On this analysis of rhetorical *where* and *when* questions, the *wh*-phrase functions as a negative QP. NPIs are licensed because of this negative QP which is in the highest c-commanding position in the sentence.

4.3.   The rhetorical surprise reading of *why* and *how* questions

Rhetorical questions formed with *why* and *how* behave differently from argument and *where* and *when* rhetorical questions. In argument and *where* and *when* rhetorical questions, the *wh*-phrase, functioning as a negative QP, takes wide scope resulting in a sentential negation reading. However, the *wh*-phrases (functioning as negative QPs) in *why* and *how* rhetorical questions cannot take wide-scope. For instance, (1a) (repeated here as (14)) cannot mean that Casey did not agree with anyone.

(14)   Why did Casey agree with anyone?

It means that Casey did agree with someone and the speaker sees no good reason for this to be so (the rhetorical surprise reading). Moreover, *when* and *where* phrases have the option of not taking wide scope. In such cases, these questions with NPIs can also end up with a rhetorical surprise reading.

(15)   Where did Bill find any evidence of ghosts?

For instance, in (3b) (repeated here as (15)), Bill found evidence of ghosts and the speaker can think of no obvious place for this to happen. In sum, rhetorical surprise readings are possible when there is a presupposition that the situation in question obtains.

5.   Factivity and Surprise Readings

Both the question surprise reading and the rhetorical surprise reading of adjunct *wh*-questions with NPIs presuppose that the situation in question obtains. That is, (1b) (repeated here as (16a)) presupposes that Bill voted for a Republican, and

(2b) (repeated here as (16b)) presupposes that Max finished writing some papers. Also, (3b) (repeated here as (16c)) on the surprise reading presupposes that John published his papers and (4b) (repeated here as (16d)) presupposes that Sam voted for a Republican.

(16)   a.   Why did Bill vote for any Republican?

         b.   How did Max finish writing any papers?

         c.   Where did John publish any of his papers?

         d.   When did Sam vote for any Republicans?

5.1.   *why* **and** *how* **questions**

The fact that *why* and *how* questions cannot felicitously be uttered unless the situation in question obtains could possibly be explained by the semantics of *why* and *how* phrases. Lawler (1971) tries to show that *why* and *how* are factives by arguing for the factive nature of the corresponding adverbials *for no reason* and *without any instrument*. According to Lawler (1971), adverbs of reason, purpose, and instrument are similar to factive predicates in that they presuppose the truth of their complement clauses. Examples illustrating the factive nature of reason adverbials are shown in (17). Both sentences in (17) entail that Harry likes salami. That is, the complement clause is true in both the affirmative and the negative sentences.

(17)   a.   There is a reason why Harry likes salami.

         b.   There is no reason why Harry likes salami.

Lawler (1971) argues that instrumental adverbials are factives. Evidence for this comes from the fact that both sentences in (18) entail that Harry fixed the car.[2]

(18)   a.   With an instrument, Harry fixed the car.

         b.   Without using any instrument, Harry fixed the car.

However, this is only a partial explanation for the behavior of *how*. It is clear that in a question which asks the manner in which some situation obtained, that situation in question is presupposed by the speaker to have taken place. For example, the question in (19) cannot be felicitously asked unless the speaker believes that Pat did fix the car.

(19)   How did Pat fix the car?

The test as it is shows that manner adverbials which correspond to the manner *wh*-word *how* are not factives. This can be seen by the sentence in (20) which shows that if there is no manner in which Pat fixed the car, then Pat didn't fix the car.

(20)   In no way did Pat fix the car.

So, *how* questions are a case where the behavior of the *wh*-phrase is different from the corresponding adverbial. Hence, the correlation between adverbials and the corresponding *wh*-words proposed by Lawler only explains part of the problem, but it does point to an interesting direction in which a solution might be found.

5.2. *when* **and** *where* **questions**

When and *where* questions with NPIs all have a rhetorical question reading available. This is as expected because these *wh*-phrases functioning as negative QPs can all take wide scope, resulting in a sentential negation reading.

An interesting fact is that *when* and *where* questions with NPIs allow the surprise reading only in certain discourse contexts. However, *why* and *how* questions with NPIs allow the surprise reading in all discourse contexts. The *wh*-phrases *when* and *where* are different from *why* and *how* in that the corresponding adverbials are not factives, as pointed out by Lawler (1971).

(21) a.   There exists some time at which Harry broke his favorite Ming vase.

b.   There exists no time at which Harry broke his favorite Ming vase.

If there exists no time at which Harry broke his favorite Ming vase, then the entailment is that Harry did not break his favorite Ming vase. The surprise readings are allowed in discourse contexts where the speaker has a knowledge that the situation in question obtains. For instance, assume that Sam usually does not vote for a Republican. But this time he did. In this context, a speaker who knows Sam's voting habits can ask the question in (16d) and it has the question surprise reading.

6.   Surprise Readings

It remains to be explained why the adjunct questions with NPIs result in surprise readings and what licenses the NPIs in such readings.

Putting aside the issue of NPI licensing for the moment, we note that in *why* questions with negation, there is a strong presupposition about the speaker's beliefs. Compare the *why* question with and without negation in (22).

(22) a.   Why did John come to the party?
b.   Why didn't John come to the party?

The question in (22a) can be asked when the speaker has no presupposition about John's expected behavior and is just seeking information as to why John came to the party. But the negated question in (22b) comes with a strong speaker presupposition that he or she has a certain expectation with respect to John's behavior. That is, the speaker expected John to come to the party. But the fact is that he didn't come, so the speaker is surprised and asking the reason why.

It is interesting that *why* questions with negation (such as (22b)) behave similarly to *why* questions with NPIs (but without negation) (such as (23)).

(23)   Why did anyone come to the party?

They both have the same kind of strong presupposition about the speaker's expectation. This suggests that there is covert negation somewhere in *why* questions with NPIs. If this is true, then we can say that (covert or overt) negation is responsible for the presupposition about the speaker's expectation in *why* questions resulting in a surprise reading and that the covert negation is responsible for licensing of NPIs in *why* questions.

   We can extend this analysis to *how* questions with NPIs by positing that *how* questions with NPIs also have covert negation. This covert negation gives rise to the presupposition about the speaker's expectation and is responsible for the surprise readings and NPI licensing. The exact location of this covert negation is still an open question. The idea of appealing to covert negation for NPI licensing is reminiscent of Baker (1970a), Baker (1970b) and Linebarger (1987) although we are not committing ourselves to other aspects of their account.

   The fact that *how* questions with overt negation are ungrammatical (as in (24)) makes it hard to relate the negation and surprise readings in this type of question. That is, *how* questions with overt negation and those with NPIs do not show the same parallel behavior that these types of *why* questions show.

(24)   * How didn't John behave?

   Upon further consideration, it is not surprising that *how* questions with overt negation act differently from *why* questions with overt negation since the scope of negation is different in these questions anyway. That is, while negation has scope over *how*, it does not have scope over *why*. For instance, in (22b), the question is asking for the reason such that John didn't come to the party for that reason. But in (24), the question is not asking for the manner such that John didn't behave in that manner. Evidence for the scope asymmetry between *how* and *why* with respect to negation is provided by the fact that *how* questions with overt negation are sensitive to weak island effects, but *why* questions with overt negation are not (see Kroch 1989, Szabolcsi and Zwarts 1993). It is true that the question in (24) can be used felicitously in certain limited discourse contexts, as noted by Kroch (1989). For instance, (24) can be asked when the discourse context is such that the speaker knows that John behaved erratically, in a wide range of manners. Nevertheless, the fact that *how* questions with negation are grammatical only in a limited discourse contexts, whereas the equivalent *why* questions with negation are always grammatical in any discourse context is enough to draw the conclusion that the scope of negation is different in the two types of questions.

7.   Conclusion

We have addressed the issue of differences in the grammaticality and interpretation in adjunct *wh*-questions with NPIs. However, there are many open questions that

must be answered, such as (1) what is the location of covert negation in *why* and *how* questions with NPIs, and (2) what is the nature of negation such that it gives rise to the surprise readings in *why* and *how* questions with NPIs. We leave these difficult questions for future research.

Notes

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[1]We will only consider questions with simple adjunct *wh*-words in this paper. More complex adjunct *wh*-phrases such as *how many*, or *how often* behave similarly to *how*, and *how xcome* behaves similarly to *why*.

[2]Note that Lawler's argument for the factivity of instrument adverbials is problematic. Since instruments are a subset of manners, it is not the instrument adverbial itself that contributes the factivity here, but the nature of the world. For example, in (18b) (repeated below) Harry could have fixed the car with some method that does not require the use of an instrument.

(18b)   Without using any instrument, Harry fixed the car.

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