The negative *wh*-construction and its semantic properties[+]

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Abstract

Widely attested cross-linguistically, the Negative *WH* (NWH)-construction involves the special use of *wh*-words (e.g. 'where', 'what' and 'how') to convey negation in certain specific contexts. The first half of this paper identifies the negative assertion as the primary meaning of the NWH construction, in addition to two conventional implicatures. In the second half, I argue that the grammatical features in NWHCs in Chinese, Korean and Japanese strongly suggest that NWHCs should be analyzed as interrogative

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wh-questions. The quantification domain of NWH-words is the sets of propositions that pick out the conversational backgrounds of the sentence (Kratzer 1977; Portner 2008). The NWHC can be paraphrased as "What is the proposition q such that in view of q, p is true?" However, the interrogative question can only be interpreted as a negative rhetorical question (i.e. a question without a true answer) because the conventional implicatures make it impossible for p to be true against any of the conversational backgrounds.

Keywords: Negation, *Wh*-construction, Quantification domain, Rhetorical question, Conversational background

1. Introduction

This paper reports a special use of *wh*-words to express the speaker's negative attitude towards a proposition. I dub this the "<u>N</u>egative <u>WH</u> (NWH) <u>C</u>onstruction." In many cases, the *wh*-word 'where' is used in the construction, though quite a number of languages also allow the use of other *wh*-expressions (e.g. 'since when', 'what', 'how', etc.) . Despite having gone almost unnoticed in the literature, the use of NWHCs is widely attested

across many languages[1]. The following are some examples.

(1) a   Koei <u>bindou</u> jau   hai   tousyugun sik   je   aa3?!   (Cantonese)

       he   where have be.at library   eat thing Q

       'No way did he eat anything in the library.'

   b   <u>Eti/Ettehkhey</u> John-i   60 sai   i-ni ?!   (Korean)

       where/how   John-Nom 60 year.old be-Q

       'No way is John 60 years old.'

   c   <u>De dónde</u>   va   a tener 60 años?!   (Spanish)

       of where   goes-he to have 60 years

       'No way is he 60 years old.'

   d   <u>Since when</u> is John watching TV now?!   (English)

In this paper, sentences such as the above are analyzed as "NWH-word + p", and are

paraphrasable as "No way p" or "It is not true that p."

     Due to its superficial resemblance to *wh*-questions, one might possibly dismiss

NWHCs as ordinary interrogative or rhetorical *wh*-questions. However, though the

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[1] The NWH-construction has so far been found in 22 languages: Cantonese, Mandarin, Classical Chinese, Japanese, Korean, Malay, Hindi, Bengali, Hebrew, Turkish, Farsi, Greek, German, Nigerian English, French, Spanish, Brazilian Portuguese, Italian, Polish, Slovenian and Russian.

present paper will argue that NWHCs are underlyingly *wh*-questions, such forms also possess a number of features that are not shared by ordinary *wh*-interrogatives. Here I first mention two diagnostic tests to help readers distinguish NWHCs from ordinary *wh*-interrogatives.

Test 1: Substitution test

Unlike ordinary *wh*-interrogatives, NWH-words/expressions are largely fixed in their form and cannot be modified or replaced by a seemingly synonymous *wh*-expression. Take the English NWH-expression *since when* as an example. This cannot be replaced by synonymous expressions such as *since what time, since which year* or *from when* in NWHCs. Similarly, in Cantonese, one cannot replace NWH *bindou* 'where' with *bin go deifong* 'what place' or 'which place.'

NWHC

(2) {Since when/*Since what time/*Since which year} is John watching TV now?!

(3) Koei {bindou / *bin   go deifong} wui sik   Dakman aa3?!   (Cantonese)

     he   where   / which Cl place   can know German   Q

     'No way can he (possibly) know German.'

Such a morphological restriction is not observed in ordinary *wh*-interrogatives in either language.

Wh-interrogatives

(4) {Since when/Since what time/Since which year} has John been the president?

(5) Koei hoji hai {bindou / bin   go deifong} hok Dakman aa3?   (Cantonese)

     he   can at   where   / which Cl place   learn German Q

     'Where can he learn German?'

Test 2: Adjunct Doubling Test

Ordinary *wh*-interrogatives involving 'where' and 'when' adjunct questions become unacceptable when an adjunct phrase of the same kind (i.e. locative or temporal modifier) occurs in the same clause, as shown in (6) and (7). Doubling adjuncts of the same kind in NWHCs, however, is perfectly fine, as in (8) and (9).

Ordinary *wh*-interrogatives

(6) a   *When did he get up at 7am?   (English)

     b   *Since when has he been the chairman since 2000?

(7) *Keoi jau   hai bindou hai satjimsat sik je   aa3?!   (Cantonese)

5

he   have at where   at   lab   eat thing Q

NWHCs

(8)   <u>Since when</u> has he been working at UCLA <u>since 2000</u>?!   (English)

(9)   Keoi <u>bindou</u> jau   <u>hai satjimsat</u> sik je   aa3?!   (Cantonese)

he   where have   at lab   eat thing Q

'No way did he eat in the lab.'

The goal of this paper is to provide a semantic analysis to account for the meaning of the NWHC. The paper is organized as follows. Section 2 presents three puzzles arising from NWHCs. Section 3 examines in detail the negative assertion and two conventional implicature arising from NWHCs. In Section 4, I make a proposal concerning the quantification domain for NWH-words and the *wh*-sentences that underlie NWHCs. Further, it will be argued that the implicatures necessarily require the *wh*-sentence to be interpreted as a negative rhetorical question. A conclusion is given in Section 5.

2. Puzzles

Three puzzles arise in the analysis of the semantics of NWHCs. First, the possibility of

(apparent) adjunct doubling in examples such as (8) and (9) strongly suggests that 'where' and 'when' in NWHCs do not quantify over their regular domains, i.e. locations and times respectively. Second, NWHCs consistently display *wh*-question grammatical features (e.g. the use of *wh*-words, *wh*-movement, question particle, etc.) across languages. Any analysis of NWHs needs to clarify the relation between *wh*-interrogatives and NWHCs and how the former figure into the meaning of NWHCs. Third, it should also be explained why NWHCs always have a negative meaning. The following are consequently the three questions to be addressed in the semantic analysis of NWHCs.

Question 1: What do NWH-words quantify over?

Question 2: How does *wh*-interrogativity figure in the analysis?

Question 3: Why does the NWHC always carry a negative assertive meaning?

3. Meaning of NWHCs

The focus of this section is on three aspects of the meaning of NWHCs, as given in (10). They include (a) the negative assertive meaning, (b) the Conflicting View Condition (CVC) and (c) the Mis-Conclusion Condition (MCC).

(10) When the speaker, SK, utters "**NWH + *p* ?!**", it entails at least the following:

(a) (SK thinks) ~*p*.

(b) SK thinks that the salient discourse participant, DP, believes that *p*. (CVC)

(c) For all SK knows, SK thinks that DP should have every reason to believe that

~*p*. (MCC)

In my cross-linguistic survey, NWHCs are found to be felicitous only in some specific

contexts, as described in (10b) and (10c). Notice that the requirements (10b) and (10c)

are not observed in negative assertions using negation markers.

3.1 Negative Assertion

Apart from appealing to intuition, there is some evidence that NWHCs convey negative

assertions. Sadock (1971) and Han (2002) provide a test to show that rhetorical questions

are assertions. The introductory phrase *after all* can occur with declarative sentences and

rhetorical questions, but not with interrogative questions. For example, (11) can only be

interpreted as a rhetorical question.

(11)   After all, do phonemes have anything to do with language?

In English, *after all* can precede NWHCs, as in (12).

(12)   After all, since when do biologists need all that math and physics?[2]

In Cantonese, when a *wh*-question is preceded by *lousat gong* 'honestly speaking', it is

interpreted as a rhetorical question.

(13)   Lousat gong aa1, bingo wui lei   aa3?

       honest speak Prt   who will come Q

       'Honestly speaking, who will come?'

Cantonese NWHCs can also co-occur with *lousat gong* 'honestly speaking.'

(14)   Lousat gong aa1, keoi bindou wui lei   aa3?

       honest speak Prt   he   where will come Q

       'Honestly speaking, no way will he come.'

The above tests give some support that NWHCs behave like assertions.

3.2 The Conflicting View Condition (CVC)

NWHCs are commonly used to express disapproval toward the DP or to correct the DP.

Let me briefly illustrate this in the Cantonese example below.

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(15)   DP: John hai 60 seoi.

John be   60 year-old

'John is 60 years old.'

SK: John bindou hai   60 seoi   aa3?!

John where   be   60 year.old Q

'No way is John 60 years old.'

The SK and the DP dispute about John's being 60 years old. The SK uses the NWHC to express the denial of the DP's statement. Without such a conflict-of-views scenario, NWHCs become infelicitous, as verified by (16). Note the contrast between the NWHC response (SK2) and the alternative response using a simple negation marker (SK1). Both the SP and the DP hold the same view, i.e. John is not a policeman (~p), it is felicitous for the SK to reiterate his view (i.e. ~p) with SK1 but not SK2.

(16) DP: John m-hai   jat   go gingcaat.

John not-be   one Cl policeman

'John is not a policeman.'

SK1:   (Mou   co.) John m   hai jat   go gingcaat.   (negative assertion)

have.not wrong John have not one Cl policeman

'(Right.) John is not a policeman.'

SK2:   #John bindou   hai   jat go gingcaat aa3?!   (NWHC)

John where   be   one Cl policeman

'No way is John a policeman.'

In fact, the dialogue is equally unacceptable if DP does not commit to or is ignorant of

John's being a policeman, as in (17).

(17) DP: Ngo m   zi   John hai-m-hai   jat   go gingcaat.

I   not know John be-not-be   one Cl policeman

'I don't know if John is a policeman.'

SK1:   John m-hai   jat go gingcaat.   (negative assertion)

John have.not one Cl policeman

'John is not a policeman.'

SK2:   #John bindou   hai   jat go gingcaat aa3?!   (NWHC)

John where   be   one Cl policeman

'No way is John a policeman.'

(16) and (17) show that the CVC is a necessary condition for NWHCs. In the above example, the conflict of views is expressed explicitly by linguistic means. The conflict can be achieved indirectly and non-linguistically. In fact, the CVC can be satisfied as long as the speaker has substantial evidence that DP believes p. What counts as substantial is dependent on the speaker's assessment in the conversational context.

3.2 The Mis-Conclusion Condition (MCC)

Meeting the CVC alone is insufficient. The SK must also believe that for all the SK knows about the scenario, the DP should have every reason to conclude $\sim p$ but the SK knows that DP actually concludes p. The DP's failure to arrive at the conclusion $\sim p$ (relative to the SK's perspective) is referred to as "mis-conclusion." One may wonder whether the MCC is just a conversational implicature following from the CVC. For example, Grice's conversational maxim of truth may explain the MCC. When we are in disagreement with another party, we may tend to think that others are wrong. Since we truthfully commit to what we have said, which contradicts with the other party, we want to hold on to our view, unless we have evidence otherwise. It follows that we tend to think that the other party must have mis-concluded (assuming that the other party is

truthful too).

However, it can be demonstrated that a pragmatic account is untenable. To investigate whether the MCC is pragmatic, we can check whether the MCC can be cancelled as conversational implicatures are generally context-dependent. The example below shows that the MCC cannot be cancelled.

Example: Meeting Cancellation

John arranges to brief his team members on the progress of their project on Wednesday, and all team members are informed of the meeting. Subsequently, John receives a call from his family and has to leave town for several days for some urgent family matters. He has to cancel the Wednesday meeting. Before he has a chance to notify his team about the cancellation of the meeting, he runs into one of the team members, Mary, on Monday, two days prior to the scheduled meeting

English

(18) Mary: Hey, John, we will have meeting tomorrow. I look forward to hearing about the project progress.

(*English*)   John's response

    (i)   #Since when will we have meeting tomorrow?! I have to cancel it

        because …

    (ii)   We will not have meeting tomorrow. I have to cancel it because …

(*Cantonese*)   John's response:

    (iii)   #Ngodei singkeisaam bindou wui hoiwui   aa3?!

        we   Wednesday   where will open.meeting Q

        'No way will we have meeting on Wednesday.'

    (iv)   Ngodei singkeisaam m wui hoiwui   aa3.

        we   Wednesday not will open.meeting SP

        'We will not have meeting on Wednesday.'

In the scenario, John intends to convey "We will not have meeting on Wednesday" (i.e.

~p). Also, John has every reason to believe that Mary believes "We will have meeting on

Wednesday" (i.e. p) because John has not notified anyone of the cancellation yet. The

idea of canceling the meeting is therefore knowledge held solely by John before the

conversation takes place. While the negative assertions (ii) and (iv) are acceptable in such

a context, the NWHC responses (i) and (iii) are felt to be quite odd. Clearly, the CVC is

satisfied in the above scenario, i.e., the SK believes ~*p* and the DP believes *p*. However, the MCC is not met in this example. As knowledge of the cancellation of the meeting is still only held by John when they run into each other, John does not expect Mary to think that the Wednesday meeting will be canceled. In other words, Mary has every reason to think *p*. If the MCC is cancelable, the NWHC responses should be acceptable. However, they turn out to be quite inappropriate.

When the scenario is altered so that John has reasons to believe that Mary should believe ~*p*, the use of NWHC responses becomes acceptable, however. Suppose that John has reminded Mary many times of the cancellation of the meeting before the conversation takes place. John expects Mary to know well that there will not be any meeting on Wednesday. The following conversation becomes fully acceptable no matter whether John chooses (i) or (ii).

English

(19) Mary: Hey, John, I look forward to hearing about the project progress on Wednesday.

(*English*)   John's response:

(i)   Since when will we have a meeting on Wednesday?! During the last two

days I have already told you guys many times that the meeting tomorrow

will be cancelled.

(ii) We will not have meeting on Wednesday. During the last two days I have

already told you guys many times that the meeting tomorrow will be

cancelled.

(*Cantonese*)   John's response:

(iii) Ngodei singkeisaam bindou wui hoiwui   aa3?!

         we   Wednesday   where will open.meeting Q

       'No way will we have meeting on Wednesday.'

(iv)   Ngodei singkeisaam m wui hoiwui   aa3.

         we   Wednesday not will open.meeting SP

       'We will not have meeting on Wednesday.'

The example (19) shows that the SK imposes the requirement that the DP should have

concluded ~*p*. The MCC is therefore not cancelable.

3.4   Semantic Status: At-issue Meaning vs. Conventional Implicatures

Although the three NWHC properties (10a), (10b) and (10c) have been listed together

with each other, (10a) evidently has a different semantic status from (10b) and (10c).

Using Grice's (1975) and Potts' (2007) terms, it will be suggested that (10a) represents

the assertive content (or what Potts calls "at-issue meaning") of NWHCs, and (10b) and

(10c) are the conventional implicatures of the construction. Before that, I first want to

illustrate the different semantic statuses of (10a) and (10b)/(10c). A distinction can be

made on two grounds. First, when language consultants were asked to attempt to describe

the meaning content of NWHCs, they were regularly able to easily identify (10a) but not

(10b) or (10c). This does not necessarily mean that they were uncertain about the CVC

and MCC. In fact, when carefully designed scenarios (e.g. those in Section 3.2 and 3.3)

were set up to elicit their intuition for these conditions, these conditions turned out to be

manifested very robustly across a broad range of languages. However, (10b) and (10c)

appear to be far less salient as aspects of the meaning of NWHCs than (10a). Generally,

language users can more readily perceive and describe the at-issue meaning than other

kinds of meanings such as presuppositions, conventional implicatures, conversational

implicatures, etc.

Second, if (10a) is violated alone, no matter whether the CVC and/or MCC are still

observed, the whole NWHC becomes unacceptable. For example, if one utters NWH + p

(meaning the speaker thinks ~p), it turns out that the actual situation should be p. The hearer would think that the speaker is entirely wrong or mistaken. Consider the following example.

(20)   Suppose John's mother turns 65 today. But John thinks that his mother is 68.

        Mary: Hey, John. Today is your mum's 65 birthday. How will you

                    celebrate it with her?

        John: Since when is my mum 65 years old?! She is 68 now.

        (John's mother stands next to John. She knows well that she IS 65.)

   (a)   John's mum: No. You are wrong, my son. I am only 65 now.

   (b)   John's mum: #Yes. You are right. But I am only 65 now.

At the point when John utters the NWHC, for all John knows, "Mother is 65 years old" (=p) is not true. It is reasonable for John to expect that Mary should know the age of his mother, though according to John's (incorrect) belief, she does not (i.e. the MCC is observed). John and Mary have opposing views (i.e. the CVC is observed). However, John's knowledge of his mother's age turns out to be incorrect, meaning p is **true**, not **false**. The intuition is that the falsity of (10a) renders the entire NWHC utterance to be **incorrect** truth-conditionally. In other words, from John's mother's perspective, John's

utterance contradicts the actual world. This can be illustrated by John's mother's continuation. She has to say that John is wrong.

In contrast, if the negative condition is observed but the CVC and/or MCC are violated, the intuition is that the speaker is not really wrong or mistaken. He only has incorrect assumptions about the CVC and/or MCC. Consider the scenario below.

(21) Suppose John's mother turns 65 today. John thinks that Mary, who is his mother's best friend, knows this.

> Mary: Hey, John. Today is your mum's 80 birthday. How will you celebrate it with her?
>
> John: Since when is my mum 80 years old?! She is 65 now.

(This time John is right about his mother's age. John's mother stands next to John. She knows that Mary recently suffered a brain injury, leaving her with a memory problem. But John is not aware of Mary's mishap.)

(a) John's mother: #No. You are wrong. You should not expect Mary to know my true age. She just suffered a brain injury. It affects her memory badly But you are right. I am not 80 years old.

(b) John's mum: Yes. You are right. I am not 80. But Mary just suffered

a brain injury. It affects her memory badly.

At the point when John utters the NWHC, for all John knows, "Mother is 80 years old"

(i.e. p) is not true. As John does not know that Mary had a brain injury, it is therefore

reasonable for John to expect that Mary should know the true age of his mother, though

in fact, she does not (i.e. the MCC). John and Mary have opposing views (i.e. the CVC).

John uses the NWHC appropriately relative to his belief worlds. However, John's

ignorance of Mary's brain injury renders the MCC incorrect, meaning John should **not**

expect Mary to know his mother's true age. Interestingly, the intuition is that despite the

violation of (10c), John is not entirely wrong (c.f. (20)). As the continuation shows, it is

actually odd for John's mother to say that John is wrong. The natural way to respond to

John is to say that he is right about "Mother is not 80 years old" but wrong about the

assumption that Mary should be expected to know his mother's age (i.e. the MCC).

In view of their different semantic status, (10a), (10b) and (10c) should consequently

be treated differently. (10a) should be treated as the basic meaning of the construction,

and (10b) and (10c) have a "secondary" status. In the following, I argue further that

whereas (10a) is the "at-issue" meaning (in Potts's term), (10b) and (10c) are

conventional implicatures, as in (22).

(22) Meaning of "**NWH + *p* ?!**"

    (a) At-issue meaning: ~*p*

    (b) Conventional Implicatures:

        (i) CVC: The SK thinks that the DP believes that *p*.

        (ii) MCC: For all the SK knows, the SK thinks that the DP should have every

        reason to believe that ~*p*.

It should be noted that (22bi) and (22bii) could possibly be classified as presuppositions.

The division between presuppositions and conventional implicatures is not a settled issue

in the literature. A lot depends on one's theory of these theoretical notions. However,

nothing in my analysis hinges on the classification of (10b) and (10c) as either one or the

other. Nevertheless, I adopt Potts's (2007) guideline to distinguish presupposition,

conversational implicature and conventional implicature. Conversational implicatures are

distinguished from conventional implicatures and presuppositions by their cancelability.

Conversational implicatures arise due to the context, not lexical or grammatical

properties. The findings in Section 3.2 and 3.3 clearly show that the CVC and MCC are

not cancelable. So (10b) and (10c) cannot be conversational implicatures. What about

presuppositions and conventional implicatures? Potts appeals to two characteristics to

tease these apart. First, at-issue meanings are generally dependent on the evaluation of the presupposition[3]. However, it has already been shown in (20) and (21) that the negative assertive meaning seems independent of the content of the MCC and CVC. Second, expressions bearing conventional implicatures "usually offer information that is not part of the common ground when they are uttered." Presuppositions usually carry old information. NWHCs are highly felicitous in situations where the information conveyed by the MCC and CVC is new. Because of these properties, (10b) and (10c) are classified as conventional implicatures in the rest of the paper.

4. Modal Analysis of NWHCs

The discussion in this section turns to explain how the at-issue meaning of NWHCs in (10a) is derived compositionally. First, I argue in Section 4.1 that NWHCs should basically be analyzed as *wh*-interrogatives. Section 4.2 proposes that the quantification domain of NWH-words is sets of proposition that pick out the conversational backgrounds, against which the sentence *p* is interpreted. On the basis of the proposed domain, Section 4.3 offers a compositional semantic analysis of the construction. Last,

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[3] In the classic example, the truth of "The king of France is bald" depends on the existence of the king of France (i.e. the validity of the presupposition).

Section 4.4 addresses how the negative assertive meaning arises as a result of the rhetorical *wh*-question semantics and the two conventional implicatures.

4.1 The *Wh*-Question-Hood of NWHCs

Despite the assertive force, two properties strongly suggest that NWHCs are essentially (interrogative) *wh*-questions. They include the use of *wh*-words, *wh*-movement in *wh*-movement languages and the use of question particles in Chinese, Korean and Japanese.

4.1.1 Use of Question Particles

Some languages mark the illocutionary force of a clause with a sentence particle. In Chinese, Korean and Japanese, interrogative *wh*-questions end with a particle that types a clause exclusively as interrogative (and rhetorical) (Cheng 1991). They cannot be used in non-interrogative sentence. Despite the lack of an information-seeking question interpretation, NWHCs must end with an interrogative *wh*-question particle but not other non-question particles in these East Asian languages.

(23)   Zoengsaam bindou wui maai   go   bun syu   aa3/aa1?!   (Cantonese)

Zoengsaam where will   buy   Dem Cl book   Q / RhetQ

'No way will Zoengsaam buy the book.'

(24)   Wo na(r) zhidao (ne)[4]?!   (Mandarin, Hsieh 2001)

I   where know   Q

'No way can I know.' (Hsieh's paraphrase: 'How do I know?')

(25)   Yanque   an   zhi   honghu zhi   zhi   zai ?!   (Classical Chinese)

sparrow where know   swan Rel   ambition Q

'No way does a sparrow know the ambition of a swan.'

(26) a   John-i   eti   6 feet-ni?!   (Korean)

John-Nom where 6 feet-Q

'No way is John 6 feet tall.'

   b   Eti   John-i   hang-sang   TV-lul bo-kessni?!

where John-nom always   TV-acc watch-RhetQ

'No way does John always watch TV.'

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[4] In Mandarin, a *wh*-question can end with an overt question particle, *ne*, or a silent particle (Cheng 1991).

(27)   Kare-no doko-ga   1 meetoru 80 senti   na   no?!   (Japanese)

he-Gen where-Nom 1 meter   80 centimeter Decl Q

Literal: 'Where of him is 1.80m?!'

Meaning 'No way is he 1.8m tall.'

It can furthermore be noted that Cantonese and Korean have certain rhetorical question

particles that give rise to rhetorical question interpretations reading only. Such particles

cannot be used in regular information-seeking questions.   Interestingly, they can also

appear in NWHCs, as illustrated in (26b). Language consultants reported no difference in

meaning whether the interrogative or rhetorical question particle was used. If NWHCs

are not underlyingly interrogative questions, the use of question particles in NWHCs

would be difficult to explain.

4.1.2 Use of *Wh*-words

A prominent feature of *wh*-questions cross-linguistically is the use of special *wh*-words.

The fact that NWHCs regularly make use of *wh*-words can be suggested to give further

support to the question analysis of NWHCs (though it also has to be acknowledged that

certain languages use *wh*-words for other non-interrogative constructions such as relative

clauses and exclamatives etc).

4.1.3 *Wh*-Movement and Inversion

Wh-movement is an extensively studied property of *wh*-questions. Similar to interrogative *wh*-questions, NWHCs exhibits *wh*-movement in *wh*-movement languages (28—31) and non-movement in *wh*-in-situ languages (32—34).

<u>*Wh*-Movement Languages</u>

English

(28) a   Since when did he arrive this morning?!

    b   Since when is he flying to Hawaii tomorrow?!

German

(29) a   Wo   ist   er   groß?

           where is   he   tall

           'No way is he tall.'

    b   Seit wann sind Hühner Säugetiere?

           Since when are chickens mammals

           'No way are chickens mammals.'

Spanish

(30)   Qué   va   a haber comprado   los   libros en   la   librería?!

       what go.3Sg.Pres to have buy.3Sg.Pst Det.Pl   book   in Det   bookstore

       'No way did he buy the books in the bookstore.'

     b   De   dónde Juan va a haber leído todos los libros ?!

        from where Juan go to have read   all   Det books

        'No way has Juan read all the books.'

Hebrew

(31)   Eyfo / Eyze   kolam   holchim   lirot   seret.

       where /which   everyone going   see.Inf   movie

       'No way is everyone going to see the movie.'

<u>*Wh*-in-situ Languages</u>

(32)   Ta nali   / nar   you   liushi   sui?!   (Mandarin Chinese)

       he where /where have sixty   year.old

       'No way is he sixty years old.'

(33)　　John-i　　eti　　60 sai　　i-ni ?　　　　　　　　　　　　　(Korean)

　　　　John-Nom where 60 year.old be-Q

　　　　'No way is John 60 years old.'

(34)　　Kare-no doko-ga　　1 meetoru 80 senti　　na　　no?!　　　　(Japanese)

　　　　he-Gen where-Nom 1 meter 80 centimeter Decl　Q

　　　　'No way is he 6 feet tall.'　　(lit. 'Where of him is 1.80m?!')

Though certain other non-interrogative *wh*-constructions also display *wh*-movement, e.g.

wh-exclamatives and *wh*-relatives in English, there is some evidence that NWHCs

correlate more with interrogative *wh*-questions. In English, matrix interrogative

wh-questions (but not *wh*-exclamatives or *wh*-relatives) are marked by subject-auxiliary

inversion. NWHCs triggers subject-auxiliary inversion as well, as illustrated in (28).

　　In sum, the grammatical features on NWHCs strongly favor an analysis that treats

NWHCs as *wh*-questions. With the question analysis in mind, I will turn to what the

quantification domain of NWH-words may be in section 4.2.

4.2 The Quantification Domain

Pinning down the quantification domain of NWH-words is less than intuitive. This is also

the number one puzzle identified in Section 2. Recall the semantic contribution of the NWH-word.: (i) negation of p (i.e. turning p into $\sim p$), and (ii) the two conventional implicatures. In view of the primacy of the negative assertive meaning (see Section 3.4), I assume that the quantification domain of the NWH-word must be directly related to the negative assertive meaning. The task now is to find a domain that is compatible with the three considerations below. First, the choice of the domain should allow the mapping of p into $\sim p$. Second, language consultants' intuition is that NWH-words such as 'where' and 'since when' do not seem to introduce reference to locations or times in to the sentence, as shown by adjunct doubling in NWHCs. In fact, in languages with more than one NWH-word, no matter which NWH-word is used, the meaning of the NWHC is the same. Third, 'where' is the most preferred *wh*-word form for NWHCs across languages. To accommodate these observations, I propose the following:

(35) (a) The quantification domain of NWH-words is the associated conversational

　　　　 background

　　(b) All NWH-words (e.g. 'where', 'what', 'since when', etc.) have the same

　　　　 quantification domain.

The rest of the section is devoted to the justification of the above.

First of all, let us briefly review the notion of conversational background, pioneered by Kratzer (1977) in her analysis of modality. The central idea of the possible world-based analysis of modals is to identify a set of relevant worlds over which the modal expression quantifies (Portner 2008: 49). Compare (36a) – (36c).

(36) (a)   Mary must be lost.

(b)   In view of what I know, Mary must be lost. (Portner 2009: 50)

(c)   In view of the evidence, Mary must be lost. (my own example, L.C.)

Assume that in the sentence "*in view of α, p*", α refers to the relative clause (e.g. *what I know*) or the DP (e.g. *the evidence*) in the examples. According to Kratzer, α in *in view of α* denotes a conversational background, i.e. a function *f* of type <s, <st, t>>, mapping worlds to sets of propositions α. In (36b), *in view of α* requires that *must* quantifies over the set of worlds that are consistent with the set of facts that the speaker knows. With respect to speech world *w*, the speaker knows, for example, that "Mary went hiking this morning (s_1) ∧ Mary never goes home later than 11pm (s_2) ∧ Mary's car was found near the hiking trail (s_3) ∧ …" The conversational background gives the following mapping:

(37)   *w*   #   { s_1, s_2, s_3, …   }

Alternatively, it can also be expressed in terms of accessibility relation:

(38)   For any worlds w and v, v is accessible from w iff every proposition in $f(w)$, i.e.

$\{s_1, s_2, s_3, \dots \}$ is true in v. (i.e. $v \in \cap f(w)$) (Portner 2009: 52)

The operator *in view of α* expresses that the complement sentence p is true in all the

worlds compatible with $\cap f(w)$ (von Fintel & Heim 2009: 13). $\cap f(w)$ is the set of worlds

compatible with the proposition set $\{s_1, s_2, s_3, \dots\}$, which is equivalent to the conjunctive

proposition: $s_1 \wedge s_2 \wedge s_3, \dots$ In essence, α is a way to depict the membership of the set of

relevant worlds where p is interpreted.

(39) "In view of α, p" = true iff in all the worlds $v \in \cap f(w)$ (w = speech world), p is true.

Kratzer assumes that the *in view of* phrase is an explicit way to specify the conversational

background. When such phrases are omitted, as in (36a), the speaker can infer the

conversational background depending on the context.

Though the notion of conversational background is motivated by the study of

modals, it is possible to extend the idea to sentences without modals. For example, von

Fintel and Heim (2009) has the following example, in which the phrase *in the world of*

achieves very similar semantic contribution.

(40)   In the world of Sherlock Holmes, a detective lives at 221B Baker Street.

Even though the place referred to in (40) is fictitious and does not exist in the actual

world, the phrase *in the world of Sherlock Holmes* instructs the hearer to relativize the

interpretation to the set of fictitious worlds compatible with the Sherlock Holmes stories[5].

In sum, these clause-initial PPs shift the accessibility relation from the one provided by

the context to the one expressed by α (Portner 2009: 53).

Returning to the NWH-word quantification domain, I propose that NWHCs have a

conversational background (or accessibility relation) shifting operator. The NWH-word is

the *wh*-quantifier that quantifies over the set of propositions (i.e. $q = s_1 \wedge s_2 \wedge s_3 \wedge \ldots$)

inside the conversational background shifting expression in (39). These propositions

determine the set of worlds in a conversational background. For example, when we say,

"Since when Sherlock Holmes is a doctor?", the quantification domain could include { q_1,

q_2, q_3, … }, where, say, q_1 = the conjunction of propositions that are true in the actual

world, q_2 = the conjunction of propositions that are true in the Sherlock Holmes stories,

q_3 = the conjunction of propositions that are true in a hypothetical world, etc. To answer

the question, the hearer is to pick a member from the set { q_1, q_2, q_3, … } such that

Sherlock Holmes is a doctor in all those worlds. More will be said about the domain in

Section 4.3.

---

[5] It includes the proposition "Sherlock Holmes lives at 221B Baker Street" among others.

With the domain assumption, I want to briefly address a few issues about the

NWH-word morphology raised earlier. First, all NWH-words are "surrogates."

Languages do not have a dedicated *wh*-word for propositions, but pick some *wh*-word(s)

to substitute the intended "which proposition" expression. The original domains of the

surrogate *wh*-words become irrelevant in NWHCs. They do not introduce reference to

locations, times, etc. This explains why language consultants cannot tell the meaning

difference between NWH-words because they quantify over the same domain despite

lexical variation.

Second, there is a strong tendency to use 'where' across languages. In my survey of

NWH-words, 18 of 20 languages use 'where' (see Appendix 1)[6]. My conjecture is that as

the proposition selects the set of worlds as the conversational background, the proposition

is closely related to worlds. One of the everyday uses of the term "world" is "a particular

division, section, or generation of the earth's inhabitants or human society (a) with

reference to the *place* or *time* of their existence, or (b) with reference to their *interests* or

pursuits." (italic mine, OED 1989). Here are some examples from the dictionary entry.

(41) a   The world of England was perfectly mad.   (place)

---

[6] Many use 'where' exclusively. Even when some languages have multiple NWH-words, 'where' usually
seems to be the more unmarked form.

b The old world, as is thought, was ignorant of this sport. (time)

c A gentleman well known in the theatrical world.   (interest)

It seems that locations and times are important anchors of worlds. That may explain why among the commonly available *wh*-words (i.e. 'what', 'who', 'where', 'when', etc.), 'where' and 'when' are frequently made use of as surrogates *wh*-words in NWHCs.

4.3 The *Wh*-Question underlying NWHCs

Having made a proposasl relating to the quantification domain, we are now in a position to articulate the *wh*-question that underlies the NWHC. An NWH-word quantifies over the set of propositions that characterize the conversational background. If we entertain the possibility that NWHCs are interrogative questions, NWHCs can be paraphrased as "What is the proposition q such that in view of q, p?" (where $q = s_1 \wedge s_2 \wedge s_3 \wedge \ldots$) According to Karttunen's (1977) analysis of question semantics, a question denotes a set of true answers or propositions, as in (42b).

(42) a Meaning of the *wh*-question underlying NWHCs (Version 1)

    NWH + p?! $\equiv$ What is the proposition q such that in view of q, p?

  b Denotation of (42a) in Karttunen's analysis of question semantics

{

       "In view of q_1, p",

       "In view of q_2, p",

       …

       "In view of q_n, p"

}

The denotation of the *wh*-question can be formally represented as (43).

(43) $[\![\text{NWH} + p?]\!]^w$

      $= \{ \, r(w) = 1 \wedge r \in D_{<s,\,t>} : \exists q \, [q \in Q \wedge r = $ in view of q, John is a bus driver $] \, \}$

                     where Q is a set of conjunctive propositions.

Let me illustrate (42) with (43). For simplicity, q_i in the answer set consists of one proposition only.

(44) a   Question: Since when is John a bus-driver?!

     b   (40a) denotes the following *true* answer set:

       {

          (i) In view of the fact that *John wears a bus-driver uniform*, John is a

          bus-driver;

(ii) In view of *the bus company's records*, John is a bus-driver;

}

The *wh*-question invites the hearer to identify a proposition q such that in view of q, John is a bus driver.

For the time being, let us assume that the *wh*-question is (independently) required to be interpreted rhetorically (see Section 4.4). None of the potential answers to the NWHC question is true. As a result, the answer set is always an empty one.

(45) Rhetorical Interpretation of (42a):

    (a)   Answer set: {   }

    (b)   There is no proposition q such that in view of q, John is a bus-driver.

While (45) seems to be close to getting the derived meaning $\sim p$, there is a glitch. If the quantification domain ranges over all possible propositions, (45) means that there is no proposition whatsoever that can make a true answer. It entails that there is no possible world v such that p is true in v. In possible world semantics, only contradictory sentences are not true in all possible worlds, e.g. "John is a teacher and John is not a teacher" or "The swan which is black is not black." Contradictory sentences are by definition not contingent on worlds. I call this the "contradiction problem." Obviously, when one utters

an NWH-sentence, he is not making a contradictory statement. NWHCs are contingent on

the speech world. In fact, for each NWH-sentence, it is easy to imagine worlds in which

the sentence is true, and other worlds in which the same sentence is false.

To circumvent the contradiction problem, I exploit the covert restriction of quantifier

domains. It is commonly observed in *wh*-interrogatives[7] that the domain of *wh*-words is

restricted either implicitly (46a) or explicitly (46b, c). In (46a), even though there is no

explicit specification of the set of humans in the quantification domain of *who*, it is

understood restricted to a small subset of humans determined contextually, e.g. the

students in the class are John, Mary and Bill.

(46) a   *Covert restriction*

Who hasn't turned in the assignment?

[Domain in context: John, Mary and Bill, not the set of all humans]

Explicit restriction

b   Who, among the students in this class, hasn't turned in the assignment?

c   Which of the students in this class hasn't turned in the assignment?

Covert restriction must occur in the above cases. Otherwise, many other people in the

---

[7] Restriction of domain is a very common phenomenon in natural language quantifiers. von Fintel (1994)
argues that "all quantifiers have a hidden domain argument, whose value is contextually supplied. (p. 28)"

universe would qualify to be the person who has not turned in the assignment, e.g. the school principal, the parents of the students, the mayor, the President, etc. However, in the relevant discourse, if interlocuters pick someone outside the set of students, the conversation becomes odd.

Similarly, in the case of NWHCs, the set of proposition q does not range over the entire set of all propositions but a set of propositions contextually-relevant to or compatible with the evaluation world w[8]. For example, when we talk about the biological discovery of a new species of spider, the relevant conversational backgrounds are likely to be the worlds compatible with findings by scientists, say, *in view of the literature on spiders*, *in view of a biologist's opinion*, etc. We will likely exclude conversational backgrounds like *in view of the literature on subjunctives in English*, *in view of WWII ending in 1954*, etc. Using the example in (44), the potential candidates for q are, say, (i), (ii) but not (iii) and (iv). The physical property of water or Napoleon's failure in the Battle of Waterloo have little to do with John being a bus-driver. So they are unlikely to be part of the contextually-relevant domain.

---

[8] Notice that even though the evaluation world is usually the actual world that the speaker is situated in, this is not always necessary. For example, when the speaker talks about the Sherlock Holmes novel, the evaluation world is shifted to the world of Sherlock Holmes, rather than the actual world.

(47) a   NWHC: Since when is John a bus-driver?!

    b   Contextually-relevant

    (i) ✓In view of the fact that *John wears a bus-driver uniform*, John is a

    bus-driver;

    (ii) ✓In view of *the bus company's records*, John is a bus-driver;

    Contextually-irrelevant

    (iii) ✘In view of *the literature on subjunctives in English*, John is a bus-driver;

    (iv) ✘In view of *WWII ending in 1954*, John is a bus-driver;

By constraining the proposition domain for q, the NWHC only asserts the relation

between p-worlds and contextually relevant q-worlds. It leaves open the question whether

p is true in all other irrelevant worlds. Consequently, NWHCs do not describe a situation

in which p is false in all possible worlds, avoiding the contradiction problem. (42) can be

revised as (48).

(48)   Meaning of the *wh*-question underlying NWHCs (Version 2)

    NWH + p?!   ≡   What is the proposition q and q is contextually-relevant such

                    that in view of q, p?   (with rhetorical interpretation)

    Now, we are in a position to formalize the semantics of NWHCs discussed above.

The first approximation of "*in view of q, p*" is given in (49).

(49) $[\![$*in view of q, p*$]\!]^w$ = $\forall w'.[q(w)(w') \rightarrow p(w')]$

The formula, however, does not make reference to contextual-relevancy in restricting the

domain of *q*. By way of the domain condition[9], $\exists w''. [q(w'') \wedge w'' \in \mathbb{C}(w')]$[10], (50)

imposes the following restriction on *w'*: in *w'*, the set of worlds *W''* that the hearer needs

to consider must be the contextually-relevant alternatives of *w'* (i.e. $\mathbb{C}(w')$)[11], and there

exists at least one *w''* $\in$ *W''* such that *q* is true in *w''*.

restriction

(50) $\lambda w': [\exists w''. [q(w'') \wedge w'' \in \mathbb{C}(w')]]. \forall w'. [q(w') \rightarrow p(w')]]$

Effectively, the set of *w'* considered is narrowed down from all possible worlds to the

subset that meets the restriction, thus avoiding the contradiction problem.

(51) is the derivation of the semantics of the NWHC. It is largely based on Heim

(2000). The difference is that Heim adopts Hamblin's (1973) analysis but I follow

Karttunen's (1977) analysis of question semantics. The technical difference is that the

former takes the view that questions denote a set of potential answers (both true and false

---

[9] See Heim and Kratzer (1998: 34).
[10] $\mathbb{C}(w)$ is a function from worlds to sets of contextually-relevant worlds.
[11] As opposed to the subset of all possible worlds.

answers) but the latter argues that questions denote a set of *true* answers (false answers

excluded). As a result, the term $r(w) = 1$ is inserted to ensure that only true answers are

allowed in the denotation of *wh*-questions.

(51)

```
              ❻
            /    \
          ❺       ❹
          wh     /  \
              λx₁    ❸
                    /  \
                  ❷     ❶
                  Q     IP
                        /\
                   in view of t₁, p
```
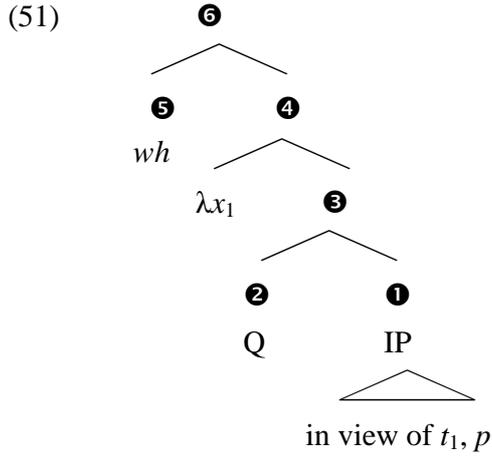
❶ $\lambda w' \colon [\exists w''. [x_1(w'') \wedge w'' \in \mathbb{C}(w')]]. \forall w' [x_1(w') \to p(w')] \,]$

                                                     (meaning of *in view of q, p*)

❷ $\lambda p \, \lambda r \, \lambda w \, [r(w) = 1 \wedge r = p]$ (meaning of the interrogative complementizer)

❸ $\lambda w. \, \lambda r \, [r(w)=1 \wedge$

          $r = \lambda w' \colon [\exists w''. [x_1(w'') \wedge w'' \in \mathbb{C}(w')]]. \forall w'. [x_1(w') \to p(w')] \,] \,]$

                                                   (functional application)

❹ $\lambda x_1. \lambda w. \, \lambda r. \, [r(w)=1 \wedge$

          $r = \lambda w' \colon [\exists w''. [x_1(w'') \wedge w'' \in \mathbb{C}(w')]]. \forall w' [x_1(w') \to p(w')] \,] \,]$

                                                   (lambda abstraction)

❺ $\lambda R_{<st, \, <s, \, <st, \, t>>>}.\lambda w.\lambda r_{st}.\exists x_{st}. \, [R(w)(r)(x)]$ (meaning of the *wh*-word)

❻ $\lambda w.\lambda r_{st}.\exists x_{st}.[r(w)=1 \wedge$

41

$$r=\lambda w': [\exists w''. [x(w'') \wedge w'' \in \mathbb{C}(w')]]. \forall w'[x(w') \rightarrow p(w')]]]$$

<div align="right">(functional application)</div>

4.4 Negative Interpretation of NWHCs

The final missing piece in the analysis of NWHCs is related to Question 3 in Section 2.

Since the meaning in (44) is no different from an ordinary interrogative question, why

must NWHCs be interpreted negatively (i.e. no true answer)? Nothing so far compels us

to interpret the NWHC negatively. To this end, I appeal to the conventional implicature,

MCC, as the source for the obligatory negative interpretation. Recall the MCC, repeated

below as (52).

(52) When the speaker, SK, utters "**NWH + *p* ?!**", it entails the following implicatures:

CVC: SK thinks that the salient discourse participant, DP, believes *p*.

MCC: For all SK knows, SK thinks that DP should have every reason to believe

that ~*p*.

Because of the MCC, when an NWHC is uttered, the SK knows that the DP has every

reason to believe ~*p* with respect to all contextually-relevant conversational backgrounds.

Let us refer to this set of contextually-relevant conversational backgrounds as *CB*. When

the SK utters an NWHC, he invites the hearer to provide a proposition *q* that

characterizes a *cb* ($\in CB$) so as to make *p* true in all the worlds associated with *cb*. This results in a special kind of question because any choice of *q* necessarily entails ~*p* rather than *p*.[12] In other words, no choice of *q* can be a true answer to the question. The MCC thus makes it impossible to interpret NWHCs as an interrogative question. The only interpretation of the *wh*-question that is compatible with the MCC is that there is no true answer to the question. On such an account, a possible paraphrase of NWHCs is (53).

(53)   NWHC + *p*?! = There is no *q* such that in view of *q*, *p*.

Since there is no choice of *q* that can make *p* true, NWHCs entail ~*p* in all the contextually-relevant conversational backgrounds. This explains why "NWH + *p*?!" is interpreted as equivalent to ~*p*.

    The analysis also offers a simple account for why NWHCs are sometimes felt to be like rhetorical questions, though the two also differ in other important ways. The first similarity is that in both kinds of questions, none of the values in the quantification domain can make the proposition true. I have explained this for NWHCs above. The situation is the same in many ordinary (negative) rhetorical questions like (54).

(54)   Who would buy this old car?   (Of course, no one)

---

[12] A similar proposal about rhetorical questions has been made in Han (2002).

When (54) is interpreted as "No one would buy this old car", "no one" essentially signals that none of the values in the domain of contextually-relevant humans for *who* can make the proposition true. The second similarity is that NWHCs and rhetorical questions are uttered when the speaker does not expect an answer. The following quote summarizes the essence of rhetorical questions in a number of studies (Sadock, 1971, 1974, Lee-Goldman 2006 among others).

(55) A rhetorical question is one that does not demand an answer, a question asked not

so as to obtain information, but so as to produce some other effect. A rhetorical

question may perfectly well *have* an answer, of course, it is just a rhetorical

question is not asked so as to demand an answer, not asked so as to close a point in

question. (Fiengo 2007: 61)

What is common is that both NWHCs and rhetorical questions are questions that do not expect an answer.

The major difference lies in the source of the unavailability of true answers in the two constructions. In NWHCs, it is the MCC that excludes any true answers. The MCC is part of the semantics of the NWH-word or the construction. On the other hand, the unavailability of true answers in rhetorical questions is due to the pragmatic context. As

Caponigro and Sprouse (2007) argue, whether a *wh*-question is interpreted interrogatively or rhetorically is determined pragmatically: "a question is interpreted as a rhetorical question when its answer is known to the Speaker and the Addressee, while it is interpreted as an ordinary question when its answer it is not know to the Speaker." The *wh*-questions in (56a)—(56c) (adapted from Caponigro and Sprouse 2007) are syntactically the same but they have three different interpretations.

(56) a   *Negative Rhetorical Interpretation*

SPEAKER: It's understandable that Luca doesn't trust people anymore. After all, who helped him when he was in trouble?

ADDRESSEE: Nobody / <NO ANSWER>

b   *Positive Rhetorical Interpretation*

SPEAKER: Luca should not have complained. After all, who helped him when he was in trouble?

ADDRESSEE: His parents.

c   *Interrogative Interpretation*

SPEAKER: I am so surprised that Luca solved the problem. (By the way,) who helped him when he was in trouble?

The account also explains naturally why NWHCs only allow negative rhetorical interpretations, but not positive rhetorical interpretations.

5. Conclusion

This paper began by identifying three important aspects of the meaning of NWHCs. First, the NWHC ("NWH-word + p?!) asserts that $\sim p$. Second, the construction also gives rise to two conventional implicatures: (a) the speaker thinks that the salient discourse participant believes that p; and (b) the SK thinks that the DP should have every reason to believe that $\sim p$. Due to the grammatical features of *wh*-questions in general, the NWHC is analyzed as an interrogative *wh*-question even though it is not interpreted as an information-seeking question. To explain the negative assertion, it is proposed that the domain of NWH-words is the set of contextually-relevant conversational backgrounds. It was further suggested that the domain of NWH-words (like other quantifiers) is pragmatically restricted, thus avoiding the contradiction problem. Last, to address the obligatory negative interpretation of NWHCs, I appealed to the MCC implicature, which makes it impossible to find any conversational background that can make p true. This, in turn, results in p being false in all the contextually relevant conversational backgrounds.

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Appendix I

Variety of NWH-words used in various languages

		'where'	*'what'*	*'which'*	*'how'*	*'when'*	*Notes*	*Total*
1	Cantonese	*bindou*	*me/meje*	*Bin*	*dim*	*geisi*		5
2	Mandarin	*nali/nar*	--	--	*zenme?*	--	Some speakers can accept *shenme* 'what' too.	2
3	Classical Chinese	*yan*, *wu*, *an*	--	--	--	--	Taken from Wang (1958/1988: 379—380).	1
4	Korean	*eti*	--	--	*ettehkhey*	*encey*		3
5	Japanese	*doko-ga*	--	--	--	--	*doko-ga* = where-Nom.	1
6	Spanish	*de dónde*	*qué*	--	--	--	*de dónde* = of/from where	2
7	Brazilian Portuguese	*onde*	--	--	--	--		1
8	French	*d'où*	--	--	--	*depuis quand*	*depuis quand* = since when	2
9	Italian	*ma dove*	--	--	*come*	*da quando*	*da quando* = since when	3
10	German	*wo*	--	--	--	*seit wann*	Some German speakers accept both *wo* and *seit wann* (=since when); others only accept the latter.	2
11	English	--	--	--	*how*	*since when*		2
12	Slovenian	*kje*	--	--	--	--		1

		'where'	*'what'*	*'which'*	*'how'*	*'when'*	*Notes*	*Total*
13	Russian	*kuda, gde*	--	--	--	--		1
14	Hindi	*kahã̃*	--	*kon-AGR*	--	*kab*	A speaker can marginally accept *kɛse* 'how.'	3
15	Bengali	*kothae*	--	--	--	--		1
16	Turkish	*nere-ye*	--	--	--	--	*nere-ye* = where-to	1
17	Farsi	*kojaa-sh*	--	--	--	--	*kojaa-sh* = where-Gen	1
18	Hebrew	*eyfo*	--	*eyze*	--	--		2
19	Malay	*mana*	--	--	--	--		1
20	Gungbe	--	--	--	--	*hwetenu gbon*	*hwetenu gbon* = when since	1