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UNIVERSITY OF CALIFORNIA
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The Negative Wh-Construction

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Linguistics

by

Yam-Leung Cheung

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The dissertation of Yam-Leung Cheung is approved.

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Andrew Simpson

_____

Timothy Stowell

_____

Daniel Büring, Committee Co-chair

_____

Anoop Mahajan, Committee Co-Chair

University of California, Los Angeles

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This dissertation is dedicated to

The Almighty God,

Whose ingenious revelation of His love and wisdom
through the universality of languages
deserves our reverence and endless praise.

婦人焉能忘記他吃奶的嬰孩、不憐恤他所生的兒子．
即或有忘記的、我卻不忘記你。
（舊約聖經 以賽亞書 49章 15節）

Can a woman forget her sucking child,
that she should not have compassion on the son of her womb?
yea, they may forget, yet will I not forget thee.
(Isaiah 49: 15, Old Testament (King James Version))

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List of Abbreviations

Acc	Accusative
Cl	Classifier
Comp	Complementizer
Dat	Dative
Decl	Declarative marker
Def	Definite
Dem	Demonstrative
Det	Determiner
Erg	Ergative
Exp	Experiential aspect
Fut	Future tense
Gen	Genitive
Inf	Infinitive
Ins	Instrumental
IWH	Interrogative Wh
IWHQ	Interrogative Wh-Question
Loc	Locative
Masc	Masculine marker
Nom	Nominative marker
NWH	Negative Wh
NWHC	Negative Wh-Construction
Perf	Perfective marker
Pl	Plural
Pres	Present tense
Prm	Promissive (in Korean)
Prt	Particle
Pst	Past tense
Q	Question particle
RQ	Rhetorical question particle
RWH	Rhetorical Wh
RWHQ	Rhetorical Wh-Question
Sg	Singular
SP	Sentence particle (or Sentence-final particle)
Subj	Subjunctive marking
SWHC	Surprise Wh-Construction
Top	Topic marker

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and knowledge of the Holy One is understanding."
(Proverbs 9:10)

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Vita

April 9, 1972	Born, Hong Kong
1995	B.A., English Chinese University of Hong Kong Hong Kong
1997	M.Phil., English (Applied Linguistics) Chinese University of Hong Kong Hong Kong, China
1997	Best Master's Thesis Award Linguistic Society of Hong Kong Hong Kong, China
2003—2004	Chancellor's Fellowship Department of Linguistics University of California, Los Angeles
2004—2006	Graduate Teaching Assistant Department of Linguistics University of California, Los Angeles
2005	M.A., Linguistics Department of Linguistics University of California, Los Angeles
2007—2008	Dissertation Year Fellowship Department of Linguistics University of California, Los Angeles

Publications and Presentations

Tsou, Benjamin K., K K Sin, Samuel W K Chan, Tom B Y Lai, Caesar Lun, K T Ko, Gary K K Chan, Lawrence Y L Cheung. (2000) “Jurilinguistic Engineering in Cantonese Chinese: An N-gram-based Speech to Text Transcription System.” *Proceedings of 18th International Conference on Computational Linguistics (COLING 2000)*, July 31 - August 4, 2000, Universität des Saarlandes, Saarbrücken, Germany. Morgan Kaufmann. pp. 1121-1125.

Cheung, Lawrence Y. L. and Benjamin K. Tsou. (2002) “Personal Names in Unrestricted Chinese Texts: Nature and Identification.” *Proceedings of Workshop on International Standards of Terminology and Language Resource Management*, Third International Conference on Language Resources and Evaluation, Las Palmas, Spain, May 28 - 2 June 2002.

Tsou, Benjamin K., Tom B. Y. Lai, K. K. Sin and Lawrence Y. L. Cheung. (2006) “Court Stenography-To-Text ("STT") in Hong Kong: A Jurilinguistic Engineering Effort.” *International Journal of Computer Processing of Oriental Languages* 19 (2-3): 99-107 (June & September 2006).

Cheung, Lawrence Y. L. (2006) "On Certain (Non-)Violations of Coordinate Structure Constraints." *Snippets* 12.

Cheung, Lawrence Y. L. (2007) *A Study of Right Dislocation in Cantonese.* Hong Kong: Language Information Sciences Research Centre, City University of Hong Kong.

Cheung, Lawrence Y. L. (2007) “Negative Wh-Words in Cantonese.” *Proceedings of the Eighteenth North American Conference on Chinese Linguistics (NACCL-18),* edited by Janet Xing. 2006. Los Angeles: GSIL Publications, University of Southern California, pp. 90-102.

Cheung, Lawrence. (2008) “First Language Acquisition of Elliptical Structures in Cantonese.” Boston University Conference on Language Development 32 Proceedings Supplement.

Cheung, Lawrence. (2008) “Obligatory XP-Raising in Cantonese: Evidence from Dislocation

Focus Construction." *Toronto Working Papers in Linguistics* 28: 15—28.

Cheung, Lawrence Y. L. (*forthcoming*) "Negative Wh-Words in Cantonese." *UCLA Working Papers in Syntax*.

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Cheung, Lawrence. "Obligatory XP-Raising in Cantonese: Evidence from Dislocation Focus Construction." Paper presented at the International Conference on East Asian Linguistics, Toronto, Nov 10-12, 2006.

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ABSTRACT OF THE DISSERTATION

The Negative Wh-Construction

by

Yam-Leung Cheung

Doctor of Philosophy in Linguistics

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Professor Daniel Büring, Co-chair

Professor Anoop Mahajan, Co-chair

The Negative WH (NWH)-construction involves the special use of some *wh*-words (e.g. 'where', 'what', 'how', etc. depending on languages) to convey emphatic negation in conversational discourse where the speaker disagrees with some other party. The phenomenon is widely attested cross-linguistically. They convey negative meaning and cannot function as information seeking questions. For example,

Koei bindou / bin / dim wui lei aa1?! (Cantonese)
he where which how will come Q
'No way will he come.'

This study draws on data from Cantonese, Korean, Hindi, English and Spanish.

Though NWH-sentences exhibit properties that pertain to *wh*-interrogatives,

NWH-sentences display unique morphological, syntactic and semantic properties, not shared by regular rhetorical/interrogative questions. Morphologically, NWH-words are restricted to a very restricted subset of *wh*-words. Syntactically, the base position of NWH-words is located at the edge of IP, as shown by the word order in *wh*-in-situ languages and the obligatory wide scope of negation. They are almost only found in root clauses. Semantically, NWH-sentences can only be used in disagreement contexts. Also, the *wh*-domain anomaly suggests that the quantification domain of the NWH-word is not the conventional domain associated with the *wh*-word.

I propose that NWH-sentences are underlyingly a *wh*-interrogative. The NWH-word, however, quantifies over a set of doxastic circumstances. The example above is paraphrasable as 'Under no circumstances will he come.' Formally, the NWH-word is analyzed as the antecedent of an indicative conditional, which selects a set of doxastic alternatives compatible with the proposition in the antecedent clause. As the antecedent takes scope over the proposition like the *if*-clause, the NWH-word occurs at the edge of IP, thus appearing higher than regular adjunction interrogative words. Further, I posit that a silent special morpheme (= Force^0) selects such *wh*-interrogatives involving the NWH-word and turn the question into a negative proposition. The overall semantics of the NWH-sentence amounts to asserting that the proposition at issue is false in a set of doxastic alternatives.

Chapter 1: What is the Negative Wh-Construction?

1.1 Introduction

Wh-words have been one of the most intensively studied topics in generative grammar. One important reason is that *wh*-morphemes can participate in a number of different constructions such as *wh*-interrogatives, *wh*-exclamatives, relative clauses, *wh*-indefinites, free choice wh, and so on. This dissertation investigates a special interpretation of *wh*-words that has largely not been documented in the generative literature. I call this construction the "Negative WH Construction (NWHC)." I provide a few examples from five languages below.

(1) a Koei bin/bindou wui sik Dakman aa3?! (Cantonese)
he which/where can know German Q
'No way can he know German.'

b Eti John-i 60 sal i-ni ?! (Korean)
where John-Nom 60 year.old be-Q
'No way is John 60 years old.'

c De dónde/Qué va a tener 60 años?! (Spanish)
from where/what go.3Sg.Pres to have 60 year.old
'No way is he 60 years old.'

d Rām kahā̃/kon-sā[1] yah kitāb parh pāyegā?! (Hindi)
Ram where/which-Masc this book read able-FUT
'No way will Ram be able to read this book.'

[1] According to Mahajan (p.c.), *kon-sā* may also be broken down into two parts, namely *kon* 'who' and *sā* (masc.)/*si* (fem.) 'be like.' When they are used together, it is used as 'which' as in *kon-sā phal* "which fruit." In this dissertation, I will gloss *kon-sā* as 'which-Masc.'

e Since when is John watching TV now?! (English)

An NWH-sentence has the form "NWH-word + *p*", where (i) the NWH-word is the *wh*-word used in the construction and (ii) *p* is the sentence without the *wh*-phrase[2]. NWH-sentences are used to convey an emphatic negation of the meaning of *p*.

(2) NWHC: NWH-word + *p*

(3) a Ngo **bindou**/**me** mou gaau gungfo aa3?! (Cantonese)
he where /what have.not hand.in homework Q
(i) NWH-word = *bindou* / *me*
(ii) *p* = He has handed in the homework.

b **Since when** is John watching TV now?! (English)
(i) NWH-word = *since when*
(ii) *p* = John is watching TV now.

The NWH-word is the *wh*-expression used in an NWH-sentence. 'Where' is the most commonly-used NWH-word across languages. In some languages, including English, Spanish, and Italian, additional elements combine with the *wh*-word to form frozen[3] complex NWH-expressions (e.g. *since when, de dónde*). For the sake of simplicity, the term "NWH-word" will be used to cover both simple NWH-words and complex NWH expressions.

The speakers who I consulted with provided many different paraphrases of NWH-sentences, including "It is not possible that *p*.", "How can it be true that *p*?", "You must be kidding that *p*.", and "No way *p*." For the purposes of this dissertation, "No way *p*" will be the standard paraphrase for all NWH-sentences. Furthermore, because

[2] I will abstract away from inversion accompanying with the construction in languages like English and Spanish.
[3] They are frozen in the sense that these expressions cannot be altered or modified like the IWH-counterparts. (See Section 2.5)

(1a)—(1e) are *unambiguous* and cannot be interpreted as interrogatives[4], "?!" will be used to mark these NWH-sentences, and "?" will be reserved for interrogative questions and rhetorical questions.

There are reasons why the NWHC has gone largely unnoticed in the literature. Due to its resemblance to interrogative/rhetorical questions, one may easily dismiss the construction as a type of rhetorical question. Alternatively, one might conclude that it is a language-specific or idiomatic use of a *wh*-interrogative. In this dissertation, I present data showing that the NWHC is in fact a distinct category within the *wh*-construction family. It possesses a number of unique properties that are not shared by interrogative or rhetorical questions. I will also show that the construction is not a phenomenon found in isolated languages; rather, it is widely attested across typologically-different languages.

The goal of this dissertation is two-fold. First, the syntactic and semantic properties of the NWHC are scrutinized and documented. What is particularly puzzling is how the negative meaning is derived; the most prominent cue, i.e. the NWH-word, does not seem to be transparently related to the negative meaning. To explain this meaning, I put forth an account based on the semantics of interrogative question and indicative conditional. I propose that the NWH-word quantifies over circumstances (technically, *propositions*), while a silent morpheme imposes the negative interpretation of the question. Second, on the theoretical front, the current study not only establishes another member in the family of *wh*-constructions, but also enables us to look into the properties of *wh*-words that are otherwise unavailable in other *wh*-constructions. These findings thus contribute to our understanding of *wh*-words.

This dissertation is organized as follows: in Chapter 2, I examine in detail the morphological properties of NWH-words. In Chapter 3, I identify the similarities and differences between the NWH-word, the interrogative *wh*-word (i.e. IWH-word), and the rhetorical *wh*-word (i.e RWH-word) syntax. In Chapter 4, I introduce the discourse conditions of the NWHC and the *wh*-domain anomaly effects, and put forth an analysis based on the semantics of indicative conditionals and *wh*-question. In Chapter 5, I present a synthesis of the observations and analyses in Chapter 2, 3 and 4. Finally, I provide a

[4] In fact, it is not possible to use 'which' or 'what' in Cantonese, Spanish and Hindi in non-argument positions in wh-interrogatives. In English, interrogative since when cannot be construed with non-perfect tenses.

conclusion in Chapter 6.

The remainder of Chapter 1 describes the general properties of the NWHC based on cross-linguistic data I collected from a pool of consultants. Section 1.2 is a survey of the languages known to use the NWHC. Section 1.3.1 discusses diagnostic tests that distinguish the IWHQ from the NWHC. These serve to facilitate the exploration of further properties described in Sections 1.3.2—1.3.4. Section 1.4 is a brief note on another *wh*-construction which is different from the NWHC but is easily confused with the NWHC.

1.2 Typological Distribution of the NWHC

The NWHC is very widely attested across languages. I conducted a survey of the NWHC in 24 languages in 12 families and sub-families. The construction is found in 22 languages. The list of languages is given below.

Language Family (Subfamily)	***Languages***
Altaic	Turkish
Dravidian	Kannada
Indo-European (Germanic)	English, German
Indo-European (Indo-Iranian)	Bengali, (Western) Farsi, Hindi
Indo-European (Romance)	French, Italian, (Brazilian) Portuguese, Spanish
Indo-European (Slavic)	Russian, Slovenian
Malayo-Polynesian	Malay
Niger-Congo	Gungbe
Semitic	Hebrew
Sino-Tibetan	Cantonese, Chaozhou, Classical Chinese, Mandarin
Isolates	Japanese, Korean

Table 1 List of languages that have the NWHC

Here is the list of languages in which I failed to elicit the NWHC.

Language Family (Subfamily)	*Languages*
Indo-European (Armenian)	Armenian
Indo-European (Germanic)	Swedish

Table 2 List of languages that I failed to elicit the NWHC

The construction is commonly used in spoken dialogues or conversational discourse between two parties. The reason for its relatively higher frequency in colloquial speech will become clear when the felicity conditions imposed by the construction are discussed in Section 4.2.

In subsequent chapters, the basic data for the analysis is drawn primarily from five languages: Cantonese, English, Hindi, Korean, and Spanish. Among these five languages, Cantonese and English are given more attention. Cantonese, in particular, reveals a number of properties of the NWHC that are more difficult to observe in other languages, e.g. in-situ placement of the NWH-word and the wide variety of NWH-words. Data from other languages are also used where appropriate. Selected examples from languages not included in the aforementioned set of five are provided below in (4).

(4) a Nere-ye kayn-iyor?! Ocag-i daha yeni ac-ti-m. (Turkish)
where-to boil-prog burner-Acc just now turn.on-Pst-1Sg
'No way is it boiling. I've just turned on the burner now.'

b Eypo/Eyze/Eyx Dani šavar et ha-xalon?! (Hebrew)
where/which/how Dani break.Pst.3Sg.Masc Acc Def-window
'No way did Dani break the window.'

c D'où Jean a soixante ans ?! (French)
from.where Jean has sixty years?
'No way is John 60 years old.'

d Kuda Jonu byt' prezidentom?! (Russian)
where John-Dat be.Inf president-Ins
'No way is John the president.'

e John kothae oi dokan theke boi-ṭa kin-l-o? (Bengali)
John where that store from book-the buy-Pst-3
'No way did John buy the book from that store.'

1.3 Construction Properties

Although NWH-sentences are used to express emphatic negation, they look very much like interrogative *wh*-questions. Are they simply *wh*-interrogatives that receive special interpretation in certain contexts? That is not implausible. Consider rhetorical *wh*-questions. Some linguists (Caponigro 2006, Caponigro and Sprouse 2007 among others) consider rhetorical questions to be grammatically equivalent to *wh*-interrogatives, except that they receive a non-information-seeking reading in contexts where both interlocutors know the obvious answer to the question. This seems to be reasonable because rhetorical questions can always be turned into interrogative questions in appropriate contexts. If we think about NWH-sentences, some of them can be interpreted literally as interrogatives. For example, (5) and (6) can be interpreted as ambiguous.

(5) Since when do you know how to cook ramen (English)
(i) 'No way do you know how to cook ramen.' (NHW-interpretation)
(ii) 'Since what time do you know how to cook ramen?' (Interrogative interpretation[5])
(Possible answer: Since I took that cooking class.)

(6) Wo ist der ein bedeutender Politiker (German)
where is Dem.Masc a important politician
(i) 'No way is he an important politician.' (NWH-interpretation)
(ii) 'Where is he an important politician?' (Interrogative interpretation)
(Possible answer: In his native Berlin)

(7) Rām yah kitāb kahā̃ parh pāyegā (Hindi)
Ram this book where read able-Fut

[5] The interrogative interpretation is marginal.

(i) ‘No way will Ram be able to read this book.’ (NWH-interpretation)
(ii) ‘Where will Ram be able to read this book?’ (Interrogative interpretation)

I argue that these cases of ambiguous interpretations are simply instances where two interpretations happen to share the same surface string. Underlyingly, they correspond to different structures. NWH-sentences are not systematically ambiguous between the NWH-interpretation and the interrogative/rhetorical interpretation. As the discussion unfolds, I identify important differences between the NWHC and the IWHQ/RWHQ, suggesting that the former and the latter are in fact grammatically different. The NWHC is not derivable from ordinary *wh*-interrogatives we know of.

To allow us to easily distinguish the NWHC from the IWHQ/RWHQ, I introduce three diagnostic tests in Section 1.3.1. These tests are language-independent and are relatively easily constructed. In Sections 1.3.2—1.3.4, additional properties of the NWHC are explored.

1.3.1 Diagnostic tests

Test #1: Substitution test[6]

As briefly mentioned earlier, NWH-words are somewhat fixed. They cannot be subject to modification or replaced by a synonymous *wh*-expression. For example, the English NWHC *since when* cannot be replaced by synonymous expressions such as *since what time* or *since which year*. Similarly, one cannot replace Cantonese *bindou* ‘where’ with *bin go deifong* ‘what place’ or ‘which place.’

NWH-sentences

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

(9) 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.’

[6] See Section 2.5 for more on the rigidity of NWH-words.

In my cross-linguistic survey, this property is very consistently found in the NWHC. However, in IWHQs/RWHQs, such replacement does not affect the grammaticality status of the sentence.

Wh-interrogatives

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

(11) 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?'

(12) Diagnostic Test #1: If the *wh*-word cannot be replaced by a synonymous *wh*-expression without affecting the grammaticality status, the sentence is an NWH-sentence.

Test #2: Adjunct Doubling Test[7]

An interrogative adjunct question involving 'where', 'when' and 'how' becomes unacceptable when an adjunct phrase of the same conventional semantic domain (i.e. locative phrase, temporal phrase and manner/method phrase) occurs in the same clause. Doubling adjuncts of the same kind in the same clause results in strong ungrammaticality.

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

b *Where did he put his book *here*?

However, adjunct doubling is fine with the NWHC.

(14) Since when has he been working at UCLA since 2000?! (English)

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

[7] See Section 4.4.4 for a discussion of NWH embedding.

he where have at lab eat thing Q
'No way did he eat in the lab.'

(16) Diagnostic test #2: If the adjunct *wh*-word can co-occur with an adjunct of the same semantic type in the same clause, the sentence is an NWH-sentence.

Test #3: Embedding Test[8]

It is well-known that regular wh-interrogatives can be embedded under predicates like 'ask', 'want to know', etc.

Embedded interrogative

(17) I asked when he quit smoking.

In contrast, the NWH-clause cannot be embedded under any predicate that takes clausal complements, be it declarative or interrogative. The test is rather reliable; it works in 19 out of the 20 languages in my survey. The only exception is German, which allows an NWH-clause being embedded under *fragen* 'ask.'

Embedded NWH-clause

(18) *John asked/wondered/thought [since when he quit smoking]. (English)
Intended: 'John expressed that no way did he quit smoking.'

(19) *Keoi man/soeng-zidou/jingwai [John bindou wui gong daaiwaa]. (Cantonese)
he ask/want-know/think John where will tell lie
Literal: 'He asked/wanted to know/thought where John will tell lies.'
Intended: 'He expressed that no way will John tell lies

(20) Diagnostic test #3: If the target *wh*-sentence cannot be embedded, it is an NWH-sentence.

[8] See Section 3.3 for more on NWH embedding.

1.3.2 Morphology

This section highlights some special morphological properties of the NWHC.

Property #1: Variation of NWH-words

There is some variation in the set of NWH-words in different languages. Quite a number of languages exclusively use the *wh*-word 'where' in the NWHC. Other *wh*-words like 'what', 'how', 'when', and 'which' are also possible in some languages. Cantonese has as many as five NWH-words. None of the languages in the survey were found to use 'who' or 'why'[9] in the NWHC. When a language has more than one NWH-word, 'where' is very often the unmarked form.

[9] A Korean consultant suggested that 'why' could also be used in the NWHC. More elicitation work is needed to confirm this.

		'where'	***'what'***	***'which'***	***'how'***	***'when'***	***Notes***	***Total***
1	Cantonese	*bindou*	*me/meje*	*bin*	*dim*	*geisi*		5
2	Mandarin	*nali/nar*	--	--	*zenme?*	--	Some speakers can rather marginally accept *shenme* 'what.'	2
3	Classical Chinese	*yan*, *wu*, *an*	--	--	--	--	See Li (1958: 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	*kahɑ̃*	--	*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

Table 3 Variety of NWH-words used in various languages

# of NWH-words	Languages
1	Bengali, Brazilian Portuguese, Classical Chinese, Farsi, German (some varieties), Gungbe, Japanese, Malay, Russian, Slovenian, Turkish
2	English, French, German (some varieties), Hebrew, Mandarin, Spanish
3	Hindi, Italian, Korean
4	--
5	Cantonese

Table 4 Number of NWH-words in various languages

Property #2: Bare Wh-Morphology

Compared to IWH/RWH-expressions, the NWH-words are primarily bare. It has already been pointed out in Diagnostic Test #1 that none of languages permit the superficially synonymous counterparts such as 'which place', 'what place', 'what manner', and 'since what time' to serve as an NWH-expression. Further, while IWH-words can be combined with prepositions or adverbs (e.g. *from when*, *approximately when*, *roughly how*, etc.), NWH-words cannot.

1.3.3 Semantics

Property #3: Unavailability of Interrogative Interpretation

Although it is mentioned in Section 1.3.1 that some NWH-sentences seem to be ambiguous, a number of other NWH-sentences cannot be interpreted as interrogative, no matter how the context is manipulated. Some examples are given below.

(21) a Koei me / bindou m wui gong daaiwaa aa3?! (Cantonese)
he what where not will speak lie Q
(i) ✓ 'No way will he not tell lies.' (✓NWH reading)
(ii) × 'Where does he not tell lies?' (×IWH reading)

b Since when is John watching TV now?! (English)
(i) ✓NWH reading
(ii) ×interrogative reading

c Rām kahā / kon-sā̃ yah kitāb parh pāyegā?! (Hindi)
Ram where / which this book read able-Fut
(i) ✓'No way will Ram be able to read this book.' (✓NWH reading)
(ii) × 'Where will Ram be able to read this book?' (×IWH reading)

NWH-sentences involving 'what' and 'which', as in (21a) and (21c), are the best examples. They can never be interrogative because these argumental *wh*-words cannot occupy non-argument positions. Even with 'where' in (21a) and (21c), the sentences do not behave syntactically the same as IWH 'where.' In Cantonese, IWH 'where' can often

be placed right after the modal but this is not possible with NWH 'where.' In Hindi, IWH 'where' becomes unacceptable when it is not in the pre-verbal position but this is not the case with the NWH 'where.' All these facts suggest that this is unlike the systematic ambiguity between the IWHQ and the RWHQ[10]. In Chapter 3, I argue that the NWH-interpretation and the IWH-interpretation correspond to different structures that, in some cases, happen to have the same linear sequence of string, giving rise to apparent counter-examples. The NWH-sentence is basically unambiguous. A more detailed comparison between the NWHC and the IWHQ/RWHQ can be found in Section 5.3.

Property 4: Disagreement Context

The NWH-sentence is felicitous only in contexts where the speaker (i) believes ~*p*, (ii) realizes that some discourse participant holds an opposite view (i.e. *p*), and (iii) thinks that this participant should have concluded ~*p* but did not. The context is referred to as the *disagreement context*, and is illustrated with the scenario in (22).

(22) A: John jiging 60 seoi laa3. (A believes *p*)
John already 60 year.old SP
'John is already 60 years old.'

[10] Here is the systematic ambiguity of a wh-question between three interpretations (adapted from Caponigro & Sprouse 2007). By manipulating the context, it is possible to obtain the interrogative or rhetorical interpretation.

(i) Rhetorical Interpretation (Negative)
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>

(ii) Rhetorical Interpretation (Positive)
SPEAKER: Luca should not have complained. After all, who helped him when he was in trouble?
ADDRESSEE: His parents.

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

B: John bindou jau 60 seoi aa3?! (B believes ~*p*)
John where have 60 year.old Q
'No way is John 60 years old.'

The NWH-sentence (22B) is used in a context where B thinks that A's belief (i.e. *p*) is wrong. B utters the NWH-sentence in order to convey to A the message that A's belief is wrong. The effect of the NWH-sentence can be paraphrased as follows:

> "You are wrong! Given what you know (or what you must have known), you should be able to arrive at the same correct conclusion as mine. However, you concluded in the completely opposite way."

The disagreement context is not needed when regular sentential negation is used. In (23), the disagreement context is unavailable because the interlocuters do not disagree with each other. Contrast the acceptability of B1 and B2 in the context.

(23) Take *p* to be "John is 60 years old."
A: John mou 60 seoi. (A believes ~*p*)
John have.not 60 year.old
'John is not 60 years old.'

Response with an NWH-sentence
B1: Hai laa1. #John bindou jau 60 seoi aa3?! (B1 believes ~*p*)
right SP John where have 60 year.old Q
'Right. No way is John 60 years old.'

Response with sentential negation
B2: Hai laa1. John mou 60 seoi. (B2 believes ~*p*)
Yes SP John have.not 60 year.old
'Right. John is not 60 years old.'

Nor does the RWHQ require the disagreement context. In fact, the RWHQ is typically used when both the speaker and the hearer *agree* on the same answer.

(24) Take *p* to be "Someone will come tonight."

A: Gammaan mou jan wui lei laa3. (A believes ~*p*)
tonight have.not people will come SP
'No one will come tonight.'

B: Hai laa1, gammaan bingo wui lei aa1?! (B believes ~*p*)
Right SP tonight who will come Q
'Right, who would come tonight?'

The above demonstrates that the NWHC has rather different contextual requirements from RWHQs and sentential negation. In Chapter 3, the disagreement conditions are further refined. Additional comparisons of the *wh*-constructions are found in Section 5.3.

Property 5: Wh-Domain Anomaly

Wh-domain anomaly refers to the puzzling observation that the NWH-word does not quantify over the regular domains with which these *wh*-words are normally associated in other *wh*-constructions. For example, although 'where' normally quantifies over locations and 'when' over time points, their use in the NWHC seems to contribute only to the negative meaning and have little to do with locations and time points respectively. The following two tests illustrate the phenomenon.

5a. Semantic Neutralization of Various NWH-words

A number of languages have more than one NWH-word, e.g. 'where', 'what', 'which', 'when', etc. No matter which NWH-word one picks, the meaning of the NWH-sentence remains more or less the same. Native speakers of these languages find it hard to tell the differences between using one or the other.

(25) a Keoi bindou/bin/me/dim hoji lo ngo di cin aa3?! (Cantonese)
he where/which/what/how can take I Cl money Q
'No way can he take my money.'

b Vo *kahɑ̃̃*/kon-sā/kab sāt fut lambā hɛ ?! (Hindi)
he where/which/when seven feet tall be-Pres
'No way is he seven feet tall.'

c De dónde/Qué va a tener 60 años?! (Spanish)
from where/what go.3Sg.Pres to have 60 years
'No way is he 60 years old.'

d1 Chelswu-ka eti yeki o-l swu iss-keyss-ni?![11] (Korean)
Chelswu-Nom where here come-can would-Q (= would be able to ...)
'No way would Chelswu be able to come here.'

d2 Ku-ka ettehkey i pangpep-ulo cha-lul kochi-l swu iss-keyss-ni?!
he-Nom how this way-in car-Acc fix-can would-Q (Korean)
'No way could he fix the car.'

d3 Encey ku-ka chayk-ul ecey ss-uss-ni?! (Korean)
when he-Nom book-Acc yesterday write-Asp-Q
'No way did he write the book yesterday.'

The pattern is very different from regular IWH/RWH-words. Choosing one *wh*-word over the other makes an obvious semantic difference in both IWHQs and RWHQs. For example, asking "Where will John buy the book?" is certainly very different from asking "When will John buy the book?"

5b: Adjunct Doubling

As discussed in Section 1.3.1, it is unacceptable for the IWH/RWH-word to co-occur with a phrase that is of the same semantic type of the *wh*-word (see (13a) and (13b)). However, this restriction in adjunct doubling does not hold in the NWHC. (26)—(29) are considered perfect even though 'where' and 'when' co-occur with the locative phrase and

[11] I am thankful to Hyon Sook Choe who alerted me to the availability of NWH-interpretation with wh-words other than 'where' in Korean and provided me with the data.

the temporal phrase in the same clause respectively.

(26) a Since when did John arrive at the airport at 7am?!

b Since when has he become the chairman since yesterday?!

(27) John bindou wui hai lidou maai go bun syu aa3?! (Cantonese)
John where will at here buy Dem Cl book Q
'No way will John buy the book here.'

(28) De dónde va a haber comprado los libros en la librería?! (Spanish)
from where go.3Sg.Pres to have buy.3Sg.Pst the book in the bookstore
'No way did he buy the books in the bookstore.'

(29) Ne-ka encey achim ilccik ilena-keyss-ni?! (Korean)
you-Nom when morning early get.up-would-Q
'No way would you get up early in the morning.'

These sentences suggest that the quantification domains of the NWH-words are likely to be different from the conventional domains these *wh*-words normally associated with in other *wh*-constructions.

1.3.2 Syntax

Property 6: Wide-scope Negation

The negation introduced in the NWHC takes wide scope over the sentence. The wide-scope property can be demonstrated by the following contrast between the NWHC and the IWHQ/RWHQ.

(29) What did everyone buy for Max?! (**IWHQ**)
(i) What is the thing *x* such that everyone bought *x*? (what > everyone)
(ii) For each person *y*, what is the thing that *y* bought? (everyone > what)

(30) What did everyone buy for Max?! (**RWHQ**)
(i) There is no thing *x* such that everyone bought *x*. (what > everyone)
(ii) For each person *y*, there is no thing that *y* bought. (everyone > what)

In IWHQs and RWHQs, when the *wh*-word is c-commanded by the universal quantifier, the sentence becomes ambiguous, as shown in (30) and (31). In contrast, the negation introduced by the NWH-word necessarily scopes over the universal quantifier, i.e. reading (i).

(31) Since when did everyone see the movie?! (**NWHC**)
(i) It is not the case that everyone saw the movie. (NEG[12] > everyone)
[situation: Bill and Ed saw it, but Mary refuses to even think about going.]
(ii) *Everyone did not see the movie. (*everyone > NEG)
[situation: Nobody saw the movie.]

(31i) can be used in situations where the speaker believes that some members of the group (but not every one of them) saw the movie. In (31ii), when the universal quantifier takes wide scope over the NWH-word, the sentence requires that none of the members saw the movie. However, such a reading is not available. A similar effect has also been observed in both Cantonese and Hindi. I discuss this further in Section 3.2.2.

Property 7: Grammatical Features of Interrogative Wh-Questions

While the NWHC differs from wh-interrogatives in many ways, it exhibits several grammatical features that correlate with interrogative or rhetorical questions. These properties form the important basis for the subsequent analysis that the NWHC involves *wh*-questions.

7a. Wh-Morphology

One important feature of IWHQs is the use of *wh*-words. NWH-words are systematically

[12] I associate the NWH-word with the negation.

a subset of IWH-words. In the language survey, I have not yet found a language whose NWH-words are different from their IWH-word counterparts. The observation is not a trivial one if we examine the *wh*-words appearing in various *wh*-constructions such as *wh*-indefinites and free choice *wh*-expressions.

Contrast this with the morphology of other *wh*-constructions. A fair amount of languages form *wh*-indefinites and free-choice *wh*-expressions by combining the *wh*-phrase with the addition of special morphemes. For example, Haspelmath's (2008: chapter 6) cross-linguistic survey shows that most of the interrogative-based indefinites are derived by attaching additional morpheme(s) to the *wh*-expression. In Japanese, a *wh*-phrase combines with the Q-morpheme *ka* to produce an existentially quantified expression or free choice *wh*-expression, i.e. 'any/every + NP.'

Wh-indefinites

(32) a [Dono gakusei]-***ka***-ga rakudai-si-ta. (Japanese / Nishigauchi 1990: 118)
which student Q Nom flunk-Pst
'Some student flunked.'

b ***ká***-pjos pjos (Modern Greek / Haspelmath 2008)
'somebody' 'who'

Likewise, Japanese and Mandarin derive universally quantified expressions by combining a wh-phrase with an additional morpheme.

Universally Quantified Expressions

(33) a Dare-***mo*** ga nani-ka o tabe-te-iru. (Japanese / Nishigauchi 1990: 117)
everyone Nom something Acc eating-be
'Everyone is eating something.'

b Shei ***dou*** hui lai. (Mandarin / Huang 1982; Cheng 1995)
who all will come
'Everyone will come.'

According to Giannakidou and Cheng (2006), free choice items in many languages (e.g. Greek, Spanish, Dutch, Korean and Japanese) are made up of *wh*-phrases "augmented by

some kind of modal marking or focus additive particle (such as too, and, even, and or)".

Free Choice Items

(34) a opjos-***dhipote*** (Modern Greek / Giannakidou 1998, 2001)
lit. who-modal marker

b nwukwu-***na*** nwukwu-***to*** (Korean / Lee 1997)
lit. who-or lit. who-and

c dare-***demo*** (Japanese / Nishigauchi 1990)
lit. who-even

The resemblance of the NWH-morphology to the IWH-morphology provides very good evidence that NWH-words and IWH-words should be analyzed in a very similar, if not identical, way. Otherwise, we would be forced to conclude that these *wh*-words are ambiguous. We would then be dealing with massive lexical ambiguity across a host of languages. This conclusion is particularly important: if the *wh*-words in the NWHC and the IWHQ are the same, much of what we learn from one construction is likely to be applicable to the other.

7b. Correlation of NWH-word and IWH-word Placement

The placement of the NWH-word by and large reflects the dichotomy between *wh*-in-situ and *wh*-movement, as found in *wh*-interrogatives. More importantly, the position of the NWH-word strongly correlates with that of the IWH-word in the same language, as illustrated in Table 5.

	IWHQ	***NWHC***
Cantonese, Mandarin, Farsi, Japanese, Korean, Hindi	in-situ wh	in-situ wh
English, French, Italian, Spanish, German, Russian, Hebrew	sentence-initial wh	sentence-initial wh

Table 5. Correlation of the syntactic position of NWH- and IWH-words

The fieldwork conducted so far shows that no languages permitting the NWHC exhibit *wh*-word placement inconsistent with that of the IWHQ.

7c. Use of Question Particles (Q-particles)

In Cantonese, Korean, and Japanese, IWHQs/RWHQs must end with a Q-particle. It turns out that NWH-sentences also must end with a Q-particle. NWH-sentences are not compatible with any non-question particles (e.g. declarative sentence particle).

(35) Zoengsaam bin wui maai go bun syu aa3 / aa1?! (Cantonese)
Zoengsaam where will buy Dem Cl book Q RQ
'No way will Zoengsaam buy the book.'

(36) 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 hangsang TV-lul po-keyssni?!
where John-nom always TV-acc watch-RQ
'No way does John always watch TV.'

(37) 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.'

Property 8: Distinct Syntactic Position

Even though the placement of the NWH-word correlates with that of the IWH-word concerning *wh*-in-situ vs. *wh*-movement, they do not occupy exactly the same position. NWH-words have a tendency to move to a position higher in the structure than IWH/RWH-words. This is best revealed by the position of NWH-words in *wh*-in-situ languages such as Cantonese, Korean, and Hindi. In Cantonese, the NWH-word must occur above the modal, but the preferred position for IWH-words like 'where' or 'when' is the post-modal position.

NWHC

(38) a Keoi bindou wui maai ce aa3?! (where < modal)
he where will buy car Q
'No way will he buy a car.'

b *Keoi wui bindou maai ce aa3?! (*modal < where)
he will where buy car Q

IWHQ

(39) a Keoi hai bindou wui maai ce aa3? (where < modal)
he at where will buy car Q
'Where will he buy a car?'[13]

b Keoi wui hai bindou maai ce aa3? (modal < where)
he will at where buy car Q
'Where will he buy a car?'

The pattern suggests that the NWH-word is structurally higher than the IWH-word. Syntactically, the NWH-word does not pattern exactly the same as the IWH-word.

Property 9: NWHC as a root phenomenon

Unlike IWHQs/RWHQs, the NWHC is restricted to the root clause. The NWH-word cannot be found in embedded contexts such as embedded clauses.

(40) a *Mary asked/believed/wanted to know since when John is 60 years old.
Intended: Mary expressed the view that John is not 60 years old.

[13] Even though IWH 'where' is possible in the pre-modal position, its interpretation is not exactly the same as when it is in the post-modal position. The pre-modal 'where' functions as a frame-setting adverb instead of an adverb for the location of the purchase. For example, John generally does not want to keep a car. However, if he lives in places where transportation is not convenient, he will buy a car. A possible answer to (39a) is: "In places where transportation is inconvenient." In contrast, (39b) is a question about where the purchase is made. A reasonable answer to (39b) is: "At the car dealer round the corner."

b Keoi man/soengseon/soeng zidou [nei bindou jau luksap seoi].(Cantonese)
he ask/believe / want know you where have 60 year.old
Intended: He expressed that you are not 60 years old.

None of the languages, except German, allow the NWHC to occur in the embedded clause. Native speakers generally find examples with NWH embedding totally ungrammatical. This is in sharp contrast with the well-formedness of *wh*-interrogatives in a number of embedded environments.

In Cantonese, while IWH-where can occur in non-root environments such as Complex NPs and sentential subjects, NWH-where cannot.

(41) NWH-word inside Complex NP

a *Keoi soengseon/tungji [[nei bindoujau luksap seoi] ge gongfaat].(Cantonese)
he believe /agree you where have 60 year.old GE view
Intended: He believed/agreed to the view that you are not 60 years old.

NWH-word inside Sentential Subject

b *[Keoidei bindou jau daa laamkau] zeoi leisoeng aa?! (Cantonese)
they where have hit basketball most ideal Q
Intended: It is most ideal that they have not played basketball.

1.4 A Note about a Superficially-Similar Wh-Construction

In the cross-linguistic study, I often ran into another superficially-similar *wh*-construction in many languages, which sometimes causes confusion among language consultants. Here is a brief note on this independent construction. This kind of *wh*-construction is cross-linguistically fairly common but rarely discussed[14]. I call the construction 'Surprise WH-Construction (SWHC).' Here are a few examples.

(42) a Mat John maai-zo gaa Bensi aa4? (Cantonese)

[14] It has been discussed in Obenauer (2004).

what John buy-Perf Cl Mercedes-Benz SP
'What? John bought a Mercedes!'

b John mat sikdak Dakman gaa3?!
John what know German SP
'What? John knows German!'

(43) Cómo que llegó esta mañana? (Spanish)
how Comp arrive this morning
'What! He arrived this morning!'

(44) a Was ist das Wasser so trüb? (German)
what is Det water so opaque
'How come the water is so opaque?'
(say upon noticing it coming out of the faucet)

b Was regnet es plötzlich?
what rains it suddenly
'What business does it have raining all of a sudden?'

Here is the appropriate context for (42a). The speaker previously did not think John bought a Mercedes. However, much to the speaker's surprise, he saw John driving it. The speaker suddenly realizes that John really bought a Mercedes. Then he can utter (42a). One very noticeable difference between the NWHC and the SWHC is that whereas the former is felicitous in contexts where the speaker *disagrees* with another party, the latter is felicitous in contexts where the speaker *agrees* with another party and the speaker comes to realize that his previous belief or thinking is wrong. Moreover, the limited data suggests that only 'what' or 'how' (but not 'where') can serve as the *wh*-word in the SWHC.

However, the SWHC is beyond the scope of this dissertation. I will not pursue the issue further.

Chapter 2. Morphology of NWHC

The morphology of NWH-words presents a number of peculiar characteristics that are not attested in other *wh*-constructions. In this chapter, I explore the hypothesis that what NWH-words encode is "which + circumstance." However, languages vary as to how the morphological complex is pronounced, resulting in morphological variation of NWH-words. We also discuss why world languages bias towards using 'where' as the NWH-word.

2. 1 Variation of NWH-words

2.1.1 Variation across Languages

Table 3 in Section 1.3.2 lists the possible *wh*-words that serve as the NWH-word in various languages. Let us examine the range of *wh*-words that can be used in the NWHC. Cantonese has the widest choice, with a total of 5 NWH-words. Although 'when', 'what', 'which, and 'how' are acceptable in various languages, there is a strong cross-linguistic tendency—true for 18 out of the 20 languages surveyed—to use 'where.' Many of the languages that have only one NWH-word—12 out of the 20 languages surveyed here—use only 'where.'

The variation of NWH-words is a rather puzzling issue. As mentioned in Section 1.3.3, the NWHC exhibits *wh*-domain anomaly. Different NWH-words make more or less the same semantic contribution in the NWHC. Native speakers of languages that have more than one NWH-word generally cannot describe any difference in meaning between sentences using different NWH-words. The observation has some non-trivial implications. If languages consistently only used, say, 'where', in the NWHC, one possible analysis is that 'where' is lexically ambiguous between the NWH and IWH meaning. However, such an explanation becomes unsatisfactory in the face of the other *wh*-words. There seems to be some systematicity about the use of *wh*-words in the NWHC. What we need is an account that explains why all these otherwise very different *wh*-words give rise to the same meaning in the NWHC.

2.1.2 Variation within Languages

When a language has more than one NWH-word, the NWH-words are not always equally acceptable. 'Where' is most often the more natural and widely-used form, over alternatives such as 'what' or 'which.' Moreover, though NWH-words share the core semantic/pragmatic properties, various NWH-words usually differ from each other—albeit slightly—in terms of grammatical restrictions. Here I would like to draw attention to some examples from Cantonese and Spanish. In Cantonese, the NWH-word is usually followed by a modal verb or an auxiliary (i.e. *jau* 'have' and *hai* 'be'). However, NWH-words have different co-occurrence patterns with the modal/auxiliary. Table 6 shows the co-occurrence restriction between *bindou* 'where', *dim* 'how' and *me* 'what' and modals/auxiliaries. It is followed by two example sentences.

	Elements that follow the NWH	***bindou*** **'where'**	***dim*** **'how'**	***me*** **'what'**
Modals	*wui* (epistemic 'can')	ok	ok	ok
	wui (ability 'can')	ok	ok	ok
	jinggoi (epistemic 'should')	?/??	*	ok
	jinggoi (deontic 'should')	ok	ok/?	ok
	hoji (ability 'can')	ok	ok	ok
	hoji (deontic 'can')	ok	ok	ok
Auxiliaries	*hai* (emphatic marker 'be')	ok	*	?
	jau (perfective auxiliary 'have')	ok	*	?
	mou (-ve perfective 'have not')	ok	*	ok

Table 6 Co-occurrence restriction between NWH-words and modals/auxiliaries in Cantonese

(1) Keoi gamziu bindou/*dim/?me jau heoi paaubou aa3?!
he this.morning where/how/what have go jogging Q
'No way did he go jogging this morning.'

(2) Keoi ??bindou/*dim/me jinggoi dou-zo aa3?! Keoi aamaam soeng gei.
he where/how/what should arrive-Perf Q he just get.on plane
'No way has he arrived. He just got onto the plane.'

Spanish has two NWH-words, namely, *de dónde* 'of/from where' and *qué* "what". Among some Spanish speakers, while *de dónde* triggers optional verb movement, *qué* "what" obligatorily triggers verb movement.[15]

(3) a De dónde va a haber hecho la tarea este hombre? (V-movement)
from where go to have done the homework this man
'No way did this man do the homework.'

b De dónde este hombre va a haber hecho la tarea? (no V-movement)
from where this man go to have done the homework
'No way did this man do the homework.'

(4) a Qué va a haber hecho la tarea este hombre? (V-movement)
what go to have done the homework this man
'No way did this man do the homework.'

b *Qué este hombre va a haber hecho la tarea? (no V-movement)
what this man go to have done the homework
'No way did this man do the homework.'

In the rest of the discussion, we will abstract away from these differences, unless they are

---

[15] In Spanish, obligatory verb movement (or inversion) is triggered in IWH-questions or in certain focused environments (Torrego 1984; Suñer 1994). Interestingly, while verb movement is obligatory with arguments, it is only optional with adjuncts.

(a) Qué compró Mara ayer? (IWH / with inversion)
what bought Mara yesterday
'What did Mara buy yesterday?'

(b) *Qué Mara compró ayer? (IWH / no inversion)
what Mara bought yesterday

relevant. NWH-words will be treated as a homogenous class, and the focus will be placed on their contribution to the negative meaning.

2.2 Why 'Where'?

The *wh*-word 'where' is overwhelmingly the preferred form of NWH-words cross-linguistically. But why should this be the case? In Chapter 4, I argue that NWH-words quantify over circumstances. 'Where' is favored because 'where' itself has a natural affinity to the domain of circumstances, even in non-negative cases. I would like to draw the reader's attention to some common but unreported uses of 'where' that are related to circumstances. The observations may give us some hints as to why 'where' is preferred as an NWH-word.

In English relative clauses (RCs), the relative pronoun 'where' can be used with a non-locative head noun, as in the naturally occurring examples (5)—(8).

(5) This is the case/scenario/situation where 10 patients have to be crammed into a small ward.

(6) There was one moment where I really genuinely thought I was going to drown.

(7) In a skit where the Hillary character is jailed by the Mayor Giuliani character, she …

(8) Another has been how to get the audience to buy into a concept where the traditional good guys — the president, for example — are bad and …

These examples are taken from authentic texts and are very acceptable. Although it is beyond the scope of this dissertation to provide a thorough analysis of the use, it is clear that 'where' can take on non-locative meaning. Semantically, the head noun in the relative clause serves to anchor a context or circumstance where the description of the relative clause is true. In this way, they function like frame-setting modifiers[16]. These

[16] According to Maienborn (2001), "frame-setting modifiers are not part of what is properly asserted but restrict the speaker's claim." She gives the following examples.

relative clauses can be paraphrased as follows:

(9) In that case/scenario/situation, 10 patients have to be crammed into a small ward.

(10) At that moment, I really genuinely thought I was going to drown.

(11) In the skit, the Hillary character is jailed by the Mayor Giuliani character.

(12) According to the concept, the traditional good guys — the president, for example — are bad and …[17]

I suggest that the relative pronoun 'where' can be used when the head noun sets up the circumstances for the relative clause. I call the examples in (5)—(8) the circumstantial use of 'where.' Other relative pronouns cannot be used in this way.

(13) There was one moment **which/when*[18]*/*how/*who* I really genuinely thought I was going to drown.

(14) Another has been how to get the audience to buy into a concept **which/*when/*how/*who* the traditional good guys — the president, for example — are bad and …

The circumstantial use of 'where' also receives some support from other languages like Spanish, French and German[19].

(a) Eva signed the contract on the last page.
Entails: Eva signed the contract.

(b) In Argentina, Eva still is very popular.
Does **not** entail: Eva still is very popular.

[17] http://www.nytimes.com/2006/08/20/arts/television/20wyat.html?ref=television&pagewanted=all

[18] 'When' is good because 'the moment' happens to refer to a time point.

[19] Note that not every language that has NWH-words allows the circumstantial use of 'where.' For example, Hebrew does not allow such use.

(15) Este sería un caso donde la gente sería egoísta. (Spanish)
this be.Subj a case where the people be.Subj selfish
'This is the case where the people would be selfish.'

(16) C'est le cas où les gens se détestent les uns les autres.(French)
this.is Dem case where Dem people self hate each other
'This is the case where people would hate each other.'

(17) a … der Fall, wo … (German)
the case where

b in einer Welt, wo …
in a world where

Apart from relative clauses, the circumstantial use of 'where' is possible in free relatives and free choice items as well. Most examples below are naturally occurring sentences.

Free Relatives

(18) This is where Schwarzenegger's support would be important.

(19) Where protein is concerned, chicken is easily the biggest mainstay in our diet.

(20) "Opposites attract" is a law of attraction, at least where electromagnetism is concerned.

(a) ze mikre bo anashim hem meod egoistim.
this situation in.which people they very selfish.
'This is the situation in which people are very selfish.'

(b) *ze mikre eyfo anashim hem meod egoistim
this situation where people they very selfish

(21) A rational number is any number of the form a/b, where *a* and *b* are integers.

(22) I can see where this would confuse you.

Free Choice Item

(23) Include diagrams wherever applicable- they will assist you greatly! [instruction on an assignment]

The evidence presented should be sufficient to show the affinity of 'where' with circumstances. If the meaning of the NWH-word is related to circumstances, the connection between circumstances and the *wh*-word 'where' may explain why 'where' is the most preferred form of NWH-words. However, it must be pointed out that the circumstantial use in relative clauses is neither a necessary nor a sufficient condition for being an NWH-word because other *wh*-words such as 'how' and 'when' seem to lack the same circumstantial use as in 'where', and yet they can serve as NWH-words in multiple languages.

2.3 NWH 'How' and 'When'

A handful of languages such as Cantonese, Korean, and Hindi permit the use of 'how' and 'when' as NWH-words. English, French, and German use a variant of 'when', namely, 'since when.' How is it that these *wh*-words can be used in the NWHC? The reasoning I propose is as follows: although *wh*-words such as 'when' and 'how' cannot serve as a circumstantial relative pronoun (cf. 'where'), they can be used to form questions about circumstances.

(24) a When can the group leader exercise his discretion power?

b When does a seed begin to grow?

In (24), the intention of the speaker is to ask for the circumstances under which the sentence becomes true. A reasonable answer to (a) is to offer a rule that specifies the circumstances under which the power can be exercised. And a typical answer to (b) is to specify the amount of water, temperature, light, oxygen, and other factors needed to

support the growth of the seed rather than a particular point in time. 'When' is thus compatible with the circumstantial use[20].

Similarly, in order to answer the 'how' questions in (25), it is necessary to describe processes and circumstances rather than manners.

(25) a How can a foreigner obtain US citizenship?

b How does a caterpillar become a butterfly?

For example, a conceivable answer to (a) is to state the relevant conditions for immigration to the US, which are basically prescriptions of circumstances in which a person must be in to qualify for citizenship.

2.4 NWH 'What' and 'Which'

IWH 'what' and 'which' generally do not occur in non-argument positions. Even if the interrogative what- or which-phrase corresponds to an adjunct, it must be in the complement position of a preposition, e.g. *in what way*, *from which car dealer*. Nevertheless, 'what' and 'which' do appear to be in non-argument positions when in an NWHC. As quite a few languages allow NWH 'what' and 'which', they cannot be dismissed as exceptions. Examples are cited below.

(26) a Ngo me mou bei cin aa3?! (Cantonese)
I what have.not give money Q
'No way have I not paid.'

b Keoi bin sik taan kam aa3?!
he which know play piano Q
'No way can he play the piano.'

---

[20] Time is also conventionally used in some languages to anchor a sentence in different circumstances. The subjunctive past marking (assuming tense to be a realization of time) can relocate the interpretation of a sentence in counterfactual worlds (Iatridou 2000).

(27) Qué va a tener 60 años?! (Spanish)
what go.3Sg.Pres to have 60 year.old
'No way is he 60 years old.'

(28) Eyze etmol Dani šavar et ha-xalon?! (Hebrew)
which yesterday Dani break.past.3Sg.Masc Acc Def-window
'No way did Dani break the window yesterday.'

(29) Rām kon-sā jaldī āyegā?! (Hindi)
Ram which-Masc quickly come-Fut
'No way will Ram come quickly.'

The use of 'what' and 'which' in such unexpected environment makes it difficult to explain the NWH phenomenon if one assumes that NWH-words are grammatically exactly the same as normal IWHQs. In the above languages, none of them allows IWH 'what' or 'which' to occur in the non-argument/complement position. (26)—(29) can never be interpreted as *wh*-interrogatives.

The use of 'what' and 'which' are also conceivably applicable to questions about circumstances. First, 'what' and 'which' can serve as a *wh*-determiner that can be combined with a wide range of nouns such as *under what circumstance* or *which book*,. Second, 'what' is usually the most unmarked form among the *wh*-words. For example, it can be used as the *wh*-scope marker in languages such as German and Hindi. Third, 'what' can be used to ask for elements that are propositional.

(30) What do you think __ ?

The gap that *what* is related to is clearly a proposition. As discussed below in Section 4.5, a proposition can be taken as the description of a circumstance. This could be an added reason why some languages choose 'what' as an NWH-word. Last, when 'which' is used in the interrogative sense, it normally has to take an overt complement NP (e.g. *which book*). Since it is never possible to insert a NP right after an NWH 'which', this may suggest that the complement position of an NWH 'which' is already occupied, possibly by a silent element associated with circumstances.

2.5 Rigidity of NWH-Words

The restrictions on the form of NWH-words are far more rigid than those of IWH-words. IWH-words can combine with prepositions to form a bigger phrase. However, NWH-words are not eligible for such a form. No NWH-word can form a bigger phrase with other elements. Cantonese *bindou* 'where' is a good example. Cantonese adjunct IWH 'where' is normally preceded by a coverb (a preposition-like element). Although the coverb *hai* 'at' can sometimes be optionally omitted, its use is never prohibited. Thus, *hai* + *bindou* (lit. 'at where') is the unmarked way of asking an adjunct IWH 'where' question.

(31) Nei (hai) bindou gindou John aa3? (IWH / Cantonese)
you at where see John Q
'Where did you see John?'

However, unlike its IWH counterpart, the NWH 'where' can never be preceded by a coverb.

(32) Keoi (*hai) bindou wui gindou John aa3?! (NWH / Cantonese)
he at where will see John Q
'No way will he see John.'

Although some languages do form NWH-words with a preposition, e.g. *since when* (English) and *d'où* (French), these can be considered frozen expressions. One cannot drop the preposition or replace it with an alternative preposition.

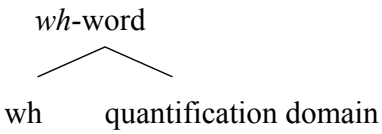
(33) Since when/*From when/*when is John a professor?! (NWH)

Since when and *from when* are normally considered near synonyms. However, only the former can trigger the intended NWH interpretation.

2.6 Substitute Hypothesis

Here I would like to put forth a proposal for the previous observations of the NWH morphology. Let us assume that *wh*-words, in general, consist of a *wh*-determiner[21] plus an element that specifies the quantification domain. For example, 'who' = which + person, 'where' = which + location, and 'when' = which + time.

(34)



In the case of NWH-words, I propose that we are dealing with "wh + circumstance" and the morpheme for circumstances is silent. Moreover, the *wh*-determiner cannot be pronounced by itself. In order to spell out the *wh*-word "wh + circumstance", another *wh*-word that is semantically close is used to substitute it in spell-out. Languages vary as to which *wh*-words are counted as good substitutes.

Sections 2.2—2.4 offer a semantic basis as to why 'where', 'when', 'how', 'what', and 'which' are potential substitutes for the *wh*-word and the silent morpheme associated with circumstances. 'Where' is most commonly chosen as the substitute because it has a strong affinity with the circumstantial meaning, which is semantically closest to "wh + circumstance." In at least some languages, "how" and "when" are also suitable as *wh*-words for questioning circumstances. "What" and "which" are possible because they can be considered more or less neutral *wh*-words in the languages, and because they do not have any obvious semantic conflict with the notion of circumstances. In contrast, there is little connection between 'who' and circumstances. When confronted with a 'who' question, it would be odd to provide an answer that describes a circumstance. That is probably why 'who' cannot serve as an NWH-word in all the languages in the survey. Finally, we are left with the question word 'why.' On the current account, it seems unexpected that 'why' is not useable as an NWH-word. 'Why' questions normally need a proposition answer introduced by 'because', and thus should be compatible with the notion of circumstances. In the survey of languages conducted for the current study, no

[21] Think of the *wh*-determiner as the 'wh' part in the wh-morphology in English.

language was found to reliably use ‘why’ as an NWH-word. One possibility is that ‘why’ introduces a causal relation between the reason-clause and the main clause. No such relation is detected in the NWHC, making ‘why’ an unsuitable substitute.

Admittedly, the “substitute hypothesis” does not offer a hard and fast rule to predict the morphology. However, its flexibility is not bad for capturing the cross-linguistic variation observed in NWH-words.

Chapter 3 Syntax of NWHC

This chapter provides an in-depth study of three major syntactic issues. First, the base position is established on the basis of Cantonese, Korean, and Hindi data. These languages show how NWH-words are different from interrogative *wh*-phrases in terms of their structural positions. Second, I show another unique feature of the NWHC: its being a root phenomenon. This bears on the relation between the silent licenser I posit and the underlying question in the construction. Third, I defend the position that some grammatical parallels between the NWHC and the *wh*-interrogatives compel us to think that the former embodies the latter in some way, in spite of the differences between them. In Chapter 5, these issues are tied together in a cohesive account. Before discussing the three major issues, I want to briefly argue that NWH-words are phrases.

3.1 NWH-words are phrases

Are NWH-words phrases (like their interrogative counterparts) or are they heads? Evidence from *wh*-movement languages suggests that the NWH-word is a phrase. In *wh*-movement languages, the interrogative *wh*-phrase undergoes *phrasal* movement to SpecCP. At the same time, in English, Spanish, and German, if the *wh*-interrogative is in the root clause, the verb or tense morpheme undergoes movement to C^0 (sometimes referred to as inversion). The NWHC in these languages also displays these properties. Given the analysis, the element before the verb/tense morpheme must be a phrase.

(1) Since when *did* he arrive this morning?! (English)

(2) Qué/De dónde *va* a tener 60 años?! (Spanish)
what/from where go.3Sg.Pres to have 60 year.old
'No way is he 60 years old.'

(3) Wo /Seit wann *ist* er groß? (German)
Where/Since when is he tall
'No way is he tall.'

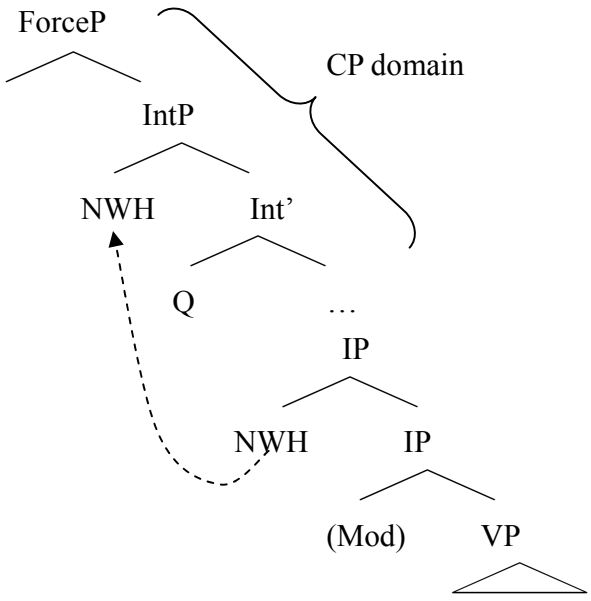
In (1)—(3), the auxiliaries (italicized) come before the subject. It is reasonable to assume that the auxiliary undergoes movement to C^0. Thus the preceding NWH-word must be a phrase occupying SpecCP.

3.2 Base Position and Landing Site

What is the base position of the NWH-word? Does it pattern with its IWH counterpart? To answer this question, one must examine the distribution of the NWH-word in two types of languages. Just as they do for *wh*-interrogatives, some languages require the NWH-word to appear in the pre-subject position; others, the in-situ position. It is more instructive to examine the distribution of NWH-words in the latter type of languages. *Wh*-in-situ languages such as Cantonese, Korean, and Hindi data provide better evidence for the base position of NWH-words.

The base position of the NWH-word that I argue for is given in (4). The NWH-word is adjoined to the top of the IP. In *wh*-in-situ languages, the NWH-word remains there and is licensed by the Q-morpheme in the CP. In *wh*-movement languages, the NWH-word has to move to IntP (i.e. the interrogative phrase), on the basis of Rizzi's fine structure of the left periphery.

(4)



Evidence for this structure is presented in Sections 3.2.1—3.2.3.

3.2.1 Word Order

3.2.1.1 Cantonese

Being an SVO and *wh*-in-situ language, Cantonese serves as a good testing ground for isolating the base position of the NWH-word. Overall, the IWH-word and NWH-word have relatively rigid syntactic distribution with respect to the positions they occupy. The NWH-word in Cantonese typically occurs in either of the following positions: (i) the pre-subject position or (ii) the post-subject position, i.e. immediately before a modal, an auxiliary (e.g. *hai* 'be', *jau* 'have') or sometimes a verb. There is a strong preference to have a modal or an auxiliary verb in the Cantonese[22] NWHC. In their absence, the grammaticality of a sentence can become degraded or even ungrammatical, depending on the particular NWH-word used. The contrast can be seen in (5a) and (5b).

Post-Subject NWH-word

(5) a John bindou/dim *wui* maai go bun syu aa3?!
John where/how will buy Dem Cl book Q
'No way will John buy the book.'

b John ?bindou/*dim maai-zo go bun syu aa3?!
John where/how buy-Perf Dem Cl book Q
'No way has John bought the book.'

(6) John bindou/geisi *(*jau*) hai cat dim daa dinwaa bei nei aa3?!
John where/when have at 7 o'clock hit phone to you Q
'No way did John call you at 7 o'clock.'

[22] The co-occurrence preference is not as strong in the Mandarin NWHC.

Pre-Subject NWH-word

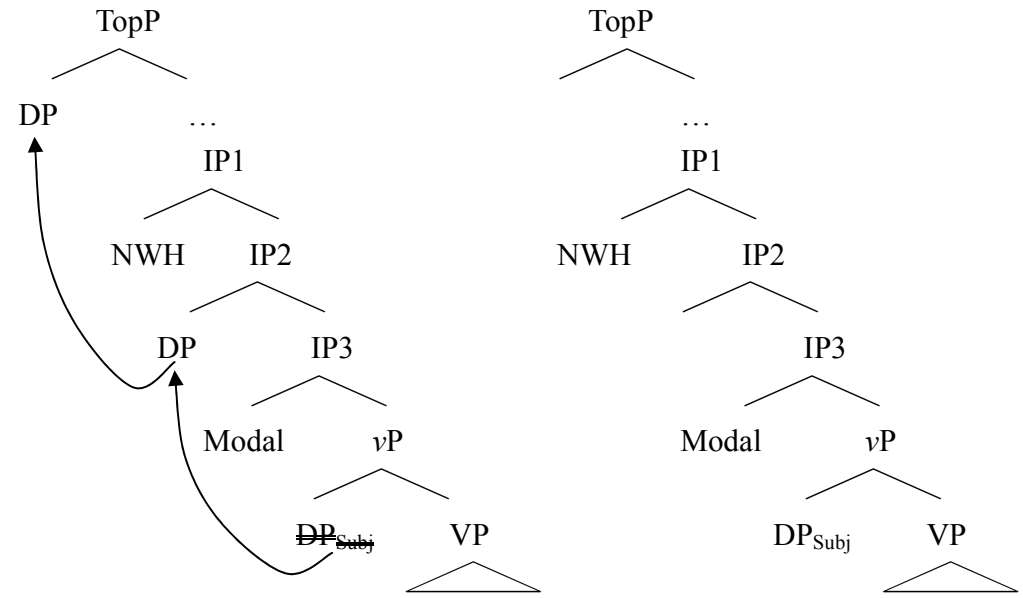
(7) Bindou/dim *(jinggoi) nei sai wun aa3?!.
where/how should you wash dish Q
'No way should you wash the dishes. [I should do it.]'

(8) Bindou/Bin *(hai) keoi heoi taihei aa3?! (*hai* 'be' = emphatic/focus marker)
where/which be he go see.movie Q
'No way will he go to see the movie.' [It is Bill who will go.]

The post-subject position is generally the preferred position for NWH-words. When the NWH-word occurs in the pre-subject position, the NWH-word has to follow a modal or an auxiliary.

To account for the distribution, I adopt the VP-Internal Subject hypothesis and assume that the subject in Chinese is generated in Spec*v*P (Koopman and Sportiche 1991, Cheng 1991). If the modal verb or the auxiliary in Chinese does not move, the two word orders are the result of the movement of the VP-internal subject to a higher position. In (5a) and (6), the subject is actually a topic that undergoes movement from Spec*v*P to SpecCP, as shown in the tree below. The pre-subject NWH-word order is derived when the subject stays downstairs in the *v*P shell.

(9) a. *Post-Subject NWH-word* *b. Pre-Subject NWH-word*



As the NWH-word always precedes the modal or auxiliary, it must occupy a position at least as high as the modal in the split IP. I propose the following:

(10) Cantonese NWH-words are adjoined to top of the IP (or at least higher than the modal in the split IP).

More justification for (10) is provided in Section 3.2.2. In Chapter 5, I discuss the semantic implications of this position.

The adjunct IWH-words (e.g. 'where' and 'when') differ from NWH-words in that the former can go into positions lower than the modal (as indicated by the arrows below). Usually, the post-modal position is the unmarked position for temporal and locative adjuncts. Yet NWH-words cannot occur there. (11) illustrates the differences between NWH-word and IWH-word placement.

(11) Keoi hoji maanmaangam taan bui gaafe aa3
he can slowly enjoy cup coffee Q

❶ ❷ ❸ ❹

NWH (*bindou*) :	*[23]	ok	*	*
IWH (*hai bindou*):	ok[24]	ok	ok	*

The facts demonstrate that adjunct IWH-words can adjoin to various syntactic positions (e.g. below the modal), producing different interpretations (Maienborn 2001). This is contrasted with the NWH-word, which can only appear above the modal.

The second difference is that IWH-words normally do not require the presence of modals/auxiliaries. Even when the IWH-word comes before the modal/auxiliary, there is no adjacency restriction. This suggests that in Cantonese, there is a close connection between modal and the NWH-word. Interested readers may refer to Appendix I for an alternative analysis of the structure that addresses the adjacency effect.

Last, unlike that of the IWH/RWH-word, the position of the NWH-word is fixed. Despite Chinese being a *wh*-in-situ language, IWH/RWH-words (e.g. 'what', 'where', 'when' and 'how') can also be moved to the beginning of a clause for focus (Wu 1999), as in the following pairs.

(12) a Me/Matje ne1, John zeoi zungji aa3? (IWH/RWH)
what Prt John most like Q
'What does John like most?'

b Me/Matje ne1, nei jingwai John zeoi zungji aa3? (IWH/RWH)
what Prt you think John most like Q
'What do you think that John likes most?'

---

[23] NWH-words can be pre-subject only when it is immediately followed by a modal/auxiliary.

[24] The IWH-phrase can be fronted. It is usually followed by a particle that looks like the topic particle in both Mandarin and Cantonese. Wu (1999) refers to this construction as wh-topicalization. The NWH-word cannot undergo this syntactic operation.

(13) a Hai bindou ne1, ngodei hoji gindou loufu aa3? (IWH/RWH)
what Prt we can see tiger Q
'Where can we see tigers?'

b Hai bindou ne1, nei jingwai ngodei hoji gindou loufu aa3? (IWH/RWH)
what Prt you think we can see tiger Q
'Where do you think we can see tigers?'

However, Cantonese NWH-words can never undergo focus movement in the same way.

(14) *Bindou/Me ne1, keoi *m-hoji* maaidou zau aa3?! (NWH)
where / what Prt he not-can buy wine Q
Intended: 'No way can he not buy some wine.'

This shows that the position of NWH-words in Cantonese is more fixed than that of IWH/RWH-words.

3.2.1.2 Korean

The structural difference between NWH-words and IWH-words also receives support from NWH-word distribution in Korean. In Korean, while the adjunct IWH/RWH-word can go below the object DP, the NWH-word must come before the object DP. (15) illustrates the grammaticality pattern when the NWH-word (a) and the IWH-word (b) occur in the indicated positions.

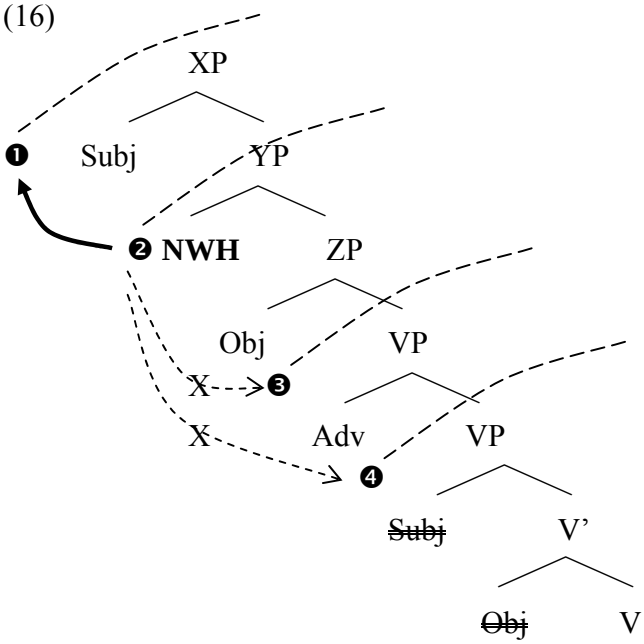
(15)	John-i ↑ ❶	chayk-ul ↑ ❷	kkomkkomhakey ↑ ❸	ilk-ess-ta ↑ ❹
	John-Nom	book-Acc	carefully	read-Pst-Decl
a (NWH)	✓Eti	✓Eti	??Eti	*Eti
b (IWH)	✓Eti-eyse	✓Eti-eyse	✓Eti-eyse	✓Eti-eyse

The interrogative *eti-eyse* 'where' can appear as low as the pre-verbal position whereas NWH *eti* must appear in either the pre-subject or pre-object positions.

Due to scrambling, the position of adjuncts in Korean is relatively free. This may explain why the IWH-word can show up in all four positions. But this also makes the

non-occurrence of the NWH-word in positions ❸ and ❹ rather puzzling. However, if we assume the following, this pattern can be explained. Suppose that scrambling always involves leftward movement. Furthermore, the *wh*-word is base-generated at the rightmost possible position (i.e. ❹ for *eti-eyse* and ❷ for *eti*). If the NWH-word starts out at ❷, the only position that it can move into is ❶.

(16)



N.B. I assume that the object is moved from a lower position inside the VP shell to a higher position.

Scrambling

→ = licit (leftward)

⇢ = illicit (rightward)

If the IWH-word is generated lower, say, at ❹, it can have the option of occurring in all four positions with scrambling. The distribution is consistent with the observations in Chinese that NWH-words originate from a position higher than IWH-words in the structure.

3.2.1.3 Hindi

Hindi also provides support to the generalization made in the last two sections. Hindi is an SOV language with relatively free word order due to scrambling. According to Mahajan (1990), Hindi does not have overt *wh*-movement to the sentence-initial position in simple clauses. *Wh*-phrases can appear in-situ (17a), or be scrambled to the front (17b).

Hindi

(17) a Ram-ne [kyaa ciiz] khaa-ii? (IWH / unmarked)
Ram-Erg what thing.Fem eat-Perf.Fem
'What thing did Ram eat?'

b [kyaa ciiz] Ram-ne khaa-ii? (IWH)
what thing.Fem Ram-Erg eat-Perf.Fem

However, between the two variants, (17a) is the unmarked one. Interestingly, when the subject is questioned, the unmarked order is that the subject is in the pre-verbal position. In other words, the subject *wh*-phrase occurs to the right of the object DP.

(18) a Kis-ne Billu-ko maar-aa ? (IWH)
who-Erg Billu-Acc hit-Perf
'Who hit Billu?'

b Billu-ko kis-ne maar-aa ? (IWH / unmarked)
Billu-Acc who-Erg hit-Perf
'Who hit Billu?'

Apparently, the preferred word order in a *wh*-question is to move the *wh*-phrase to the immediately pre-verbal position. This includes adjunct 'where' questions.

(19) a Rām yah kitāb kahā̃ parh pāyegā? (IWH)
Ram this book where read able-Fut
'Where will Ram be able to read this book?'

b *Rām kahā̃ yah kitāb parh pāyegā? (IWH)
Ram where this book read able-Fut

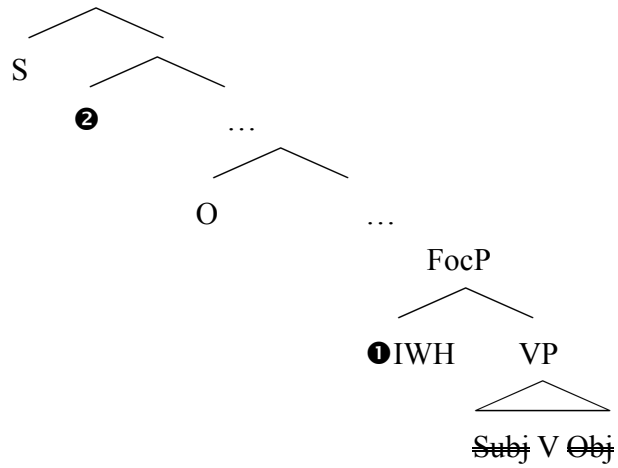
As for the NWH-word, its unmarked position is the pre-object position. Another possible option is the the immediately pre-verbal position. However, there is some variation among the Hindi consultants in accepting the pre-verbal NWH-word. While two speakers thought that the pre-object position (20a) and pre-verbal position (20b) sounded equally good, one Hindi consultant only accepted the pre-object position (20b).

(20) a *Pre-Object* (accepted by all)
Rām kahā̃ yah kitāb parh pāyegā?! (NWH)
Ram where this book read able-Fut
'No way will Ram be able to read this book.'

b *Pre-Verbal* (not accepted by all)
Rām yah kitāb kahā̃ parh pāyegā?! (NWH)
Ram this book where read able-Fut

Mahajan (p.c.) suggests a possible underlying structure of a simple Hindi sentence, given in (21). All elements in the VP shell, except the verb, must vacate the shell and be moved to some higher positions in the clause, say, to the CP domain. As in languages such as Hungarian (Horvath 1986), there is a focus position immediately above the VP. Normally, a *wh*-phrase such as subject or object *wh*-phrase must undergo leftward movement to the focus position ❶ for interrogative interpretation, resulting in the apparent adjacency between the interrogative *wh*-phrase and the verb.

(21)



Now suppose the NWH-word is base-generated in a position labeled as ❷. Position ❷ is above both SpecFocP and the landing site of the object DP. So the most unmarked order is to have the NWH-word appearing before the object, i.e. "S-NWH-O-V". In contrast, the "S-O-NWH-V" may still be derived by further scrambling the object around the

NWH-word, making it less preferred among some speakers. The assumption that the base position of the NWH-word is higher than the pre-verbal focus position could account for the judgment patterns of the two types of *wh*-constructions.

One further indication of the higher structural position is that it is possible to insert an adverb between *kahā̃* 'where' and the verb in the NWHC.

(22) Rām kahā̃ jaldī āyegā? (IWH)
Ram where quickly come-Fut
'Where will Ram come quickly?'

This shows that there is no adjacency constraint between the NWH-word and the verb. But this is generally not possible with the IWH-word and the verb.

(23) a *Pre-Verbal*
Rām yah kitāb kahā̃ parh pāyegā? (IWH)
Ram this book where read able-Fut
'Where will Ram be able to read this book?'

b *Pre-Object*
*Rām kahā̃ yah kitāb parh pāyegā? (IWH)
Ram where this book read able-Fut

While the interrogative 'where' is well-formed in the pre-verbal position, it becomes ill-formed in the pre-object position.

3.2.2 Negation Scope

3.2.2.1 Facts

In Section 1.3.4, it is noted that the negation introduced by the NWH-word systematically takes wide scope over the sentence, including the subject. The relevant examples are repeated below for easy reference.

English
English IWH-words are scopally ambiguous with the universal quantifier occurring to

their right in (24)[25] and (25)—arguments and adjuncts alike. But the NWH-word cannot, as in (26). I associate the NWH-word with the negative meaning.

(24) What did everyone buy for Max? (**IWHQ**)
(i) ✓What is the thing *x* such that everyone bought *x*? (what > ∀)
(ii) ✓For each person *y*, what is the thing that *y* bought? (∀ > what)

(25) When did everyone hit him? (**IWHQ** / Aoun and Li 1993: 152)
(i) ✓What is the time *x* such that everyone hit him at *x*? (when > ∀)
(ii) ✓For each person *y*, what is the time *x* that *y* him at *x*? (∀ > when)

(26) Since when did everyone see the movie?! (**NWHC**)
(i) ✓It is not the case that everyone saw the movie. (NEG > everyone)
[situation: Bill and Ed saw it, but Mary refuses to even think about going.]
(ii) ✗For each person *x*, *x* did not see the movie. (*everyone > NEG)
[situation: Nobody saw the movie.]

The obligatory wide-scope interpretation is not restricted to English. Hindi shares this very similar scopal property.

Hindi
The Hindi interrogative sentence in (27) is ambiguous between two scopal readings. 'Each man' can take wide scope over 'what' or vice versa. However, in the NWHC, the negation necessarily scopes over 'each man.'

(27) Har-ek ādmī kyā / kyā cīz khari-degā?! (**IWHQ** / Hindi)
each man what / what thing buy-Fut
(i) ✓What is the thing *x* such that everyone will buy *x*? (what > everyone)
(ii) ✓For each person *y*, what is the thing that *y* will buy? (everyone > what)

---

[25] The ambiguity also applies to rhetorical wh-questions.
What did everyone buy for Max?! (RWHQ)
(i) ✓There is no thing *x* such that everyone bought *x*. (what > ∀)
(ii) ✓For each person *y*, there is no thing that *y* buy. (∀ > what)

(28) Har-ek ādmī kahɑ̃ jit saktā hɛ?! (**NWHC** / Hindi)
each man where win can be
(i) ✓ 'It is not the case that each man can win.' (NEG > everyone)
(ii) ✖ 'For each man *x*, *x* cannot win.' (*everyone > NEG)

Cantonese

Cantonese also shares a similar pattern, though in a slightly different way. The scope rule is stated in (29).

(29) The NWH cannot be c-commanded by quantified DPs, quantified adverbials and *zinghai* 'only.'
a *QP ... NWH ...

b NWH ... QP …

(30) and (31) show that regardless of whether the subject is universally or existentially quantified, if it c-commands the NWH-word, the sentence becomes bad. However, the pre-subject NWH-word is always grammatical. The negation always takes scope over the quantifier.

Quantified DPs

(30) a **Mui-jat go hoksaang* dou <u>bindou</u> jau lei aa3?!
every-one Cl student DOU where have come Q
(i) ✖ 'No way did every student come.' (*NEG < ∀)
(ii) ✖ 'Every student did not come.' (*∀ < NEG)

b <u>Bindou</u> hai *mui-jat go hoksaang* dou jau lei aa3?!
where be every-one Cl student DOU have come Q
(i) ✓'No way did every student come.' (NEG < ∀)
(ii) ✖ 'Every student did not come.' (*∀ < NEG)

(31) a **Jau jat go hoksaang* <u>bindou</u> lei-zo aa3?!
have one Cl student where come-Perf Q

(i) × 'No way has some student come.' (*NEG < ∃)
(ii) × 'Some student has not come.' (*∃ < NEG)

b Bindou jau *jat go hoksaang* lei-zo aa3?!
where have one Cl student come-Perf Q
(i) ✓ 'No way has some student come.' (NEG < ∃)
(ii) × 'Some student has not come.' (*∃ < NEG)

(32) exemplifies the rule stated in (29) with the quantified temporal adverbial, *every Sunday*. (32c) is included to show that the offending factor is the quantified subject, and not the fact that the adverbial is found in post-subject position.

Quantified Adverbials

(32) a *Keoi *mui go singkeijat* dou bindou/dim wui heoi gaauwui aa3?!
he every Cl Sunday DOU where/how will go church Q
(i) × 'No way will he go to church every Sunday.' (*NEG < ∀)
(ii) × 'Every Sunday, he will not go to church.' (*∀ < NEG)

b Keoi bindou/dim wui *mui go singkeijat* dou heoi gaauwui aa3?!
he where/how will every Cl Sunday DOU go church Q
(i) ✓ 'No way will he go to church every Sunday.' (NEG < ∀)
(ii) × 'Every Sunday, he will not go to church.' (*∀ < NEG)

c Keoi *nei go singkeijat* bindou/dim wui heoi gaauwui aa3?!
he this Cl Sunday where/how will go church Q
'No way will he go to church this Sunday.'

Last, a c-commanding subject DP with *zinghai* 'only' also produces ungrammaticality.

Zinghai 'Only'

(33) a **Zinghai John* bindou/dim wui lei aa3?!
only John where/how will come Q
(i) × 'No way will only John come.' (*NEG < only)
(ii) × 'Only John will not come.' (*only < NEG)

b Bindou/dim wui *zinghai John* lei aa3?!
where/how will only John come Q
(i) ✓ 'No way will only John come.' (NEG < only)
(ii) ✗ 'Only John will not come.' (*only < NEG)

The Cantonese pattern is a bit different from the Hindi one. Hindi allows a quantifier to precede the NWH-word but the NWH-word still takes wide scope (see (28)). Cantonese simply bans any sentence in which the NWH-word is c-commanded by a quantified phrases or an 'only' DP. The generalization stated in (29) pertains to the NWHC and does not apply to IWHQs in Cantonese. Take (34) and (35) as examples.

(34) *Mui-jat go hoksaang* dou maai-zo me aa3? (IWH/Cantonese)
every-one Cl student DOU buy-Perf what Q
(i) ✓ 'What is the thing *x* such that every student bought?' (what < ∀)
(ii) ? 'For each student *y*, what did *y* buy?' (?∀ < what)

(35) Keoi *mui jat* dou wui hai bindou sik maanfaan aa3? (IWH/Cantonese)
he every day DOU will go where eat dinner Q'
(i) ✓ 'What is the place *x* such that he has dinner every day?' (what < ∀)
(ii) ? 'For each day *y*, what is the place *x* such that he has dinner?' (?∀ < what)

An IWH-word can be c-commanded by a quantifier without any problem. The preferred reading is to have the IWH-word take wide scope over the quantifier.

3.2.2.2 Explanation

The basic structure in (4) explains why the NWH-word necessarily takes wide scope. Since the base position of the NWH-word is at the edge of the IP, it always c-commands the subject, object, and all other VP- or IP-adverbials. In comparison, locative 'where' or temporal 'when' can adjoin to the lower part of the structure and be c-commanded by the universally quantified subject.

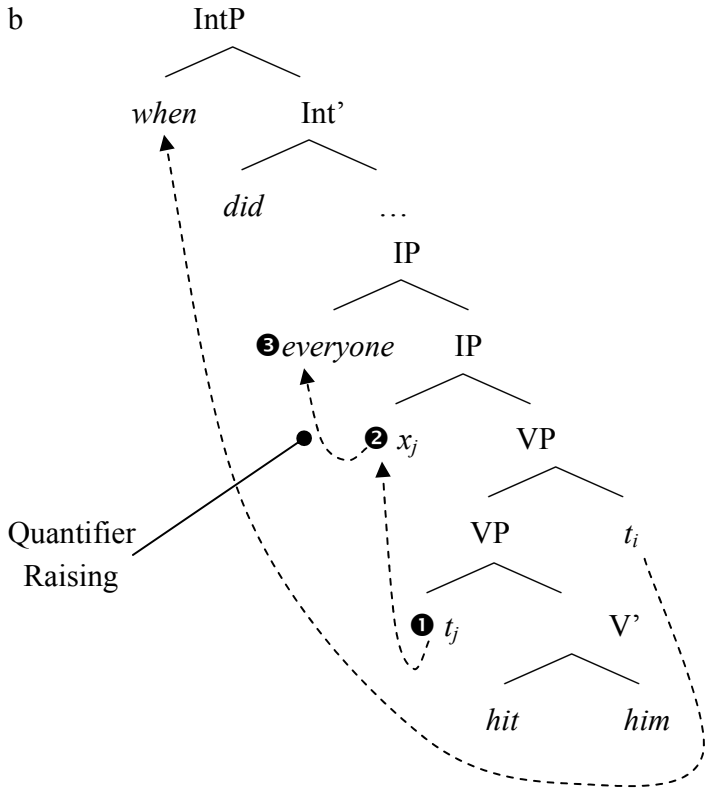
Let us illustrate the difference with two English examples and their structures.

(36) a When did everyone hit him? (**IWHQ**)

(i) ∀ > when

(ii) when > ∀

b

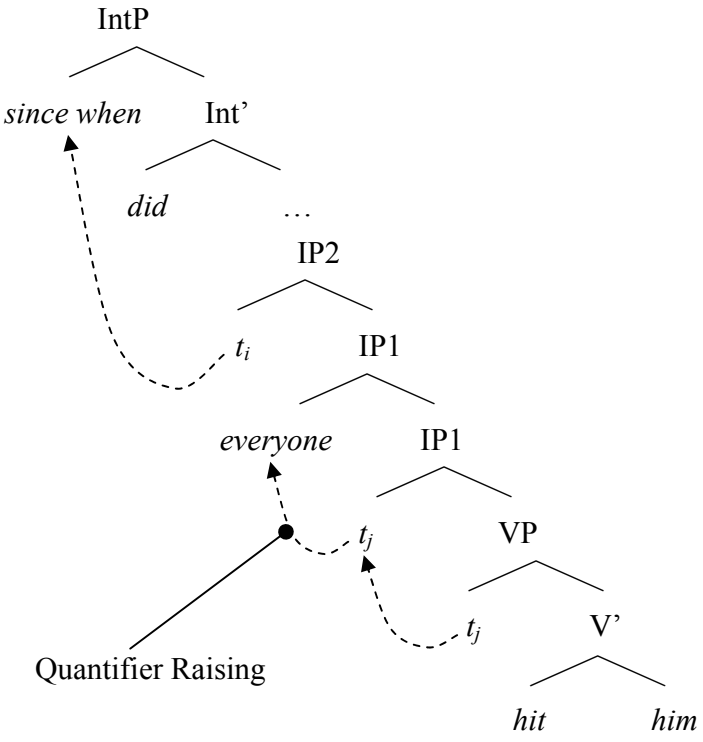


To account for the scope ambiguity, I assume that the subject, *everyone*, undergoes movement from the VP-internal subject position to SpecIP ❷, and a further quantifier raising to ❸ in (36). Reading (36i) is available because the universal quantifier at position ❸, *everyone*, c-commands the trace of *when.* On the other hand, *when* from SpecIntP can also take scope over *everyone* at position ❸. Consequently, the configuration yields two scopally different interpretations.

The NWHC structure below differs from the one illustrated above in the location to which the *wh*-word adjoins. *Since when* in our analysis first adjoins to the top of the IP, above the quantifier-raised *everyone*. It is subsequently moved into SpecIntP via *wh*-movement. As a result, *everyone* can never take wide scope over the NWH-word, resulting in the unambiguous negation wide-scope reading.

(37) a Since when did everyone see the movie? (**NWHC**)

b



Next we want to explain why quantified phrases and 'only' phrases can never precede the NWH-word in Cantonese. According to the proposed structure in (4), the structure above the NWH-word is the domain of CP. As a result, whenever the subject DP shows up before the NWH-word, the DP should be interpreted as a topic, rather than a regular subject.

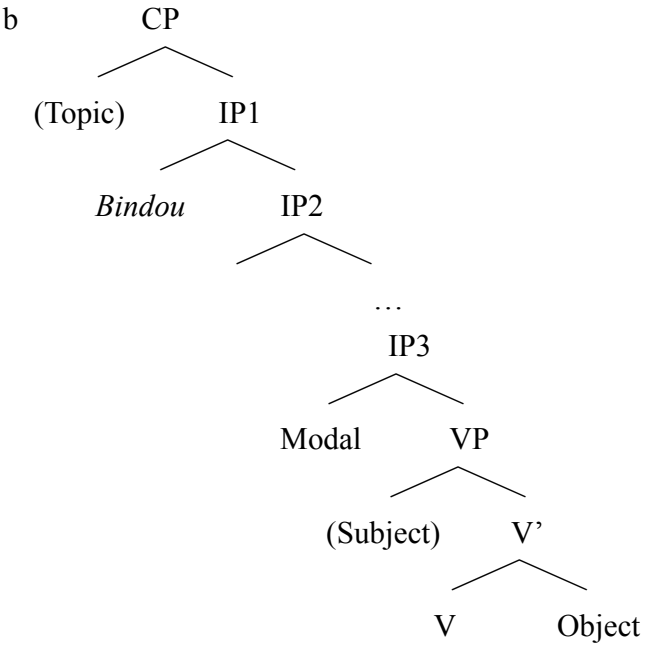
topic

(38) *Go go hoksaang* bindou hoji zou nei go satjim aa3?!
Dem Cl student where can do Dem Cl experiment Q
'No way can that student do the experiment.'

The assumption is not unreasonable, as Chinese is well-known for a being topic-prominent language (Li and Thompson 1981). Further, it is possible (although less common) to have the subject below the modal, suggesting that the subject originates from a position lower in the structure.

(39) a Bindou hoji *go* *go hoksaang* zou nei go satjim aa3?!
where can Dem Cl student do Dem Cl experiment Q
'No way can that student do the experiment.'

b



If the analysis is correct, it is possible to explain why quantifiers cannot precede the NWH-word. Cross-linguistically, quantified phrases are not ideal candidates for topicalization. This is also true in Cantonese.

(40) a ?? Jau go jan ne, lei-zo laa3.
have Cl people Top come-Perf SP
'Someone has come.'

b ?? Saam-go jan ne, John wui gin ge3.[26]
three-Cl people Top John will see SP

[26] (40b) is possible on the contrastive topic reading. In the context where the speaker wants to highlight that John will see three people, not many people.

'He will see three people.'

c *Zinghai Mary ne, lei-zo laa3.
only Mary Top come-Perf SP
'Only Mary has come.'

Whenever a quantified subject precedes the NWH-word in Chinese, the only option is to move it into a topic position. As a result, the grammaticality of the sentence becomes marginal. Some further support can be drawn from some special cases where numerally-quantified DPs when interpreted as a generic DP can become a topic.

Topicalization of Generic Numerally-Quantified DPs

(41) a Saam go jan (ne) hoji sik-saai baat wun min.
three Cl person Top can eat-all eight bowl noodle
'Three people can eat eight bowls of noodles.'

b Baat wun min (ne), saam go jan hoji sik-saai.
eight bowl noodle Top three Cl person can eat-all
'Three people can eat eight bowls of noodles.'

Similarly, the generic DP can also precede the NWH-word. The structure in (4) can explain it because as seen in (41a) and (41b), the generic DP *saam go jan* has no problem being a topic.

(42) Saam go jan (ne) bindou hoji sik-saai baat wun min.
three Cl person Top where can eat-all eight bowl noodle
'No way can three people eat eight bowls of noodles.'

In addition, although 'only'-phrases cannot typically precede the NWH-word, the sentence is fine if the 'only'-phrase is interpreted as a bare antecedent of a conditional. Recall the ill-formed sentence (33a), repeated below.

(43) **Zinghai John* bindou/dim wui lei aa3?!
only John where/how will come Q

'No way will only John come.'

If *zinghai John* 'only John' is understood as the conditional antecedent, i.e., 'if there is only John', 'only'+DP > NWH sequence becomes well-formed.

(44) *Zinghai John* bindou/dim wui jau jan lei aa3?!
only John where/how will have people come Q
'If only John [is invited], no way will those people come.'

Here is the context for (44). Suppose Mary is holding a poetry recital event. She is inviting two poets, John and Susan. Susan is a famous poet but John is not. The speaker thinks that if only John is invited, nobody will come. Thus, (44) can have the reading that "if only John is invited (as the special guest), no way will people come to the event.

To sum up, the analysis that the NWH-word adjoins to the edge of IP offers a good solution to the wide scope negation phenomenon. Chinese, being a *wh*-in-situ language, has provided further evidence to the proposal, as it is impossible to have a quantified subject precede the NWH-word.

3.2.3 Relative Scope with Topics and Sentential Adverbs

The discussion in the previous sections assumes that the NWH-word is adjoined to the top of IP. One possibility that has not been entertained is that the NWH-word is generated in the CP domain (see Appendix I). To address the issue, the relative position between the NWH-word and the elements typically found in the CP could be revealing. Two grammatical elements are chosen: topics and sentential adverbs.

Rizzi (1997, 1999, 2001) proposes that the CP can be sub-divided into fine layers, as shown below.

(45) FORCE (TOP*) INT (TOP*) FOC (TOP*) FIN IP

Based on Italian data, he shows that an indefinite number of topics can be found between different layers in the hierarchy. In Chinese, it is also possible to have multiple topics (Li and Thompson 1981, Paul 2005).

(46) Zhongguo, da chengshi ne, jiaotong fangbian yi-dian. (Paul 2005)
China big city Top transportation convenient a-bit
'In China, in big cities, public transport is more convenient.'

If the Cantonese NWH-word is in the CP, one might expect that topics can go before and after it. However, this is not true. Topics must precede the NWH-word.

Base-generated topic

(47) a Go coeng fo ne, bindou hoji hai sap fanzung zi noi gausik aa3?!
Dem Cl fire Top where can in 10 minute Mod inside put.out Q
'As for the fire, no way can (firemen) put it out in 10 minutes.'

b *Bindou go coeng fo ne, hoji hai sap fanzung zi noi gausik aa3?!
where Dem Cl fire Top can in 10 minute Mod inside put.out Q

Temporal topic

(48) a Camjat ne, bindou jau saam go hoksaang cidou aa3?!
yesterday Top where have three Cl student late Q
'No way were three students late yesterday.'

b *Bindou, camjat ne, jau saam go hoksaang cidou aa3?!
where yesterday Top have three Cl student late Q

Topic derived via movement

(49) a Nei bo dinnou ne, bindou jau jan jung-gwo aa3?!
you Cl computer Top where have person use-Exp Q
'No way has anyone used your computer.'

b *Bindou, nei bo dinnou ne, jau jan jung-gwo aa3?!
where you Cl computer Top have person use-Exp Q

No matter what kind of topic one chooses, the NWH-word can only follow it.

Sentential adverbs such as *frankly* and *generally speaking* also behave like topics in terms of distribution; they occur before NWH-words. Here are some examples.

(50) Frankly, since when has an upgrade to a Gate's product solved a stability problem?

(51) Generally speaking, since when does graphics determine the quality of gameplay?

(52) As for more roads, since when has more roads really ever reduced traffic?

In Cantonese, *hinjin* 'evidently', *lousat gong* 'frankly speaking', etc. normally precede topics. These adverbs also obligatorily precede the NWH-word.[27]

(53) a Lousat gong aa, bindou wui jau gam do haakjan lei sik maanfaan aa3?!
frank speak Top where will have so many customer come eat dinner Q
'Frankly speaking, no way will so many customers come to have dinner.'

b *Bindou, lousat gong aa, wui jau gam do haakjan lei sik maanfaan aa3?!
where frank speak Top will have so many customer come eat dinner Q

In brief, elements like topics and sentential adverbs should occur before the NWH-word. If topics or sentential adverbs can be placed all over CP (except before ForceP), the distribution suggests that the NWH-word is not in the CP domain.

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[27] Korean has a rather free word order. 'Frankly' can be sentence-initial, post-subject and pre-verbal, as in (i). However, in the NWHC, placing the sentential adverb after 'where' results in degraded acceptability. Compare (ii) and (iii).

(i) {Solcikhi} na-nun {solcikhi} party-ey {solcikhi} ka-ko siph ta.
frankly I-Nom frankly party-Loc frankly go want SP
'Frankly, I want to go to the party.'

(ii) Solcikhi eti nay-ka party-ey ka-ko siph keyss ni?!
frankly where I-Nom party-Loc go want Q
'Frankly, no way do I want to go to the party.'

(iii) ?Eti solcikhi nay-ka party-ey ka-ko siph keyss ni?!
where frankly I-Nom party-Loc go want Q

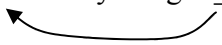
The cross-linguistic data have given some evidence that the base position of the NWH-word does not pattern with that of the IWH-word. Based on word order, negation scope, and topic distribution, it has been argued that while adjunct IWH-phrases can be as low in the structure as, say, the VP shell, NWH-words adjoin to the top of IP.

3.3 NWHC as a Root Phenomenon

Another noticeable difference between the NWHC and the IWHQ/RWHQ is that the former is almost always restricted to the root context but the latter is not. In all the examples of the NWHC illustrated thus far, the NWH-word is always located in the main clause. I will make use of embedding, sentential subject, and other island structures to illustrate that the NWH-word cannot occur in non-root environments.

(54) shows that the IWH-word can be placed in the embedded clause. If the matrix verb selects an interrogative *wh*-complement, the IWH-word will move to the beginning of the embedded clause and take the embedded scope (i.e. an embedded question). If the matrix verb selects a non-interrogative *wh*-complement, the IWH-word moves further up to the matrix clause initial position and takes the matrix scope (i.e. a matrix question).

(54) a John asked/wondered [what Mary bought __]. (embedded scope)



b What did John think [that Mary bought __]? (matrix scope)

In Chinese, even though IWH-words are in-situ, the scope of the IWH-word is also dependent on the property of the matrix verb (Huang 1982). In (55a), the matrix predicate selects an interrogative complement. The IWH-word in the embedded clause takes the embedded scope. In (55b), the matrix predicate selects a non-interrogative complement. The IWH-word in the embedded clause takes the matrix scope.

(55) a John man/soeng zidou [Mary maai-zo me].
John ask /want know Mary buy-Perf what
'John asked/wondered what Mary bought.'

b John jingwai [Mary maai-zo me].
John know Mary buy-Perf what
'What did John know that Mary bought?'

Even though it has not been discussed as much, RWH-words also display scope difference like IWH-words. (56) includes sentences from G. Pullum's discussion of embedded rhetorical questions (due to a talk by I. Caponigro)[28]. I offer the Cantonese counterparts in (57).

(56) a I want to ask how many rich people this law has ever been applied to __.

b How many people do you think this law has ever been applied to __ ?

(57) a Ngo soeng man [nei tiu faatlai jung-gwo hai gei-do jaucin jan dou].
I want ask this Cl law apply-Exp at how-many rich people there
'I want to ask how many rich people this law has been applied to __.'

b Nei jingwai [nei tiu faatlai jung-gwo hai gei-do jaucin jan dou].
you think this Cl law apply-Exp at how-many rich people there
'How many rich people do you think this law has been applied to __ ?'

What is surprising is that it is almost always impossible to embed NWH-clauses in the same way, as in (58)—(62). The NWH-word in the embedded clause can take neither the embedded nor the matrix scope.

English

(58) a *John asked/wondered [since when he arrived 10 min ago].

b *John thought [since when he arrived 10 min ago].

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[28] Pullum, Geoffrey K. "Embedded Rhetorical Questions."
http://itre.cis.upenn.edu/~myl/languagelog/archives/003714.html (October 29, 2006 06:15 PM)
"Attested subordinate rhetorical interrogatives"
http://itre.cis.upenn.edu/~myl/languagelog/archives/003746.html (November 7, 2006 01:05 PM)

Intended: ‘John expressed that no way did he arrive 10 min ago.’

Cantonese

(59) a *Keoi man/soeng zidou [John bindou wui gong daaiwaa].
he ask/want know John where will tell lie

b *Keoi jingwai [John bindou wui gong daaiwaa].
he think John where will tell lie

Literal: ‘He asked/wanted to know/thought where John will tell lies.’
Intended: ‘He expressed that no way will John tell lies.’

Spanish

(60) a *Me preguntó [que qué iba a haber llegado esta mañana].(Spanish)
to.me ask.3Sg.Pst Comp what go.Pst to have arrived this morning
Literal: ‘He asked me what is-going he to have arrived this morning.’
Intended: ‘He expressed that no way did he arrive this morning.’

b *Él creyó que qué va a haber llegado esta mañana.
he believe.3Sg.Pst Comp what go.Pres to have arrived this morning
Literal: ‘He believed that what is-going he to have arrived this morning.’
Intended: ‘He expressed that no way did he arrive this morning.’

Hindi

(61) a *Vo soctā hɛ ki Rām kahā̃ jitegā.
he think be-Pres Comp Ram where win-Fut
Literal: ‘He wonders where Ram would win.’
Intended: ‘He expressed that no way would Ram win.’

b *Us-ne mujke pucchā ki Rām kahā̃ āyegā?!”
he me ask.Pst Comp Rām where come-Fut
Literal: ‘He asked me where Ram would come.’
Intended: ‘He expressed to me that no way will Ram come.’

Korean

(62) John-i Mary-ae-gae eti bap-eul muk-ut-nya-go mul- ut-da.
John-Nom Mary-Dat where meal-Acc eat-Pst-SP ask-Pst-SP
Literal: 'John asked Mary where$_{NWH}$ she had meal."'
Intended: 'John expressed to Mary that no way she had meal."'

Though the generalization is rather robust, there is one exception, i.e. German. The German consultants found NWH-clause embedding under *fragen* 'ask' pretty good.

German (indirect embedding)

(63) a Hans fragte, [wo das ein Argument für deine Theorie ist / sei]
Hans ask.Pst where that an argument for your theory be.Pres/be.Subj
Literal: 'Hans asked where that is an argument for your theory.'
Meaning: 'Hans expressed that no way is that an argument for your theory.'

b Hans fragte, [seit wann 9 eine Primzahl ist / sei]
Hans ask.Pst since when 9 a prime number be.Pres/be.Subj
Literal: 'Hans asked since when 9 is a prime number.'
Meaning: 'Hans expressed that no way is 9 a prime number.'

Due to the SOV word order in the embedded clauses and the possible use of the subjunctive tense, the bracketed clauses must involve indirect embedding, instead of direct quotation.

One may wonder whether the ill-formedness in (58)—(62) is due to the incorrect choice of the matrix verb[29]. For example, in (58a), if one assumes that 'ask'-type verbs take a semantic question as their complement, the NWH-sentence is not a good candidate as it expresses a negative proposition semantically. Nevertheless, there is some evidence

[29] It is true that I was not able to systematically go through many CP-taking verbs in the elicitation. I cannot exclude the possibility that given enough time, one might find some verbs that select NWH-clauses. However, my impression is that the language consultants found it quite impossible to come up with such verbs. This could be a subject for further investigation.

that ‘ask’ is not entirely incompatible with NWH-clauses. In English, German, and Korean, the consultants reported that ‘ask’ could be used to embed a directly quoted NWH-clause. Apparently, ‘ask’ is compatible with the NWH-clause, even though the clause is not information-seeking in nature.

English

(64) John asked, “Since when he arrived 10 min ago?!”

(65) Again I ask, since when was talking frankly about sex to be considered sexism?[30]

German

(66) Hans fragte, “Wo ist das ein Argument für deine Theorie?!”
Hans ask.Pst where is that an argument for your theory
Literal: ‘Hans asked, “No way is that an argument for your theory.”’
Meaning: ‘Hans said, “No way is that an argument for your theory.”’

Korean

(67) John-i Mary-aegae mul-ut-da, “ Eti ni-ga bap-eul muk-ut-ni?”
John-Nom Mary-Dat ask-Pst-SP where you-Nom meal-Acc eat-Pst-Q
Literal: ‘John asked Mary, “No way have you eaten your meal.”’
Meaning: ‘John said to Mary, “No way have you eaten your meal.”’

Although indirect embedding is not observed in other languages like Cantonese, Spanish, and Hindi, the above offers some positive evidence that the failure to indirectly embed an NWH-clause is not due to the semantics of ‘ask.’ When the NWH-clause is not embedded, as the quoted sentences in (64)—(67), it goes well with ‘ask’ in some languages. In Chapter 5, I propose why the NWHC must occur within the root clause.

[30] http://www.bbc.co.uk/blogs/theeditors/2008/10/open_and_shut_case.html?page=2

3.4 Correlation of NWHC and IWHQ/RWHQ

Apart from morphological similarity, the NWHC also shares some syntactic properties with IWHQs/RWHQs. The correlation between the two types of *wh*-constructions includes (i) the typological correlation of *wh*-word placement (i.e. *wh*-movement vs. *wh*-in-situ) and (ii) the use of question particles in Chinese, Korean, and Japanese. The observations form an important basis for the proposal in Chapters 4 and 5 that the NWHC should be analyzed as a *wh*-interrogative.

3.4.1 Typological Correlation of Wh-word Placement

Observed early on by Huang (1982), languages can be broadly divided into at least two types according to the distribution of IWH-words: *wh*-movement languages and *wh*-in-situ languages. The former type always requires the overt movement of the *wh*-phrase to the beginning of the clause to take scope. The latter type has the *wh*-phrase remained in the in-situ position. Though the placement of the *wh*-word in the sentence-initial position alone is not a sufficient condition for claiming that the NWHC is *wh*-interrogative[31], it is certainly an important characteristic of *wh*-interrogatives. As mentioned in Section 1.3.4, the requirement for *wh*-movement in the two *wh*-constructions is strongly correlated. In fact, no language seems to violate the correlation in the survey so far. Table 5 is repeated below for convenience.

	IWHQ	***NWHC***
Cantonese, Mandarin, Farsi, Japanese, Korean, Malay	*wh*-in-situ	*wh*-in-situ
English, French, Italian, Spanish, German, Russian, Hebrew	*wh*-movement	*wh*-movement

Table 7. Correlation of the placement of NWH- and IWH-words

[31] For example, *wh*-movement can also be found in relative clauses, *wh*-exclamatives, etc., even though these constructions are not interrogative by nature.

3.4.1.1 Wh-movement Languages

In *wh*-movement languages, the clause-initial position is the only position available for NWH-words.

English

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

b Since when is he flying to Hawaii tomorrow?!

German

(69) 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

(70) a 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.'

Italian

(71) Ma dove John l'ha comprato qui?
but where John it-has bought here?
'No way did John buy it here.'

Hebrew

(72) Eyfo / Eyze kolam holchim lirot seret.

where /which everyone going see.Inf movie
'No way is everyone going to see the movie.'

Russian

(73) a Kuda Pete ekhat' v Los Andzheles?!
where.to Peter.Dat go.inf to Los Angeles
'No way can Peter go to Los Angeles.'

b Gde Pete uchit'sya?!
where Peter.Dat study.Inf
'No way can Peter study.'

The discussion so far implicitly assumes that the NWHC involves overt *wh*-movement in *wh*-movement languages. However, it must be emphasized that the standard diagnosis for *wh*-movement is island sensitivity (Ross 1967), e.g. complex NP constraints, *wh*-island constraints, and so on. To set up the relevant testing sentences, the NWH-word must be placed inside an embedded clause or a subordination clause. Unfortunately, as studied in Section 3.2, NWH-clauses are generally considered ungrammatical in non-root environments, and thus testing the NWHC for island sensitivity is not possible. However, it seems reasonable to think that the NWHC does in fact involve *wh*-movement in *wh*-movement languages, given the robust cross-linguistic findings. For now, I assume that the NWHC in languages like English and Spanish involves overt *wh*-movement of the NWH-word.

As for the landing site of NWH-words, there are two pieces of evidence that they occupy SpecCP (or SpecIntP in Rizzi's fine structure of the left periphery). First, as is discussed in Section 3.3.3, the NWHC in some *wh*-movement languages (e.g. English, German, and Spanish) is accompanied by movement of verb/tense, which is often analyzed as an instance of I-to-C head movement. The phenomenon is sometimes referred to as "inversion." Since the NWH-word also precedes the fronted verb/tense element, SpecCP seems to be a reasonable position of the NWH-word. Second, in languages like Brazilian Portuguese, Italian, and Slovenian, the clause-initial NWH-word is immediately followed by a complementizer.

(74) Onde **que** o John tem 60 anos?! (Brazilian Portuguese)

where that the John has 60 years.
'No way is John 60 years old.'

(75) Ma dove **che** è stato bravo?![32] (Italian)
but where Comp pro was good
'No way is (he) good.'

(76) Kje pa **da** je Janez predsednik?! (Slovenian)
where Clt Comp is John president
'No way is John the president.'

The sentences show that the landing site of the NWH-word is above the complementizer. The observations are consistent with the possibility that the landing site of the NWH-word is in the CP domain.

3.4.1.2 Wh-in-situ Languages

The NWH-word in *wh*-in-situ languages normally appears in the sentence-medial position, as illustrated in the following examples.

(77) a Ge ji yan[33] yong niu dao?! (Classical Chinese)
cut chicken where use cow knife
'No way should a knife for killing a cow be used to kill a chicken.'

b Wuren yan gan gong wu yi?!
Wu.people where dare attack I city
'No way do the Wu people dare to attack our city.'

---

[32] The sentence is due to Gennaro Chierchia. There seems to be some speaker variation as to whether the complementizer *che* can be included. Among my three consultants, two accept the complementizer but one strongly prefers to omit it.

[33] According to Li (1958: 379—380), *yan* 焉, *wu* 惡, *an* 安—all are used as the locative wh-word 'where' in Classical Chinese (as early as Qin Dynasty 秦). They can all be used as an NWH-word like *nali* in Mandarin.

(78) Ta nali / nar you liushi sui?! (Mandarin Chinese)
he where /where have sixty year.old
'No way is he sixty years old.'

(79) John-i eti 60 sai i-ni ? (Korean)
John-Nom where 60 year.old be-Q
'No way is John 60 years old.'

(80) 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?!')

(81) John kothae oi dokan theke boi-ṭa kin-l-o? (Bengali)
John where Dem store from book-the buy-Pst-3
'No way did John buy the book from that store.'

(82) Rām kon-sā jaldī āyegā?! (Hindi)
Ram which quickly come.Fut
'No way will Ram come quickly.'

(83) John kojaa-sh si saal-e-sh-e?! (Farsi)
John where-Gen-3Sg 30 year-ez-his-be.3Sg
'No way is John 30 years old.'

(84) Dia mana ada datang?! (Malay)
3Sg where have come
'No way has he come.'

The positions of the NWH-word in the examples are the unmarked position of the NWH-word. In some languages, they can appear in other positions due to scrambling.

3.4.2 Use of Question Particles

The second correlation between the NWHC and the IWHQ is the use of question particles in Chinese (including Cantonese, Mandarin, and Classical Chinese), Korean, and Japanese. What are question particles? Following Chomsky and Lasnik (1977), Cheng (1991) proposes the Clausal Typing Hypothesis, which states that every clause must be typed (e.g. declarative, interrogative, etc). Her claim is that languages mark *wh*-interrogative clauses either by using *wh*-particles or question particles (in C^0 position) to declare the type, or by *wh*-movement of the *wh*-phrase to ensure the C^0 has the +wh feature. Some *wh*-in-situ languages like Chinese, Korean, and Japanese have overt *wh*-particles; others like Hindi and Turkish may have silent *wh*-particles.

In Chinese, Korean, and Japanese, a class of *wh*-particles is used to mark interrogatives, but not declaratives. Interestingly, NWH-sentences also must end with a question particle.

(85) Zoengsaam bin wui maai go bun syu aa3/aa1?! (Cantonese)
Zoengsaam where will buy Dem Cl book Q / Q
'No way will Zoengsaam buy the book.'

(86) Wo na(r) zhidao (ne)[34]?! (Mandarin, Hsieh 2001)
I where know Q
'No way can I know.'[35]

(87) Yanque an zhi honghu zhi zhi zai ?! (Classical Chinese)
sparrow where know swan Mod ambition Q
'No way does a sparrow know the ambition of a swan.'

(88) a John-i eti 6 feet-ni?! (Korean)
John-Nom where 6 feet-Q
'No way is John 6 feet tall.'

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

[35] Hsieh's original paraphrase of the NWH-sentence 'How do I know?'

b Eti John-i hang-sang TV-lul bo-kessni[36]?!
where John-nom always TV-acc watch-RQ
'No way does John always watch TV.'

(89) 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.'

NWH-sentences are not compatible with any non-question particles (e.g. declarative sentence particle).

(90) *Zoengsaam bin wui maai go bun syu laa1 / bo3?! (Cantonese)
Zoengsaam where will buy Dem Cl book SP(Decl) SP(Decl)
Intended: 'No way will Zoengsaam buy the book.'

(91) *Wo na(r) zhidao (ba)[37]?! (Mandarin)
I where know SP(Decl)
Intended: 'No way can I know.'

[36] One thing worth mentioning is that Korean has a rhetorical question particle *-kessni* (see Choi (2005)), in addition to interrogative questions particles. When it appears in questions, the question cannot be interpreted as an information-seeking question but a rhetorical question. As shown (88), the Korean NWHC also allows the rhetorical particle to be used. No matter whether the interrogative or the rhetorical question particle is used, native speakers are not able to tell the meaning difference between the two. The interpretation of both particles is the same only when the question is negative. This suggests that even when the interrogative question particle is used in the NWHC, it is interpreted as negatively.

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

(92) a *Eti na-nun cemsim-ul mek-ess-ta?![38] (Korean)
where I-Top lunch-Acc eat-Pst-Decl
Intended: 'No way did I eat lunch.'

b *Eti nay-ka nayil cemsim-ul sa-ma?!
where I-Nom tomorrow lunch-Acc buy-Prm
'I will buy you lunch tomorrow.'

Before ending, I want to mention Hsieh's (2001) analysis of the question particle *ne* in the Mandarin NWHC. Since she argues that the NWH-word is a negation operator that has little to do with *wh*-interrogatives, the use of *ne* actually poses a problem to her analysis. She cites Shi and Chang's (1995) analysis claiming that *ne* is non-interrogative[39] but represents "reminding" or "probing." While the analysis may not be impossible, the fact that Korean and Japanese also use question particles in the NWHC strongly suggests that *ne* should also be analyzed as a question particle.

3.4.3 Inversion

Subject-verb inversion or V-fronting is another characteristic commonly found in interrogative questions. In languages in which interrogative questions trigger inversion, inversion is also triggered in NWH-sentences.

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[38] I also tested other Korean sentence particles given in Pak (2004), including *e-la* (imperative), *ca* (propositive), *lla* (premonitive), *ulyum(una)* (permissive), *ela* (exclamative), and *sose* (optative). None of them work with NWH-sentences.

[39] It has been widely accepted in the literature (e.g. Chao 1968, Li and Thompson 1981, Cheng 1991) that *ne* can function as an interrogative particle.

English

In English, subject-verb inversion is a characteristic that pertains to root *wh*-interrogative questions. Other constructions that involve *wh*-movement (e.g. relative clause, *wh*-exclamatives) do not trigger inversion. The NWHC clearly is accompanied by subject-auxiliary inversion.

(93) Since when did he bake a cake this morning?!

(94) Since when is he flying to Hawaii tomorrow?!

This suggests that the English NWH-construction involves a *wh*-interrogative.

Spanish

The generalization of Spanish *wh*-interrogatives is that when the *wh*-phrase occupying the CP is an argument, obligatory V-movement is triggered; when it is adjunct *wh*-phrase, the movement is optional (Torrego 1984, Suñer 1994). As for the NWHC, Spanish requires obligatory V-fronting with *qué* "what." Some speakers find V-fronting optional (though somewhat less preferable) with *de dónde* "of/from where.[40]" It is not immediately clear why despite their similarity in meaning in the NWHC, *qué* and *de dónde* display such as difference. However, what is clear is that both of them can trigger inversion.

(95) a De dónde va a haber hecho la tarea Juan?! (inverted)
from where go to have done the homework Juan
'No way did Juan do the homework.'

b #De dónde Juan va a haber hecho la tarea ?! (un-inverted)
from where Juan go to have done the homework

(96) a Qué va a haber hecho la tarea Juan?! (inverted)
what go to have done the homework Juan

[40] I indicate the variation in judgment with '#.'

'No way did Juan do the homework.'

b *Qué Juan va a haber hecho la tarea?! (un-inverted)
what Juan go to have done the homework

Again, the triggering inversion in Spanish suggests that NWHCs are closely related to *wh*-interrogatives.

Chapter 4 Semantics of NWHC

4.1 The Plan

The challenge of finding a semantic analysis for the NWHC is two-fold. On the one hand, the consistent use of *wh*-morphology and the syntactic movement correlation with *wh*-interrogatives in the NWHC are indicative of a close relation between the NWH-word and *wh*-constructions in general. On the other hand, the NWHC also displays a number of unique characteristics (e.g. *wh*-domain anomaly, obligatory negative interpretation, disagreement condition, etc.) not found in other *wh*-constructions. This study not only provides an analysis of the construction itself but also sheds new light to the semantics of NWH-words that can be incorporated into the general theory of *wh*-words. The objectives of this chapter are as follows: (A) to describe the semantic properties of the NWHC (Section 4.2—4.4), and (B) to propose an analysis to explain the negative meaning.

A. Semantic Description

I summarize the major semantic aspects of the construction below.

Biased context (Section 4.2): Though language consultants usually associated the NWH-sentence with sentential negation, the construction imposes special requirements on the beliefs of the discourse parties. The requirements can be divided into three components: (i) the speaker's belief, (ii) the disagreeing party's belief, and (iii) the speaker's belief of the disagreement party's "miscalculation." Though the focus of the semantic analysis in Section 4.5 is the derivation of $\sim p$ (i.e. the speaker's belief), one should not overlook its specific contextual requirements that set the NWH-sentence apart from regular negation and rhetorical questions.

Wh-Question-hood (Section 4.3): The NWHC possesses grammatical features normally found only in *wh*-interrogatives. Though the NWH-sentence is not information-seeking, these observations form a good empirical basis to assume that the NWHC is underlyingly a *wh*-question.

Wh-Domain Anomaly (Section 4.4): *Wh*-words in various *wh*-constructions are generally rigidly associated with specific quantification domains. However, various diagnostics will be put forth to show that such semantic requirements become nonexistent in the NWHC. The findings result in the motivation that the NWH-word is associated with a different kind of quantification domain, namely circumstances. This plays an important role in the semantic analysis presented in Section 4.4.

B. Outline of the Analysis

The semantic analysis (Section 4.5) offers a compositional account of how the NWH-sentence comes to mean ~*p* on the speaker's part in Section 4.2. The point of departure is that the NWHC is underlyingly a *wh*-question, based on Section 3.4 and 4.3. To do that, it is necessary to understand what the *wh*-word denotes. Due to *wh*-domain anomaly (Section 4.4), it is posited that the NWH-word does not quantify over canonical quantification domains but over circumstances. I claim that the NWHC is equivalent to "under what circumstances *q* is it true that if *q* then *p*?[41]" The NWH-word corresponds to the antecedent in the conditional. A silent negative rhetorical functional head that selects a *wh*-question contributes to the obligatory negative rhetorical interpretation. This analysis makes crucial use of the notion of indicative conditionals in explaining how the negative rhetorical question is interpreted as ~*p*.

4.2 Negation and Biased Context

This section provides a comprehensive description of the meaning conveyed by the NWHC. The focus is on the apparently strong negative interpretation and the contextual bias found in NWH-sentences. The semantic components conveyed by the construction are stated in (1).

(1) When the speaker utters "**NWH + *p* ?!**", it entails at least the following attitudes towards *p*:
    (A) According to the speaker's belief, ~*p*.

[41] Here I ignore the issue of *wh*-movement for the sake of simplicity.

(B) According to the speaker's belief, the discourse participant believes that *p*.
(C) According to the speaker's belief, the discourse participant should have believed that ~*p*.

Although (1A) is the most accessible by native speakers, (1B) and (1C) are equally robust. In fact, all three discourse conditions must be met in order to make the NWH-sentence felicitous. Section 4.2.1 and 4.2.2 focus on the speaker's belief (i) and the disagreeing party's belief (ii). Section 4.2.4 deals with what I call the speaker's belief of the disagreeing party's miscalculation (iii).

4.2.1 Speaker's Belief of ~p

Native speakers of languages with the NWHC generally paraphrase NWH-sentences with sentential negation or some sort of negative meaning, despite the lack of overt negation in the NWHC. The negative meaning explains why (2a) and (3a) sound contradictory but (2b) and (3b) are coherent.

English

(2) a Since when is John an American?! #(I believe) John is an American.
~*p* ; *p* (**contradiction**)
b Since when is John an American?! (I believe) John isn't an American.
~*p*; ~*p* (**coherent**)

Cantonese

(3) a John bindou hai Meigwok jan aa1?! #Daanhai (ngo zidou) John hai Meigwok jan.
John where be U.S. people Q but I know John be U.S. people
'No way is John an American. But (I know) John is an American.'
~*p* ; *p* (***contradiction***)

b John bindou hai Meigwok jan aa1?! (Ngo zidou) John m-hai Meigwok jan.
John where be U.S. people Q I know John not-be U.S. people
'No way is John an American. (I know) John isn't an American.'
~p; ~p (**coherent**)

What is noteworthy is that the belief of *~p* is associated with the speaker. This point is highlighted because the NWH-sentence imposes specific attitudinal requirements on both the speaker and the addressee. It is necessary to verify that *~p* is associated with the speaker but not with the addressee. The continuation test above presents some good evidence. When a speaker utters a sentence *q*, normally it means that the speaker believes that *q*. The underlined sentences in (2a, b) and (3a, b) can be taken as a true proposition in the speaker's beliefs[42]. For example, *John really is an American* can be taken as *The speaker believes that John really is an American*. This explains why (2a) and (3a) are contradictory, as more clearly shown in (4).

(4) a Since when is John an American?! #(I believe that) John is an American.
Meaning: I believe John **is not an American**. #I believe that John **is an American**.

b Since when is John an American?! (I believe that) John isn't an American.
Meaning: I believe John **is not an American**. I believe that John **isn't an American**.

4.2.2 Discourse Participant's Beliefs

The NWH-sentence also encodes the discourse participant's belief.

(5) The speaker can felicitously utter the NWH-sentence only when the discourse participant holds the view that *p*.

The bias can be best illustrated by embedding the NWH-sentence in the dialogues below.

[42] Or "The speaker of *q* believes that *q*."

Case I. Disagreement Context

Suppose that A and B disagree on John's nationality. A believes that John is an American (*p*), but B believes that John is not an American (~*p*). To express his belief that John is not an American (i.e. ~*p*), B can respond to A with an NWH-sentence. For the sake of contrast, a negative declarative is included as an alternative response.

(6) A: I know John is an American. (English)
Response:
B: (i) Since when is John an American?!
B: (ii) John is not an American.

(7) A: Ngo zidou John hai Meigwok jan gaa3. (Cantonese)
I know John be U.S. people SP
'I know John is an American.'
Response:
B: (i) John bindou hai Meigwok jan aa1?!
John where be U.S. people Q
'No way is John an American.'
B: (ii) John m-hai Meigwok jan aa3.
John not-be U.S. people SP
'John is not an American.'

As expected, the NWH-sentences (i) are felicitous response in the disagreement context. So are the (ii) sentences.

Case II. Agreement Context

The next set of dialogues is minimally different from the previous set but A's attitude toward John's nationality is reversed. Both A and B hold the same view that ~*p*. If B wants to express agreement with A, it is infelicitous to do so with an NWH-sentence (i) but not with a negative declarative (ii).

(8) A: I know John is not an American.
B's response:

(i) #Since when is John an American?!
(ii) John is not an American.

(9) A: Ngo zidou John m-hai Meigwok jan gaa3.
I know John not-be U.S. people SP
'I know John is not an American.'
B's response:
(i) (Hai aa3.) #John bindou hai Meigwok jan aa1?!
be SP John where be U.S. people Q
'No way is John an American.'
(ii) (Hai aa3.) John m-hai Meigwok jan aa3.
be SP John not-be U.S. people Q
'(Right!) John is not an American.'

This observation illustrates that while the NWHC is sensitive to the discourse condition in (5), the negative declarative is not. The infelicity of (i) cannot be explained by the speaker's belief alone. If NWH-sentences do not impose any requirement on the discourse participant, it becomes mysterious why (8i) and (9i) are sensitive to the contrast in the discourse participant's attitude but (8ii) and (9ii) are not.

Case III. No Opinion Context

The third context considered is the no opinion context. The previous examples are not enough to prove (5). The data presented in Case I and II is potentially compatible with the alternative condition such as (10).

(10) The speaker utters the NWH-sentence when the disagreeing participant holds an attitude (about the proposition *p)* that is different from the speaker's.

Such a condition would admit situations where the speaker thinks that ~*p* and the disagreeing participant either thinks that *p* or does not know whether *p* or ~*p* (i.e. no opinion). However, the two examples below show that (10) is incorrect. NWH-sentences are not felicitous when the discourse participant has no opinion about the truth of *p*.

Example 1: John's Nationality

Suppose A has never met John before and has absolutely no idea about his nationality.

(11) A: I have never met John before. I don't know if John is an American.

(12) B: (i) #Since when is John an American?!
(ii) John is not an American.

Notice that A does not know whether John is an American or not (i.e. no opinion or lack of the knowledge of the truth about *p*). A's view is certainly different from B's. According to (10), (12i) should be fine but, in fact, is pragmatically unacceptable.

Example 2: Teaching Prime Numbers

Suppose that John is a mathematics teacher in an elementary school. The topic of today's class is the concept of prime numbers. The students in the class have not been exposed to the concept before. When John begins the class, he says, "Before I tell you what counts as a prime number, let me give you some examples. 2 is a prime number. 3 is a prime number. 5 is a prime number. …"

(13) (i) #(But) Since when is 6 a prime number?!
(ii) But 6 is not a prime number.

Though it is perfectly fine for John to tell the students that 6 is not a prime number with a negative declarative, the NWH-construction is infelicitous. According to (10), (13i) should be good because John conveys "6 is not a prime number" (~*p*) and he believes that the students do not know whether 6 is a prime number (i.e. lack of knowledge about *p*). However, while (13i) is a bad continuation, (13ii) is perfect. The example, again, illustrates the sensitivity of the NWHC to the discourse requirements.

To summarize, NWH-sentences are used only in the disagreement context, but not in the neutral or agreement context. Table 8 below summarizes the felicity conditions discussed above.

	Speaker's View	***DCP's View***	***NWH***	***Negative Declarative***
Case I	*~p*	*p*	Felicitous	Felicitous
Case II	*~p*	*~p*	Infelicitous	Felicitous
Case III	*~p*	(no opinion)	Infelicitous	Felicitous

Table 8 Felicity conditions for using the NWH-sentence

4.2.3 Discourse Participant (DCP)

In many of the previous examples, the discourse participant (DCP) involved is the immediate addressee. Yet it is not always the case. The DCP could well be someone who is not participating in the conversation. He or she could even be someone salient in the discourse. The identity of the DCP is contextually determined. The following is a scenario where the DCP is not the immediate addressee.

Context: John and Mary are having lunch in a restaurant. They overhear two high school teachers at the table behind them talking about Puerto Rico being a state of the U.S. The teachers are unaware of the following dialogue between John and Mary.

(14) Mary: I really wonder how teachers can make such a mistake.

John: Me too. Since when is Puerto Rico a state of the U.S.?!

Mary is John's immediate addressee. Clearly, the teachers are in no way counted as their immediate addressees in (14). Mary, who agrees that Puerto Rico is not a state of the U.S, is not the person that John disagrees with. The teachers are the target of John's disagreement. Since the NWH-sentence is felicitous, it shows that John can direct his disagreement towards the teachers, even though they are not the immediate addressees.

The DCP can also be implicit, e.g. the author of an essay or the authority responsible for erecting a sign. Consider the following scenario. John and Mary are reading a newspaper article which reports, "The U.S. adopted the Kyoto Protocol in 1997." As we

all know, the Bush administration did not endorse the protocol in 1997.

(15) Mary: How can the journalist make this stupid mistake?

John: Since when did the U.S. adopt the Kyoto Protocol in 1997?!

It is perfectly fine for John to utter (15) as a comment on the glaring error. John directs the disagreement towards the author of the article, not the immediate addressee, Mary.

The DCP need not even say a word or draw a sign to be considered a DCP. As long as the speaker has good reasons to believe that a party holds an opposite view, the party can be considered the DCP.

Example: Disposing E-Waste

John and Mary are talking in the kitchen. From a distance, John just saw their neighbor, Bill, disposing some old computers in the trash, even though it is against Californian law to do so. It is not the first time John saw Bill do this. John says to Mary:

(16) John: Mary, look at what Bill is doing. Since when can he dispose the computers in the trash?!

Notice that Bill has not communicated any message to John verbally. Bill may not even be aware of John and Mary's dialogue. However, the context suggests that Bill thinks that it is alright to throw old computers in the trash. Thus, as (16) is acceptable in the situation, this shows that the DCP could be anyone who the speaker thinks disagrees with him.

4.2.4 Mis-conclusion: Worlds that should have been

It is not enough to have a context where the speaker and the DCP have opposing views about *p*. The third felicity condition talks about some additional assumption about the DCP that the speaker makes, which can be described as follows:

(17) The speaker believes that the DCP should have possessed enough knowledge that entails the conclusion of ~*p*. However, to the speaker's surprise, the DCP turns out

to conclude *p*. The speaker thinks that it is wrong for the DCP to believe *p*.

Apart from realizing that the DCP believes that *p*, the speaker must also believe that the DCP should have been able to conclude ~*p* (i.e. same as the speaker) but failed to do so. In other words, the speaker's anticipated world in which the DCP believes that ~*p* has not realized. Instead, in the actual world, the DCP believes that *p*. Henceforth the unrealized anticipation that the DCP should arrive at the same conclusion as the speaker is referred to as the "mis-conclusion." One may wonder whether the inclusion of the mis-conclusion is necessary. Is it not just a conversational implicature? I use the following example to show that if the mis-conclusion is explicitly suppressed, the NWH-sentence becomes infelicitous. This indicates that the mis-conclusion is a necessary component of the meaning and is not cancelable.

Example: Meeting Cancellation

Last week, John scheduled to brief his team members on the project progress coming Wednesday. All team members have been informed of the meeting. However, a moment ago (Tuesday), John got a call from his family regarding an urgent family matter. As a result, John has to be out of town for several days, and thus 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.

English

(18) Mary: Hey, John, so we're having that meeting tomorrow. I look forward to hearing about the project's progress.

John's response

(i) #Since when are we having a meeting tomorrow?! I have to cancel it because …

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

Cantonese

(19) John's response:

(i) #Ngodei singkeisaam bindou wui hoiwui aa3?!
we Wednesday where will open.meeting Q
'No way will we have a meeting on Wednesday.'

(ii) Ngodei singkeisaam m wui hoiwui aa3.
we Wednesday not will open.meeting SP
'We will not have a 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. The plan to cancel the meeting is known only to John before the conversation takes place. The (i) sentences above are felt to be odd. Clearly, contextual condition (A) and (B) are satisfied in the above scenario: the speaker believes ~*p* and the DCP believes *p*. However, the mis-conclusion condition is missing in the example. As the plan to cancel the meeting is still private to John when they run into each other, John does not expect Mary to know that the Wednesday meeting will be canceled. This results in the violation of the mis-conclusion requirement (C).

The prediction then is that if the scenario is altered so that John has reasons to believe that Mary should have known ~*p*, the use of NWH-sentence becomes acceptable. This is indeed borne out. Suppose that John has reminded Mary many times of the cancellation before the conversation takes place. John expects Mary to know well that there will not be any meeting on Wednesday. The following conversation becomes very acceptable no matter whether John chooses (i) or (ii).

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

John's response:

(i) Since when will we have the meeting on Wednesday?! I've already told you guys many times that the meeting has been canceled.

(ii) We will not have the meeting on Wednesday. I've already told you guys many times that the meeting has been canceled.

The example shows that the NWHC cannot be neutral about the speaker's expectation of the DCP. The mis-conclusion requirement must be met.

Is common ground relevant?

What is the source of evidence that the leads the speaker to think that the DCP should have had the knowledge to conclude ~*p*? One may suggest that this may be due to common ground, or the common knowledge shared by the speaker and the DCP. For example, in the meeting cancellation example, the speaker might have made the inference that the DCP should have known about the cancellation because the speaker knows the fact that the DCP has been informed many times. Both parties should have the common knowledge of the cancellation. So one possibility is that the NWHC is used when the speaker knows that the DCP should share enough common knowledge with the speaker so as to enable the DCP to conclude ~*p*. However, I show that common ground is not the necessary source for the use of the NWHC. In the following, I assume Stalnaker's (2002: 716) definition of common ground:

> "It is common ground that φ in a group if all members accept (for the purpose of the conversation) that φ, and *all believe that all accept that φ*, and all believe that all believe that all accept that φ, etc." (italics mine)

A crucial property of the definition is that not only the speaker but also all other members of the discourse believe that all members accept φ.

The first piece of evidence that common ground may not be relevant is that, in many instances, there is no common ground between the speaker and the DCP concerning the truth of *p* when the NWH-sentence is uttered. Recall the e-waste disposal example. John's neighbor does not even know that he has been talked about. No common ground could have existed. The neighbor cannot possibly believe what John thinks about the truth of *p*. It shows that the information source leading to the conclusion of the DCP's mis-calculation is not from common ground.

Even in cases where common ground exists, it may not contain sufficient information to the conclusion of the DCP's mis-calculation. Consider the following case. John goes to an ATM to check his account balance. While John is doing this, Bill hides in

a building near the ATM, and uses a telescope to see John's account balance of $19.67 displayed on the screen. John is entirely unaware that he is being spied on, and thinks that he is the only person who sees the figure. Ten minutes later, John meets Bill in the cafeteria. John lies to Bill, claiming that he has won the lottery.

(21) John: I won a lottery last week. I now have $1,000,000 in my bank account.

Bill: Since when do you have $1,000,000 in your bank account?! You're lying. You only have $19.67 in your bank account.

Though Bill and John both know that the current balance in John's bank account is $19.67, this piece of information is certainly not part of the common ground between John and Bill. John does not assume that anyone else knows the account balance. Bill also knows that John makes that assumption. Not all discourse members believe that all members accept that Bill has $1,000,000 in his bank account. Nevertheless, this use of the NWH-sentence is acceptable. It shows that the information for the computation of mis-calculation need not be based on common ground. The availability of mis-conclusion is subject to the judgment of the speaker in the context.

4.2.5 Primacy of Speaker's Perspective

The discussion in Section 4.3 emphasizes that the meaning of the NWHC is not simply about the truth value of *p*. Rather, the construction encodes the truth value of *p* relative to three sets of belief worlds, namely, the speaker's belief worlds, the DCP's belief worlds, and the speaker's projection of the DCP's belief worlds. Nothing, however, has been said about the relation between these three perspectives. Does the NWH-sentence assert the three perspectives equally? Or could one perspective be primary and the others secondary? Unfortunately, there is not enough evidence to decide which of the above is correct. What is clear is that none of the conditions are cancelable. In the subsequent analysis, however, I choose to focus on deriving the speaker's perspective and treat it as the primary meaning. I do this for two reasons. First, when native speakers are asked to give the meaning of the NWHC, they most likely refer to the speaker's belief that $\sim p$ as the meaning. This is not to mean that the other two are unavailable. If appropriate contexts

are given (such as those in the previous sub-sections), speakers can reliably provide robust judgments for discourse conditions (B) and (C) in (1). However, they are far less conscious of them. Second, if the actual fact contradicts with the DCP's belief entailed by the NWH-sentence, the intuition is that the speaker is not entirely wrong. He only has the wrong assumption about the DCP's belief. Native speakers seem to be more tolerant when condition B and C are not met. However, if the actual fact contradicts with the speaker's belief (i.e. condition A) entailed by the NWH-sentence, the intuition is that the speaker contradicts himself. Thus, the speaker's perspective seems to be more important in determining the felicity of the NWH-sentence.

4.3 Wh-Question-hood

As discussed at length in Chapter 3, there are good reasons to believe that the NWHC is closely related to *wh*-questions syntactically. The current analysis adopts the view that the NWHC should be analyzed as a *wh*-question. This fundamentally determines the kind of semantic analysis to be adopted. Why do we want to hypothesize that the NWHC is essentially an interrogative? Hsieh (2001) puts forth an alternative analysis, which regards the NWH-word in Mandarin as the overt realization of NegP, making no connection to *wh*-questions. However, the following grammatical parallels between the NWHC and the IWQH/RWHQ provide credible reasons to import the semantics of *wh*-questions in analyzing the NWHC. First, the NWHC, IWHQ, and RWHQ[43] all involve the use of *wh*-words.[44] Second, the NWHC also shares features that are characteristic of IWHQs, such as Q-particles and *wh*-word placement (see Section 3.4). These properties cluster with *wh*-interrogatives but not as much with the other types of *wh*-constructions. If the NWHC and the IWHQ/RWHQ are not closely related, an independent explanation is still needed for the clustering of the properties across many languages. The findings strongly suggest that if we do not want to render the parallels

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[43] Here I assume that the RWHQ is a sub-type of the IWHQ.

[44] It is true that the use of wh-words alone is not sufficient for claiming that the NWHC is an IWHQ/RWHQ Many *wh*-word-bearing constructions are generally not considered to be interrogative questions, for example, *wh*-indefinite, *wh*-relatives, *wh*-exclamatives, etc.

accidental, it is reasonable to believe that the two types of *wh*-constructions are closely related, despite some differences. Last, there is a strong tendency in the recent literature to relate various *wh*-constructions in a more unified way semantically and syntactically (see Nishigaushi 1990, Cheng 1991, Caponigro 2003 among others). The assumption is that even though the meaning of various *wh*-constructions could be very different superficially, it would be far more satisfactory and insightful if the semantics of the *wh*-morphemes in various *wh*-constructions can be unified in some significant way. And, in fact, there are good insights that have been gained in such an attempt. It seems that this could be a profitable way to study the NWHC. Because of the empirical and theoretical appeal of the *wh*-question analysis, the proposal in Section 4.5 assumes that the NWHC embodies a *wh*-question. The critical task is to account for the semantic discrepancy between the NWHC and the IWHQ/RWHQ.

4.4. *Wh*-Domain Anomaly

Wh-domain anomaly is an interesting aspect of the NWHC. To recapitulate, it refers to the exceptional relaxation of the domain restriction normally found in the use of *wh*-morphology. The observations are anomalous because *wh*-morphology is normally very sensitive to semantic category of the domain. I illustrate that domain congruity holds robustly across many *wh*-constructions and languages in Section 4.4.1. The generalization makes the observations of *wh*-domain anomaly in the NWHC all the more puzzling. Section 4.4.2 suggests that (i) the quantification domain of an NWH-word is not its conventional domain, and (ii) the quantification domain is circumstances.

Wh-domain anomaly is highlighted for several reasons. First, it is generally not observed in other *wh*-constructions. A theory of the NWHC that lacks an explanation to it would be inadequate. The observations are puzzling in the light of the prevalent assumption of (conventional) quantification domain of *wh*-expressions that is generally built into the semantics of *wh*-expressions. Second, while native speakers have no problem saying that the entire NWH-sentence conveys negative meaning, it seems not straightforward for them to say why ‘where’, ‘when’, etc. are related to expressing $\sim p$. The following investigation may facilitate our understanding of the semantics of the NWH-words.

4.4.1 Domain Congruity

The crucial question to ask is: what is the semantic contribution of the *wh*-word in the construction? One important aspect is that *wh*-phrases quantify over a set of entities. *Wh*-words are commonly associated with a set of entities from a specific domain, i.e. *who* is associated with humans; *where*, with locations, *when*, with time points, *how*, with manners/methods/degrees; and *why*, with reasons. Henceforth, I refer to these as the "conventional domains" of *wh*-words. In most *wh*-constructions, domain mismatch results in semantic ill-formedness, as in (22).

(22) a [intended domain: *humans*]
Who/*Where/*When wrote the letter?

b [intended domain: *humans*]
John saw the policeman who/*where/*when caught a robber yesterday.

c [intended domain: *humans*]
John can talk to whoever/*wherever/*whenever you want.

d [intended domain: *degrees*]
How/*What beautiful the picture is!

The matching of the entities quantified with their *wh*-word, as illustrated in (22), is henceforth referred to as *domain congruity*. Domain congruity is a robust constraint imposed consistently not only across various *wh*-constructions (IWHQ, *wh*-relatives, free choice *wh*-expressions, *wh*-exclamatives, etc.) but also across languages.

In IWHQs/RWHQs, domain congruity can be detected in at least two ways. First, we can observe the correspondence between the *wh*-word and the extension of *wh*-word, as in (22). Second, it is possible to look at the felicity of answers to the *wh*-questions. Generally, if one is to sincerely respond to an IWHQ/RWHQ[45], the most direct way to do

[45] I disregard those responses that act as comment on the question or meta-linguistic challenge to the presupposition of the question.

it is to include a phrase that denotes an entity in the conventional domain in the answer, say, a locative, a temporal phrase, etc.

(23) IWHQ

a A: **When** can Bill have lunch? (IWHQ)
B: <u>At 1pm</u>. / # In the cafeteria.

b A: **Where** can Bill have lunch? (IWHQ)
B: <u>In the cafeteria</u>. / #At 1pm.

RWHQ

c A: (After all,) **When** could Bill possibly have lunch? (RWHQ)
B: <u>Never</u> / #Nowhere.

d A: (After all,) **Where** could Bill possibly have lunch? (RWHQ)
B: <u>Nowhere</u> / #Never.

The matching of the domain of the *wh*-word and the underlined phrase crucially determines the felicity of the answers. *The examples above demonstrate that domain congruity must be met in the response to an IWHQ and RHWQ.*

Does the NWH-word exhibit domain congruity effects? The answer is: no comparable effects can be detected in the NWHC. This will be demonstrated in the following sections.

4.4.2 Semantic Neutralization

A number of languages have more than one NWH-word. Generally, replacing one NWH-word with another does not seem to alter the meaning of the NWH-sentence. The phenomenon is dubbed semantic neutralization. The basic data are as follows:

(24) a Keoi bindou/bin/me/dim hoji lo ngo di cin aa3?! (Cantonese)
he where/which/what/how can take I CL money Q
'No way can he take my money.'

b Vo *kahɑ̃̃*/kon-sā/kab sāt fu□ lambā hɛ?! (Hindi)
he where/which/when seven feet tall be-Pres
'No way is he seven feet tall.'

c De dónde/Qué va a tener 60 años?! (Spanish)
from when/what go.3SG.PRES to have 60 years
'No way is he 60 years old.'

d Eti / Encey / Ettehkey ku-ka chayk-ul ecey ss-ess-ni?! (Korean)
where / when / how he-Nom book-Acc yesterday write-Asp-Q
'No way did he write the book yesterday.'

Though *wh*-words differ in their conventional quantification domain, the differences are neutralized in the NWHC. Native speakers of these languages normally do not make reference to the conventional domains in paraphrasing NWH-sentences. They often find it quite hard to tell how NWH-words such as 'where' and 'what' are semantically different from one another. This is not to say that these NWH-words are fully interchangeable in all cases. However, when an NWH-word can be substituted by another, native speakers often cannot describe the difference. No matter which NWH-word is used, conventional domains do not seem to be directly relevant to the meaning of the NWH-sentence. This is surprising in the face of the domain congruity requirement found in most *wh*-constructions.

4.4.3 No Fragment Wh-Answer

IWHQs or RWHQs can be felicitously answered with a fragment answer (usually a DP or PP) corresponding to the *wh*-word. I call such answers *fragment wh-answers*. Notice that in IWHQs/RWHQs, the semantic domain of the fragment *wh*-answer must match the conventional domain of the *wh*-word. For example, when the question is about the identity of a human (i.e. 'who'), the answerer has to provide a DP denoting a human as the answer. This is a very general requirement that cuts across questions in natural languages.

(25) a A: Who will buy this car? (IWHQ)
B: John.

b A: Who would buy this crappy car? (RWHQ)
B: Nobody.

(26) A: When did they wash the clothes? (IWHQ)
B: Yesterday.

(27) A: Ngodei hai bindou hoji maai-dou jaupiu aa3? (Cantonese IWHQ)
we at where can buy-able stamp Q
'Where can we buy some stamps?'

B: (Hai) jauzingguk lo1.
at post.office SP
'At the post office.'

NWH-sentences cannot be answered in the same way. Contrast (25)—(27) with (28)—(29). (28) and (29) cannot be answered with a temporal and a locative fragment *wh*-answer respectively.

(28) A: Since when is John 60 years old? (NWHC)
B: #(Since) October 1, 2008.

(29) A: Ngodei bindou hoji wandou seoi aa1?! (NWHC)
we where can find water Q
'Where can we (possibly) find some water?'
(Scenario: hopelessly searching for water in a desert)
B: #Mou jamho deifong.
have.not any place
'Nowhere!'

4.4.4 Adjunct Doubling

As discussed in Section 1.3.1 and 1.3.3, adjunct doubling is good in the NWHC (30, 31), but bad in the IWHQ/RWHQ (32). The unacceptability of the latter is fairly strong.

NWHC

(30) a **Since when** did John arrive at the airport *at 7am*?! (English)

b **Since when** did he become chairman *on April 1, 2008*?!

(31) a John **bindou** wui *hai nidou* maai go bun syu aa3?! (Cantonese)
John where will at here buy Dem Cl book Q
'No way will John buy the book here.'

b John **geisi** wui *hai loeng dim* maai go bun syu aa3?!
John when will at two o'clock buy Dem Cl book Q
'No way will John buy the book at two o'clock.'

IWHQ

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

b ***Where** did he put his book *here*?

In (32), the underlined phrase occupies the gap left behind by the interrogative *wh*-word after *wh*-movement, which is illicit.[46] Even if we put aside the syntax, semantically, it

[46] One may argue that there are cases when, say, two temporal/locative phrases can co-occur.

(i) a When did he get up this morning?
b Where did he put his book in his bedroom?

The above examples are good because the speaker asks for the more specific time/location within a stretch of time/location. Semantically, there is no conflict for the co-occurrence of the two phrases. Indeed, two phrases such as these are assumed to attach to the structure at different levels. However, in this section, I want to avoid this kind of sentences. The relevant examples are carefully chosen so that the two phrases cannot be attached. Temporal/locative phrases involving exact time/location (e.g. at 7am, here) are used.

does not make sense to ask for the value of the missing information when the exact time/location is given. Again, what is surprising is that the NWH-word has no problem co-occurring with a phrase that matches the conventional domain of the NWH-word.

One possible explanation for the well-formedness of adjunct doubling in the NWHC is that (30) and (31) are in fact not cases of adjunct doubling. They are apparent counterexamples of adjunct doubling violation. The NWH-word possibly quantifies over a domain distinct from the conventional domain. The grammaticality of (30) and (31) offers some positive evidence to this claim.

4.4.5 Unavailability of Explicit Domain Specification

While the quantification domain of IWH/RWH-words can be explicitly stated, that of NWH-words cannot. In IWHQs, the domain of these sets is usually not the set of all humans, locations, or times but is restricted to a subset determined either contextually or explicitly.

(33) a *Covert restriction*
Who hasn't turned in the assignment?
[Context: the set of students in class, not the set of all humans]

Explicit restriction (with a PP)

b Who, <u>among the students in this class</u>, hasn't turned in the assignment?

The hearer is supposed to pick a member from this subset to form an answer. Although the contextually-determined subset is often mutually understood, it can be made explicit. In (33b), the domain of the set that *who* quantifies over is explicitly specified in the epenthetical. In (34), the phrases restricting the quantification domain are underlined.

IWHQ

(34) a Where, <u>of the three locations I just suggested</u>, is the best for the event?

b <u>Among these three places</u>, where should we host the party?

c Keoi hoji hai ni gei go deifong ge bindou maaidou joeng joek aa3?
he can at this several Cl place GE where buy goat meat Q
Literally: 'Where of these several places can he buy goat meat?' (Cantonese)
Meaning: 'In which of these (several) places can he buy goat meat?'

Where in (35a) and (35b) is restricted to a set of three candidate locations by an epenthetical and an adverbial PP respectively. The phenomenon can also be found in RWHQs, as in (37).

RWHQ

(35) a Who, among the students in this class, would skip this exam? [No one]

b Where, among these three locations, could one possibly build a house?

c After all, among these three places, where can we possibly host the party?

However, explicit domain restriction is found to be very bad in the NWHC. It is impossible to construct any parenthetical or modifying phrases to restrict the domain of the NWH-word, if any.

(36) a *Since when, among the times I just mentioned, is he 60 years old?!

b *Among the several dates stated, since when is he 60 years old?!

(37) *Keoi ni gei go deifong ge bindou hoji maaidou joeng joek aa3?
he this several Cl place GE where can buy goat meat Q
Literal: 'Where, among these several places, can he buy goat meat?'
Intended: 'No way can he buy goat meat.'

It appears that the NWH-word lacks the transparent domain observed in regular IWH/RWH-words.

The properties discussed in Section 4.4.2—4.4.5 have provided some evidence that *when a wh-word is used in the NWHC, its conventional domain becomes irrelevant.* If we

assume that the NWHC is underlyingly a question, we are now faced with the problem: what is the quantification domain of the NWH-word? In the following, I propose that the *wh*-word in the NWHC quantifies over circumstances.

4.5 Semantic Analysis of NWHC

In this section, I provide a proposal to account for the meaning of the NWHC with reference to its question-hood and domain anomaly. As mentioned in Section 4.2.5, this analysis is primarily concerned with the speaker's perspective. The plan is as follows. First, assuming that the NWHC is underlyingly a *wh*-question, I propose in Section 4.5.1 that the NWH-word quantifies over circumstances, instead of the conventional domains like locations ('where'), time points ('when'), etc. Second, in Section 4.5.2, I propose that the negative interpretation is contributed by a silent morpheme that selects a *wh*-question and requires that the answer set be empty. Furthermore, the type of *wh*-question selected must be of the NWH-clause type.

4.5.1 Analyzing NWHC as a Wh-Question and an Indicative Conditional

I have defended in Section 4.3 the hypothesis of importing the semantics of *wh*-question to the analysis of the NWHC, due to grammatical parallels. Now, if the NWHC is equated with a *wh*-question, what is the basic meaning of NWH-sentences? What do NWH-words stand for? I propose that the *wh*-question underlying the NWH-sentence is the negative rhetorical interpretation of (38). The NWH-word quantifies over a set of (circumstance-describing) propositions $\{q_1 \ldots q_i\}$.

(38) NWH + *p*?!
- a ≡ Under what circumstances is it true that *p*?
- b ≡ (or technically) What is *q* such that if *q* then *p*?

4.5.1.1 Form of Wh-Question and NWH-word Quantification

Let us derive (38b) step by step. First, recall some of the paraphrases native speakers give to NWH-sentences.

(39) a ‘No way *p*.’
b ‘It is not the case that *p*.’
c ‘Under no circumstances *p*.’
d ‘It is not possible that *p*.’

The intuition behind these paraphrases is that the speaker thinks that *p* is not simply false in the actual world. They do not think *p* is true in any circumstances that he can reasonably conceive. Intuitively, the NWH-sentence has a modal favor in meaning. The use of “under no circumstances” is probably the most transparent rendering of this meaning.

I propose that the NWH-word contributes to the meaning “under no circumstances.” Regardless of the specific *wh*-word used (e.g. “where”, “what”, “which”, etc.), the NWH-word functions as an adjunct and quantifies over a set of *circumstances*, as stated in (40).

(40) The NWH-word quantifies over a set of circumstances.

The support for the claim in (40) is as follows. Recall from Section 4.2 that the NWHC encodes attitudes towards *p* relative to belief worlds. The semantics of the NWHC may involve the manipulation of belief worlds relative to *p*. The NWH-word could possibly be related to circumstances. Moreover, the postulation is compatible with *wh*-domain anomaly. First, the assignment of the new quantification domain to the NWH-word helps to explain why *wh*-domain anomaly arises. Since NWH-words quantify over a new domain, the conventional domain becomes irrelevant in the semantics of the NWHC. Second, as all NWH-words have the same quantification domain (i.e. circumstances), the meaning of NWH-sentences with different *wh*-words remains the same. Third, if the NWH-word quantifies over circumstances, there is no conflict for it to co-occur with an adjunct phrase of the conventional domain.

Following the claim in (40), the meaning of the NWH-sentence is (41). The negative meaning is derived from the negative interpretation of the *wh*-question in (41).

(41) NWH + *p* ? ≡ Under what circumstances is it true that *p*?

Possible world semantics is adopted to formalize the idea of "circumstances."

4.5.1.2 NWHC in the Form of an Indicative Conditional

I follow the assumption in possible world semantics that "there are no expressions in English that take their extension a possible world, that is, there are no pronouns or names referring to possible worlds (von Fintel and Heim 2007: 9)." Instead, it is possible to talk about worlds via sentences in natural language. In set-theoretic terms, a sentence picks out a set of possible worlds in which the sentence is true. Formally, a proposition is of type <s, t>, and is "a function from possible worlds into truth values" (Stalnaker 1975). In this study, a circumstance characterized by the proposition *q* is defined as the set of possible worlds such that *q* is true in those worlds.[47] For example, when one says "under the circumstances that John is sleeping", the phrase refers to the set of possible worlds in which John is sleeping. (41) can be rewritten as (42).

(42) NWH + *p* ? ≡ Under what circumstances is it true that *p*?[48]

The PP "under the/what circumstances" is essentially equivalent to the antecedent of a conditional, as in (43). The proposition *q* can be viewed as a way to specify circumstances. For example, (44a) is semantically equivalent to (44b).

(43) NWH + *p*?! ≡ What is *q* such that if *q,* then *p*?

(44) a **Under the circumstances that** John completes the task by Monday, he will be rewarded with an extra bonus.

b **If** John completes the task by Monday, he will be rewarded with an extra bonus.

As (43) appears in the form of an *if*-conditional, the semantics of the NWH-word also needs to be adjusted. Technically, the NWH-word now quantifies over propositions inside an indicative conditional, instead of circumstances.

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[47] The term "circumstance" is not a technical term in semantics. At least, there is no established definition for it.

[48] To make it clear, the PP "under what circumstances" originates from the same clause as *p*.

(45) NWH + *p*?

a ≡ Under what circumstances that *q* is it true that *p*?

b ≡ What is the proposition *q* such that if *q*, then *p*?

(46) The NWH-word quantifies over a set of propositions inside an indicative conditional.

Informally speaking, if (45b) is an interrogative question (though the question must be interpreted negatively), the speaker intends to convey the following: Provide a proposition *q* (which characterizes the set of circumstances) such that if *q* is true, *p* is also true.

Semantics literature generally classifies conditionals into two broad categories: *indicative conditionals* and *subjunctive conditionals* (or *counterfactual conditionals*). According to Stalnaker (1968, 1975), conditionals in natural languages cannot be adequately captured by material implication $q \rightarrow p$. He proposes to analyze the antecedent as a selection function of worlds that limits the range of worlds that the consequent *p* is evaluated against.

> "[A] conditional statement, if A, then B, is an assertion that the consequent is true, not necessarily in the world as it is, but in the world as it would be if the antecedent were true. […] Intuitively, the value of the function should be that world in which the antecedent is true which is **most similar**, in relevant respects, to the actual world (the world which is one of the arguments of the function)." [boldface mine] (1975: 274—275)

The *if*-clause (or the antecedent) is a function *f*(*q*, *w*) that selects a world *w'*, the nearest (most similar) world to the actual world *w* at which *q* is true. In Stalnaker's original formulation, the antecedent selects one single possible world. In the following discussion, however, I modify this and adopt the thesis of plurality of worlds (Lewis 1986). There could be more than one world that is nearest to *w*.

Restricting the worlds selected by the antecedent to those nearest the actual world is the critical device that distinguishes indicative conditionals from counterfactual conditionals. Consider the two conditionals below.

(47) (uttered by a US presidential candidate)
If I am the US president, I will withdraw all troops from Iraq.

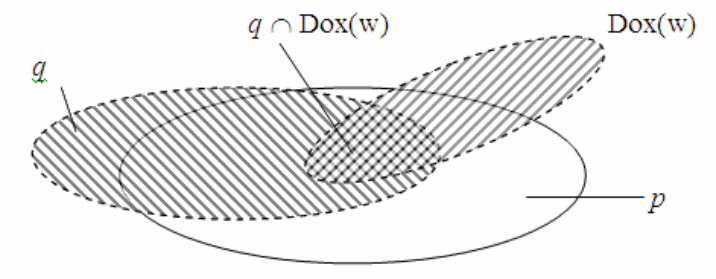
(48) (uttered by an ordinary Russian citizen)
If I were the US president, I would withdraw all troops from Iraq.

In (47), the relevant set of worlds under consideration is the set of *q*-worlds that are (highly) plausible in the actual world. The antecedent selects worlds which are not only consistent with *q* but also **very close** to the actual one or ***doxastic alternatives***. In (48), the relevant set of worlds is the set of *q*-worlds that are **far from** the actual world or highly unrealistic relative to the actual world. The two kinds of conditionals are minimally different only in the restriction of *q*-worlds.

Let us refer to the set of doxastic worlds as "Dox(w_i)." Dox(w_i) stands for the function that maps w_i to a set of doxastic alternatives (including w_i). They are consistent with the speaker's epistemic knowledge of the actual world. The knowledge, in turn, is describable in terms of the set of propositions in the common ground. For example, in doxastic worlds, the law of gravity is obeyed; human beings are mortal; Los Angeles is located in California, etc. In other words, Dox(w_i) is the set of worlds compatible with the set of propositions in the common ground (Stalnaker 1998, 2002). The doxastic requirement excludes worlds that are highly implausible. As a result, the doxastic alternatives are determined by the interlocuters' assumed background knowledge. This kind of conditional is referred to as an "indicative conditional", as in (47). Subjunctive conditionals differ from indicative conditionals in that the antecedent of the former selects a set of worlds such that (i) *q* is true in them and (ii) they are significantly similar to the actual world but are not part of Dox(w_i). When someone daydreams and says, "If I were king, …", the relevant set of worlds is that the speaker is the king. While, in these worlds, the law of gravity holds and human beings are mortal, they are not the doxastic alternatives to the actual world.

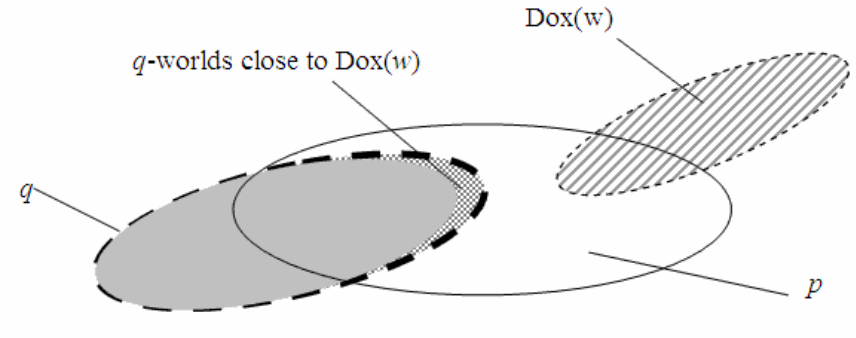
In the following, the relation between *p* and *q* is illustrated by Venn diagrams. The indicative conditional refers to the relation between *q*-worlds ∩ Dox (w) (instead of simple *q*-worlds) and *p*-worlds.

(49) Indicative "if *q*, then *p*" (i.e.  region)



The ▨ area represents the set of worlds selected by the antecedent. *p* must be true in all of these worlds. As a result, the area must be a subset of *p*. Similarly, subjunctive conditionals can be defined by ▨ requiring that the antecedent select worlds consistent with *q* but are not part of the doxastic alternatives. Furthermore, these worlds are relatively closer to but not part of the doxastic alternatives. In the following Venn diagram, the dotted area represents the counterfactual worlds selected by the antecedent. Again, *p* must be true in all of them.

(50) Subjunctive "if *q*, then *p*" (dotted region)



The notion of indicative conditional is highlighted for two reasons. First: grammatically, all the languages that have the NWHC use non-subjunctive mood (e.g. the indicative mood, verbs with modal elements, etc.) in the construction. Second, if the intersection with Dox(*w*) is left out, we run into the *contradiction problem*. The reason for this is that when (45) is interpreted negatively, we arrive at the meaning: "There are no circumstances (or possible worlds) such that *p*." It is not possible to find a proposition *q* such that if *q,* then *p*. In other words, *p* is not true in any world. In possible world semantics, only contradictory sentences are not true in any possible world, 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. Obviously, the

felicity of NWH-sentences is contingent on the world. For each NWH-sentence, it is possible to imagine worlds in which the sentence is true, and other worlds in which the same sentence is false. By constraining the set of selected worlds, the characterization of the conditional semantics (both indicative and subjunctive) only asserts the relation between the selected worlds and *p*-worlds. It leaves open the question whether *p* is true in all other unselected worlds, thus avoiding the contradiction problem.

Now, we are in a position to formalize the idea of conditionals based on the semantics discussed above. The first approximation is given in (51), based on strict implication.

(51) $\forall w'[q(w') \rightarrow p(w')]$

The formula, however, does not make reference to doxastic alternatives. By way of the presupposition, $\exists w''.\ [q(w'') \wedge w'' \in \mathrm{Dox}(w')]$, implemented as the domain condition,[49] (52) imposes the following restriction on *w'* worlds: among the doxastic alternatives associated with *w'*, there exists a possible world *w''* such that *q* is true in *w''*.

presupposition

(52) $\lambda w'\colon [\exists w''.\ [q(w'') \wedge w'' \in \mathrm{Dox}(w')]].\ \forall w'' \in \mathrm{Dox}(w').\ [q(w'') \rightarrow p(w'')]\ ]$

Effectively, the set of *w'* considered is narrowed down to the subset that meets the presupposition.

4.5.1.3 NWHC in the Form of Question

The next step is to turn the *if*-conditional into a *wh*-question. In this section, let us first assume that the NWHC is indeed an interrogative *wh*-question with the *wh*-word quantifying over a set of propositions in the antecedent. The question invites the hearer to identify a proposition *q* such that $q \cap \mathrm{Dox}(w')$ is a subset of *p*-worlds. Given the declarative form (53), we wish to derive the interrogative form (54).

---

[49] See Heim and Kratzer (1998: 34).

Declarative Form

(53) Under those circumstances that *q,* it is true that *p*.

Interrogative Form

(54) a Under what circumstances that *q* is it true that *p*?

b What is the proposition *q* such that if *q*, then *p*?

I adopt the Karttunen (1977) style of question semantics: a question denotes a set of true answers or propositions. If (55a) were an information-seeking question, one could imagine relevant answers like (55b).

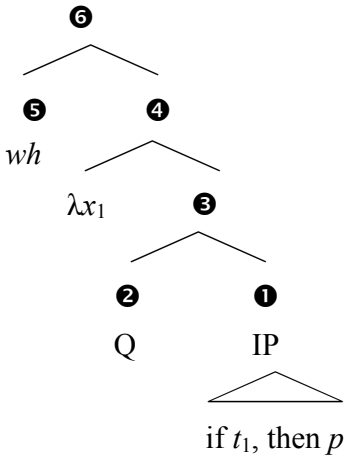
(55) a NWH + John will be rewarded (=*p*)?!

b Answer set:

{ If John can find some new clients, *p*;
If John finishes the assignment tomorrow, *p*;
If the team can solve the problem, *p*;
… }

When the interrogative sentence is uttered in *w*, the utterer thereby requests to be told the set of propositions that are true in *w*. Here is the derivation of the question semantics adapted from Heim (2000).

(56)



❶ $\lambda w'$: [$\exists w''$. [$x_1(w'') \wedge w'' \in \mathcal{C}(w')$]]. $\forall w'' \in \mathcal{C}(w')$ [$x_1(w'') \rightarrow p(w'')$]
(meaning of *in view of q*, *p*)

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

❸ $\lambda r.\ \lambda w.$ [$r(w) = 1 \wedge$
$r = \lambda w'$: [$\exists w''$. [$x_1(w'') \wedge w'' \in \mathcal{C}(w')$]]. $\forall w'' \in \mathcal{C}(w')$ [$x_1(w'') \rightarrow p(w'')$]]
(functional application)

❹ $\lambda x.\lambda r.\ \lambda w.$ [$r(w) = 1 \wedge$
$r = \lambda w'$: [$\exists w''$. [$x(w'') \wedge w'' \in \mathcal{C}(w')$]]. $\forall w'' \in \mathcal{C}(w')$ [$x(w'') \rightarrow p(w'')$]]
(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 $\wedge$
$r = \lambda w'$: [$\exists w''$. [$x_1(w'') \wedge w'' \in \mathcal{C}(w')$]]. $\forall w'' \in \mathcal{C}(w')$ [$x_1(w'') \rightarrow p(w'')$]]
(functional application)

(56) shows how the interrogative question in (54) is derived. The adoption of the *wh*-question analysis has still not explained the obligatory negative interpretation of the NWHC. The representation as in (56) is no different from an interrogative question. Nothing so far compels us to interpret the NWHC negatively. The next two sections

explain how the negative interpretation is derived.

4.5.2 Empty Answer Set (EAS) Morpheme

This section addresses why the NWHC must be interpreted negatively. To answer this question, one may want to examine how other *wh*-constructions receive their interpretations in general. An approach that has become prevalent in the literature is the following:

> "*Wh*-phrases are devoid of semantic content and should be treated as 'variables' in the logical representation. The quantificational force of the *wh*-phrase is determined by a certain class of quantificational elements, such as Q-element *mo* in Japanese and *no matter* in English. These elements determine the quantificational force of the *wh*-expression under certain structural conditions that hold with the *wh*-phrase that has undergone movement at LF." (Nishigauchi 1990)

The idea that the quantificational force of a *wh*-construction is determined by the licenser has been applied to not only *wh*-interrogatives (Nishigauchi 1990; Cheng 1991, 1994; Cable 2007; among others) but also other *wh*-constructions such as *wh*-indefinites (Nishigauchi 1990, Li 1992, Hagstrom 1998), universal quantification (Cheng 1991), and free-choice *wh*-morphology (Giannakidou and Cheng 2006). The dependency relation is widely attested in different languages. I briefly illustrate this relation here with Mandarin data from Cheng (1991). The licensers are underlined.

Q_{wh} ... wh (interrogative reading)

(57) Shei mai-le shenme <u>(ne)</u>?
who buy-Perf what Q
'Who bought what?'

$Q_{Yes/No}$ ... wh (existential reading)

(58) Jialuo mei-you mai shenme <u>ma</u>?
Jialuo not-have buy what $Q_{Yes/No}$
'Did Jialuo buy anything?'

Neg … wh (interrogative or existential reading)

(59) Shei mei-you mai shenme (ne)?
who not-have buy what Q
(i) 'Who didn't buy what?'
(ii) 'Who didn't buy anything?'

wh … dou (universal reading)

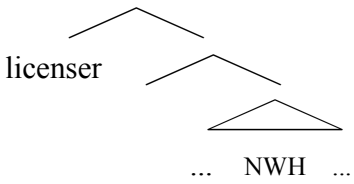
(60) Shei dou mai-le nei ben shu.
who DOU buy-Perf Dem Cl book
'Everyone has bought the book.'

Depending on the different licensers or licensing contexts, the *wh*-word in Mandarin receives different interpretations. Notice that each *wh*-construction has a different licenser.

In my analysis of the NWHC, the same idea is adopted. The negative interpretation is attributed to a special licenser in NWH-sentences.

(61) a All NWH-words must be bound by a licenser which imposes a negative interpretation on the *wh*-question involving an NWH-word.

b



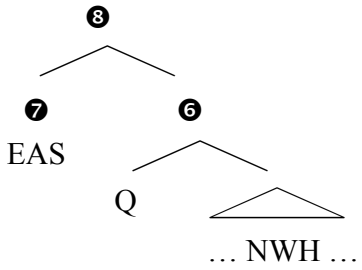
What corresponds to the licenser in the NWHC? The Q-morpheme seems to be a good candidate. Section 3.4.2 shows that in Chinese, Korean, and Japanese, question particles (i.e. Q-morphemes in these *wh*-in-situ languages) are needed. Unfortunately, this assumption does not explain why Q-morphemes—which generally license an interrogative reading—do not do so in NWH-sentences. One may counter that rhetorical questions also take question particles in these languages and can be interpreted negatively. Perhaps the NWHC is just a variant of a rhetorical question. However, in view of the many morphological, syntactic, and semantic differences between the NWHC and

RWHQs, it is not satisfactory to subsume the NWHC under the category of rhetorical questions. Furthermore, rhetorical interpretation is basically a pragmatic phenomenon (see Section 5.3.1.2). Rhetorical questions are simply interrogative questions uttered in contexts where the interlocuters feel that the answer to the question is obvious. The NWH interpretation clearly does not have the option of shifting between the interrogative and rhetorical interpretation. Recent studies show that rhetorical questions are not necessarily negative but can be positive (e.g. *After all, who loves you most? Of course, your wife.*) Again, the NWHC does not exhibit such a property. (Readers can refer to Section 5.3 for a more detailed comparison between NWH-sentences and RWHQs.)

To reconcile these facts, I propose that the particular kind of negative interpretation in the NWHC is due to a composite licenser that consists of (i) a Q-morpheme (the same as that in *wh*-interrogatives) and (ii) a silent morpheme that entails the set of answers to be empty. Together they give rise to the negative interpretation. I dub the silent morpheme the "Empty Answer Set morpheme" (or EAS-morpheme). Syntactically, the EAS-morpheme selects a *wh*-interrogative that contains an NWH-word[50].

(62) The EAS-morpheme selects a *wh*-question that contains an NWH-word and requires that the answer set be empty.

(63)



Up to node ❻ in(56), the structure is more or less the same as a regular *wh*-interrogative. The only difference is the use of NWH-words. In (63), the EAS-morpheme is generated on top of the *wh*-question[51] to guarantee that the answer set of the *wh*-question will be empty, i.e. the negative interpretation.

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[50] In other words, it does not select wh-questions that do not contain an NWH-word.
[51] On Karttunen's analysis, a question denotes a set of true answers/propositions.

(64) NWH-interpretation: The answer set of a *wh*-question that contains an NWH-word is empty.

Using example (55), repeated as (67), the NWH-sentence means:

(65) a NWH + John will be rewarded (=*p*)?!
b Answer set: { }
c There is no proposition *q* such that under circumstances that *q* (and are very similar to the actual world), *p*.

The postulation of a silent EAS-morpheme may seem stipulative at first glance. However, if the hypothesis that *wh*-elements generally require some licenser for interpretation is correct, and that an overt licensor is lacking in the NWHC across languages, it is not unreasonable to think that the NWH-word has a covert licenser in the structure.

Now let us derive the semantics of the EAS-morpheme. Its function is to turn a *wh*-question (i.e. a set of true propositions) into a negative rhetorical question (i.e. a negative proposition). The meaning of ❻ is given in (56), repeated as (66).

(66) $\lambda w.\lambda r_{st}.\exists x_{st}.[r(w)=1 \wedge$
$r=\lambda w'$: $[\exists w''. [x(w'') \wedge w'' \in \text{Dox}(w')]]. \forall w'' \in \mathcal{C}(w') [x(w'') \rightarrow p(w'')]]]$

Moreover, we assume that the top node ❸ has the value defined in (67).

(67) $\lambda w.\neg\exists x_{st} [r(w)=1 \wedge$
$r = \lambda w'$: $[\exists w''. [x(w'') \wedge w'' \in \text{Dox}(w')]]. \forall w'' \in \mathcal{C}(w') [x(w'') \rightarrow p(w'')]]]$

If the whole structure is to be interpretable by standard composition rules, the interpretation of the EAS is as below.

(68) ❼ $\lambda V_{<s, <st, t>>}. \lambda w. \neg\exists q_{st} [V(w)(q)=1]$

Consider an actual NWH-sentence. Suppose that the antecedent quantifies over a set of

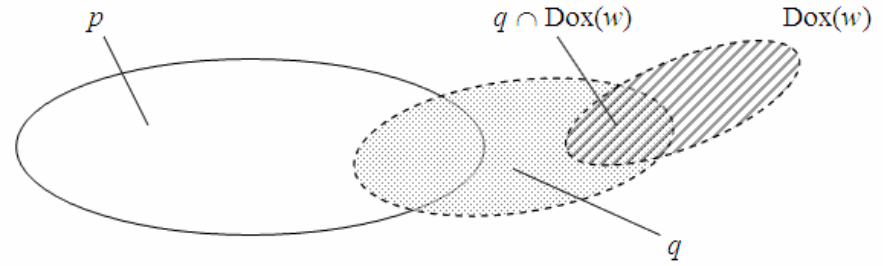
propositions *q*, as in (69b).

(69) a NWH + John will be rewarded (= *p*)?

b { If John skips the class today, *p*;
If John finishes the assignment tomorrow, *p*;
If John's mum becomes sick next week, *p*;
If global warming worsens, *p*.
… }

Under the negative interpretation, none of the potential answers or propositions, by definition, are true. That means that it is not possible to find a proposition *q* such that if *q* ∩ Dox(*w*), then *p*. The indicative conditional analysis asserts that *p* cannot be true in worlds that *q* ∩ Dox(w). As shown in (70), the intersection of *q* and Dox(*w*) does not overlap with *p*.

(70) NWH-sentence: if *q*, then *p*.



The existence of the non-empty interception of *p* and *q* is important because it guarantees that "if *q*, then *p*" is true at least in some worlds (when the doxastic presupposition is not met), avoiding the contradiction problem, i.e. the situation in which the conditional sentence is false in all worlds.

4.5.3 Relevance to ~p

The last step of the semantic analysis deals with how the NWH-sentence comes to mean ~*p*. The analysis thus far establishes that the NWHC is the negative rhetorical interpretation of (47), repeated as (71).

(71) NWH + *p*?

a ≡ Under what circumstances that *q* is it true that *p*? (with -ve interpretation)

b ≡ What is the proposition *q* such that if *q*, then *p*? (with -ve interpretation)

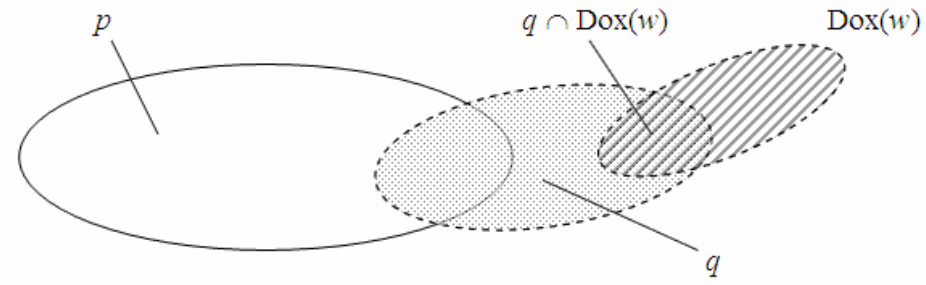
However, as has been stated from the beginning, the native speaker's intuition is that the NWH-sentence means ~*p*. This section explains how the two are related.

In the following, I show why *p* must be false in all worlds of Dox(*w*) in order to meet the negative interpretation requirement, i.e. (72).

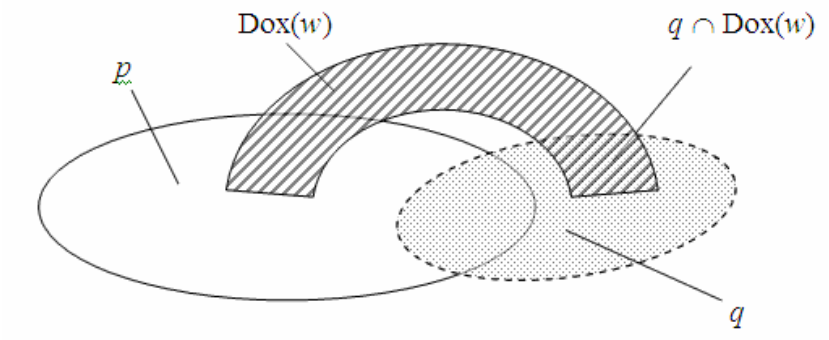
(72) The negative interpretation of NWHC entails falsity of *p* in all the doxastic worlds under consideration.

What this means is that the relation between *p* and *q* ∩ Dox(*w*) in NWH-sentences is (73) (=(70)) but not (74). At first glance, (74) may seem compatible with the negative interpretation because in both diagrams, *q* ∩ Dox(*w*) does not overlap with *p*.

(73) NWH-sentence: if *q*, then *p*. (CORRECT)



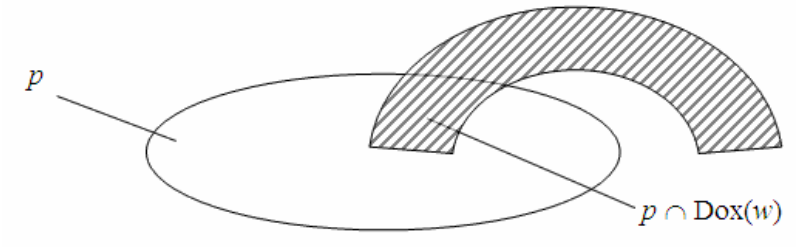
(74) NWH-sentence: if *q*, then *p*. (INCORRECT)



I will prove that only (73) is incompatible with (71) by contraposition. First, suppose

that *p* is not necessarily false in all doxastic worlds. This means that there are some worlds in Dox(*w*) in which *p* is true (indicated by the overlapping area).

(75)

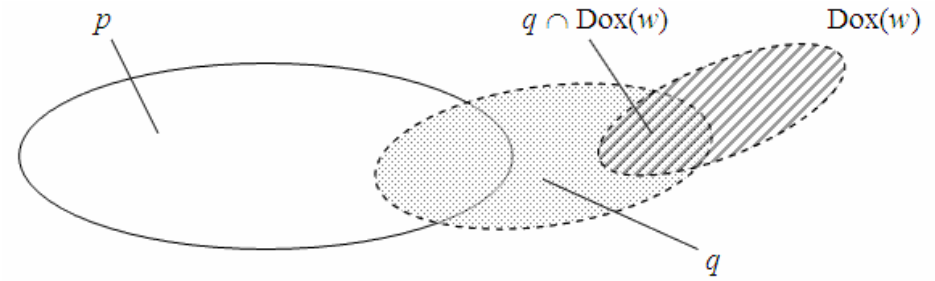


Whenever there is a non-empty set of doxastic worlds inside the *p* set, i.e. $p \cap \text{Dox(w)} \neq \varnothing$, there is a possibility of creating a proposition *q* such that $q \cap \text{Dox(w)} \subseteq p \cap \text{Dox(w)}$. This can be done by picking any arbitrary subset of worlds in the overlap region $p \cap \text{Dox(w)}$; since the subset of worlds can be represented by a proposition *q**, such a scenario entails that the question in (71) must have a non-empty answer set. "If *q** then *p*" is certainly true and the doxastic presupposition is satisfied. However, this is in conflict with the negative interpretation of the question, which requires an empty answer set. Notice that the contradiction exists regardless of whether the interlocuters know the exact context of *q**. What is crucial is that when the overlapping region is non-empty, there exists a *q** to render the answer set non-empty. Consequently, to meet the negative requirement, *p* must be false in Dox(*w*). This explains the intuition that the NWHC means ~*p*.

4.5.4 A Note about q-*world Restriction*

A crucial feature of the analysis is to make *p* false in the selected set of doxastic worlds, i.e. $q \cap \text{Dox}(w)$. This is why the NWH-sentence is interpreted as ~*p*.

(76) NWH-sentence: if *q*, then *p*.

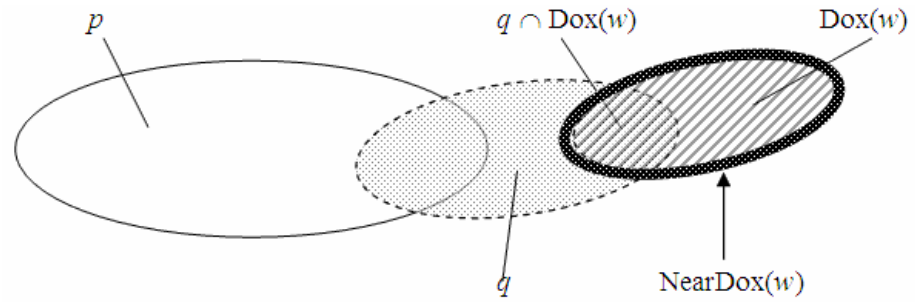


Although this characterization seems largely correct, it should be pointed out that language consultants have the intuition that the kind of negation conveyed by NWH-sentences is stronger than ~*p*. However, the current analysis does not capture this particular intuition.

There could be two sources of the stronger negation. First, in Section 4.2, it is argued that the utterer of an NWH-sentence imposes the assumption that despite the obviousness of the scenario, the DCP has mis-concluded that *p* is false. This assumption implies that the utterer believes the DCP's conclusion is not only wrong but unreasonable. This pragmatic implication makes the negation stronger.

Second, there is a sense that the restriction $q \cap$ Dox(w) is probably too strong. It seems that when the NWH-sentence is uttered, the speaker not only claims that *p* is false in $q \cap$ Dox(w), but that *p* is false even in worlds that are considered close to Dox(w) by some measure. These worlds are, strictly speaking, not part of Dox(w). Let us call these worlds NearDox(w). The idea is illustrated by the diagram in (77). The major difference between (76) and (77) is that in the latter, there is a set of worlds that are close to Dox(w) but not part of it, as indicated by the non-slanted line on the rim of the eclipse.

(77) NWH-sentence: if *q*, then *p*.



The utterer claims that even $q \cap$ NearDox(w) does not overlap with *p*. Consider the following example. q_1, q_2, q_3, q_4 are part of $q \cap$ Dox(w). An example of NearDox(w)

would be worlds in which "John does *not* skip the class today (=q_5)." Otherwise, they should be part of Dox(w).

(78) a NWH + John will be rewarded (= p)?

b { If John skips the class today (=q_1), p;
If John finishes the assignment tomorrow (=q_2), p;
If John's mum becomes sick next week (=q_3), p;
If global warming worsens (=q_4), p.
}

When the utterer utters (78), he claims (i) none of the answers in (78b) are good answers, and (ii) "if q_5, then p" is not a good answer as well.

Nevertheless, it seems very difficult to spell out the criteria for the function NearDox(w). A lot depends on the pragmatics and the speaker's judgment of what is close to Dox(w). The discussion in this section aims to highlight some minor differences between the semantic formulation and native speakers' intuition. I assume that the analysis presented in Section 4.5 is largely adequate in capturing the meaning of the NWHC. The exact details of NearDox(w) will not be pursued further.

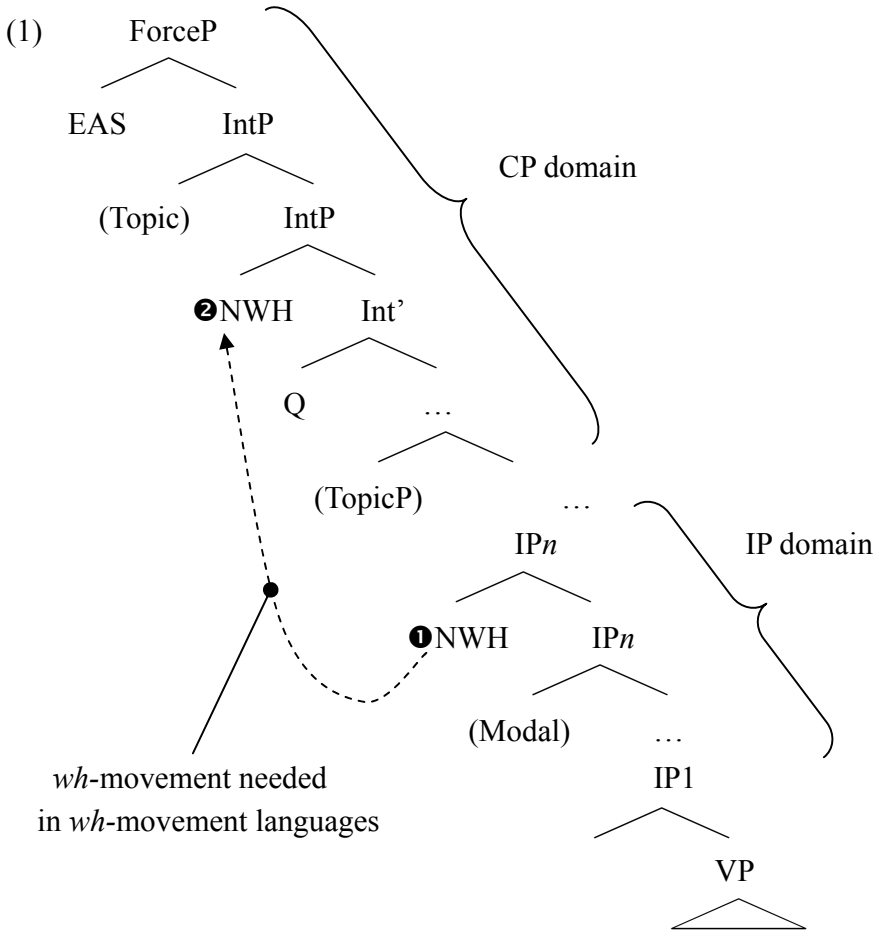
Chapter 5 Synthesis

The goal of this chapter is to bring together findings from the previous three chapters and offer a synthesis. Based on the semantic analysis presented in Chapter 4, Section 5.1 discusses why NWH-words are syntactically higher than their IWH counterparts. In Section 5.2, I describe how the EAS-morpheme contributes to the root phenomenon. Section 5.3 examines the similarities and differences between the NWHC and RWHQ.

5.1 Base Position Revisited

I begin with a brief summary of the syntactic analysis presented in Chapter 3. Below are the main points of the analysis. The structure of an NWH-sentence is presented in (1).

a. The NWH-word is adjoined to the top of IP.
b. In *wh*-in-situ languages (*e.g.* Chinese), the NWH-word remains in ❶ and is licensed by the Q composite via unselective binding. In *wh*-movement languages (*e.g.* English), the NWH-word must be licensed by moving to SpecIntP ❷.
c. The EAS-morpheme selects a +wh IntP that has a relation with an NWH-word, either by having SpecInt occupied by an NWH-word (in *wh*-movement languages) or by binding an NWH-word via the Q-morpheme (in *wh*-in-situ languages).



Based on the basic word order, the wide scope interpretation of negation, and the distribution of topics (see Section 3.2), I defend that the top layer of IP is the base position of the NWH-word. In Chapter 4, I analyze the NWH-word semantically as the antecedent of a conditional. The NWH-word functions as an adverb that restricts the circumstances where *p* is interpreted. This section explains why the NWH-word is mapped onto the edge of IP using the semantic analysis mentioned.

It has been commonly observed that the placement of adverbs correlates with the interpretational scope and adverb type cross-linguistically (Jackendoff 1972, McConnell-Ginet 1982, McCawley 1988, Cinque 1999). For example, manner adverbs (e.g. *quickly*, *carefully*, etc.) modify the V or VP and are generally placed close to the verb. Speaker-oriented adverbs (e.g. *frankly*, *comparatively speaking*, etc.) tend to appear in the sentence-initial position and provide the speaker's overall attitude toward the sentence. Since the NWH-word serves to restrict the evaluation worlds of *p*, which is

taken to be the IP, it is reasonable to think that the NWH-word behaves as an IP-modifier. This is consistent with the findings that NWH-words originate from a relatively high position (as opposed to VP-modifiers), and do not occur low in the structure as other adjunct IWH-words. The NWH-word must sit in a position that takes scope over the entire proposition *p*, corresponding to the IP. If Rizzi's (1997) fine structure of the left periphery is adopted , the NWH-word is located just below the CP.

(2) [FORCE (TOP*) INT (TOP*) FOC (TOP*) FIN] **NWH** [IP*n* …Mod… IP1 [*v*P…

Furthermore, as the NWH-word is analyzed as the antecedent of a conditional, the distribution of NWH-words is predicted to be similar to that of *if*-clauses; this prediction is borne out in the current study's corpus. In many languages, the *if*-clause is located at the sentence-initial position. In English, putting the *if*-clause before the main clause is the unmarked word order for conditionals.

(3) If it rains, we will all get terribly wet and miserable.

(4) If they come on time, we will still be able catch the train.

The *if*-clause is generally assumed to be a clause adjoined to S or CP (von Fintel 1994). Haegeman (2003) also argues that conditional clauses are adjoined to IP or CP depending on the interpretation of the antecedent[52]. In Korean, the *if*-clause is either pre-subject or post-subject but not post-object, as in (5). The distribution of the *if*-clause is rather similar to that of the NWH-word.

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[52] Haegeman (2003) distinguishes two types of conditionals, namely, event-conditionals and premise-conditionals. She shows that in event-conditionals (a), the antecedent clause "structures the event. It expresses a cause leading to the effect expressed in the matrix clause." They are adjoined to IP. In premise-conditionals (b), the antecedent clause "structures the discourse: it makes manifest a context for the question raised in the associated clause. They are adjoined to CP.

(a) If it rains, we will all get terribly wet and miserable. (*event-conditional*)

(b) If [as you say] it is going to rain this afternoon, why don't we just stay at home and watch a video? (*premise-conditional*)

Korean

(5) a [Manyak nay-ka colli-myen] naccam-ul cal kes ita. (plain conditional)
if I-Nom am-sleepy a nap-Acc take will SP
'If I am sleepy, I will take a nap.'

b *Naccam-ul [manyak nay-ka colli-myen] cal kes ita.
a nap-Acc if I-Nom am-sleepy take will SP

In Cantonese, the antecedent also precedes the main clause.

(6) Jyugwo zingzi taizai m goigaak, sewui wui ceotjin baton.
if political institution not reform society will emerge unrest
'If the political institution does not undergo reform, social unrest will emerge.'

(7) Jyugwo m-hai hou jyun, ngo soeng haang heoi.
if not-be very far I want walk go
'If it is not too far, I want to go there on foot.'

Another similarity shared between the NWH-word and *if*-clauses is that both of them follow topics. Sentences in (8)—(10) show that *if*-clauses follow topics and speech-oriented adverbs. Given that topics usually precede *if*-clauses, it is reasonable to say that the *if*-clause is relatively low in the CP domain or even in the IP domain.

English

(8) a As for McDonalds, if you have a McD burger after having a BK burger, you will realise just how terrible they are![53]

b *If you have a McD burger after having a BK burger, as for McDonalds, you will realise just how terrible they are!

(9) a As for Culnen, if Wedgewood had borrowed money from C&H, …

[53] http://www.digitalspy.co.uk/forums/showthread.php?p=22560128

b *If Wedgewood had borrowed money from C&H, as for Culnen,…

Korean

(10) a Solcikhi eti nay-ka party-ey ka-ko siph keyss-ni?!
frankly where I-Nom party-Loc go want RQ
'Frankly, no way do I want to go to the party.'

b ?Eti solcikhi nay-ka party-ey ka-ko siph keyss-ni?!
where frankly I-Nom party-Loc go want RQ

Although Cantonese accepts both (11a) and (11b), it is more preferable for the topic to precede the antecedent.

Cantonese

(11) a Zunggwo ne1, jyugwo zingzi taizai m goigaak, sewui wui ceotjin baton.
China Top if political institution not reform society will appear unrest
'As for China, if the political institution does not undergo reform, social unrest will emerge.'

b (?)Jyugwo zingzi taizai m goigaak, Zunggwo ne1, sewui wui ceotjin baton.
if political institution not reform China Top society will appear unrest

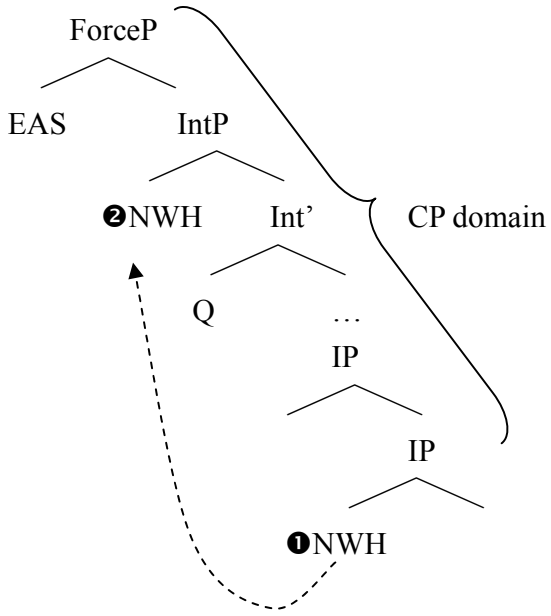
In brief, the circumstantial restriction semantics of NWH-words provides an explanation for why the NWH-word must appear at the top of IP. The distribution of *if*-conditional provides support to the claim.

5.2 EAS-morpheme and Root Phenomenon

5.2.1 EAS-morpheme as Force^0

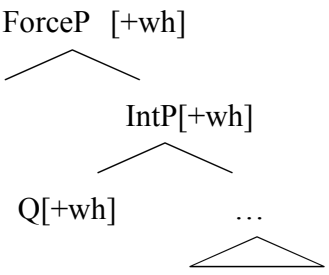
Driven by semantic interpretation, the EAS-morpheme is introduced in Chapter 4. The current section suggests that this morpheme contributes not only to the semantics but also to the root phenomenon of the NWHC (Section 3.3). Before expanding on this contribution, I first map the EAS-morpheme to the syntactic structure.

(12)

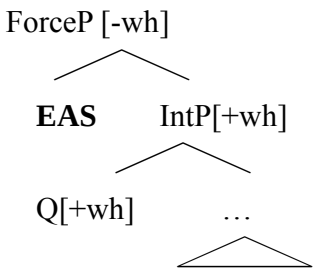


In (12), the EAS-morpheme is the head of ForceP. The assumption is made on both semantic and syntactic grounds. First, the CP domain is delimited upward by ForceP. Force^0 expresses various clause types: declarative, interrogative, exclamative, relative, different types of adverbial clauses, etc. (Rizzi 1997, 2002, Holmberg and Platzack 2005). The EAS-morpheme has the function of determining the clause type. It turns the clause type from an interrogative question (due to the +wh Q-morpheme) into a negative proposition.

(13) a Regular IWHQ



b NWHC



It seems possible that the EAS-morpheme is the Force^0. CP is generally considered to be the domain where the clause is anchored to the context and the speaker's point of view. It is possible that the EAS-morpheme also encodes the biased context requirement (see

Section 4.2). Second, structurally, the ForceP is a slot located higher than the Q-morpheme, which is assumed to be the head of IntP, is in the left periphery hierarchy. The ForceP-IntP sequence also provides a syntactic configuration for expressing the selection of a *wh*-question by the EAS-morpheme.

5.2.2 Root Phenomenon

It has been demonstrated that the NWH-word only occurs in the root clause. However, many *wh*-constructions are not restricted to the root clause. Various types of *wh*-dependency can be established in embedded contexts. Here are some examples.

(14) Where/When/Why do you think [John was kidnapped *t*]? (IWHQ)

(15) the man [who John thinks [Mary met *t*]] (relative clause)

(16) I am surprised at how fast John solved the problem. (*wh*-exclamative)

In *wh*-in-situ languages, *wh*-words can even be found inside syntactic islands. For example, in Cantonese, the in-situ *wh*-words (i.e. *bindou* 'where' or *gesi* 'when') inside the modifying clause can take matrix scope even though they are inside a relative clause (17) or sentential subject (18).

(17) Nei soeng maai [hai bindou/gesi sangcan] ge ce aa3?
you want buy at where when manufacture Mod car Q
'What is the place *x* / time *x* such that you want to buy a car that was manufactured at place *x* / time *x*?'

(18) [Keoi hai bindou/gesi sik ngaan] zeoi hou aa3?
he at where/when eat lunch most good Q
'What is the place *x* / time *x* such that his having lunch at *x* is the best?'

Since our analysis assumes that the NWHC involves an IWHQ, why is the NWHC not available in these syntactic contexts? I suggest here that the restriction is related to the grammatical property of the EAS-morpheme. Let us consider the two major differences

between the NWHC and the IWHQ/RWHQ, i.e. (i) the use of NWH-words and (ii) the licensing of the negative interpretation by the EAS-morpheme. Semantically, there seems to be nothing wrong with having an *if*-clause and *under no circumstances* in the embedded clause.

(19) I believe that if it rains tomorrow, the picnic will be canceled.

(20) a He told the Obama camp last week that under no circumstances would he be a candidate.

b She said that under no circumstances would she allow us to skip the meeting.

I attribute the ill-formedness of NWH-embedding to a failure to establish the licensing relation of the NWH-word by the EAS-morpheme in the embedded context. I propose that the EAS-morpheme can only appear in the root clause but not in the embedded clause because the embedded CP domain is degenerated. Emonds (1970) points out that certain transformations are only available in root clauses, e.g. subject-auxiliary inversion, tag questions, adverb preposing, parenthetical clauses, topicalization, dislocation, etc.

(21) *Bill didn't come to the party because neither did Mary. (Subj-Aux Inv)

(22) a Bill dates someone, doesn't he? (Tag question)

b *Bill asked if he could date someone, could he?

(23) a Only on weekends did I see those students. (Adverb preposing)

b *The students that only on weekends did I see are living in the country now.

(24) a Each part John examined carefully. (Topicalization)

b *I fear (that) each part John examined carefully.

(25) a John's sister, she won't do anything rash. (Dislocation)

b *Bill hopes that John's sister, she won't do anything rash.

Thus, it is fair to say that the variety of clause types in the root clause is richer than that in the embedded clause. The NWH-clause could potentially be another construction type that is subject to the root-embedded asymmetry. My conjecture is that the embedded ForceP is degenerated and is not able to host the EAS-morpheme, and as a result, embedding the NWH-clause is not a possible option.

5.3 Comparison of NWHC and RWHQ

When confronted with the NWHC for the first time, many people may believe that the NWHC is related to rhetorical questions. Having presented the analysis of the NWHC in the previous chapters, I now compare the NWHC and the RWHQ.

5.3.1 Rhetorical Questions

What is a rhetorical question? The answers to the question in the literature can be divided broadly into two types, which are not necessarily in conflict with each other. However, the clarification of their differences facilitates the understanding of the relation between the NWHC and the RWHQ.

5.3.1.1 Two Perspectives on Rhetorical Questions

I. RQ is a question that does not demand an answer

In the first group of studies, a rhetorical question is characterized with reference to the pragmatics and information exchange of the question between the interlocuters (Sadock, 1971, 1974, Ilie 1999, Koshik 2003, Lee-Goldman 2006, Fiengo 2007). Here is a quote that summarizes the essence of rhetorical questions in these studies.

(26) 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 crucial is that rhetorical questions are questions that do not expect an answer. Henceforth I refer to such an interpretation of questions as the "non-interrogative interpretation."

II. RQ as a positive and negative proposition

Many formal linguists (Sadock 1971, 1974, Bhatt 1998, Han 2002, Caponigro and Sprouse 2007) are interested in equating the rhetorical question with a proposition. For some time, emphasis has been placed on analyzing the RWHQ as a negative proposition. Recent studies have reaffirmed that the RWHQ can have both positive and negative interpretations.

Negative Rhetorical Interpretation

There is a tendency in the literature to associate rhetorical question with negative proposition (Sadock 1971, Lee 1994, Han 2002).

(27) A rhetorical question does not expect to elicit an answer. In general, a rhetorical question has the illocutionary force of an assertion of the opposite polarity from what is apparently asked (Han 2002).

(28) Rhetorical questions do not solicit an answer. Rhetorical questions assert that the extension of the question denotation is empty. (Bhatt 1998)

Sadock (1971: 224) claims that "question-word questions can have the effect only of an assertion of opposite polarity."

(29) Who understands English? (Sadock 1971: 224)
= No one understands English.

(30) (After all,) Who has been to Moose Jaw? (Bhatt 1998)
= No one has been to Moose Jaw.

According to Han (2002), the *wh*-word in the RWHQ is equivalent to a negative quantifier like "no one", "nowhere", etc. If we adopt Karttunen's semantics of

wh-question, the negative rhetorical interpretation entails that none of propositions the question denotes is true in the actual world. For example, in (29), suppose "who" ranges over the set of people: {John, Mary, Bill, Sue}. The negative rhetorical interpretation means that both the speaker and the hearer find it obvious that none of the four potential answers or propositions is true in the actual world. Moreover, the licensing of negative polarity items in rhetorical questions also makes prominent the idea that rhetorical questions are negative assertions (Sadock 1971, Bhatt 1998, Han 2002). Henceforth I will refer to this as the "negative rhetorical interpretation."

Positive Rhetorical Interpretation

Recent studies (Lee and Goldman 2006, Rohde 2006, Caponigro and Sprouse 2007) have drawn attention to the fact that rhetorical questions are not limited to the negative interpretation. The answers of rhetorical questions can be positive, as long as the context allows.

(31) A: Who's in charge here, anyway? (Lee and Goldman 2006)
B: **You** are.

(32) A: They should stop complaining about the chair to us. After all, who voted for him?
B: **(All of) them** / #Nobody. (Caponigro and Sprouse 2007)

(33) What's going to happen to these kids when they grow up?
[context: juvenile delinquents] (Rohde 2006)

In (31)—(33), the RWHQs call for non-negative answers. They are very natural in the given conversational contexts. What the new set of data has shown is that RWHQs are not necessarily negative assertion. For clarity, I will refer to the rhetorical interpretation that requires a positive response as the "positive rhetorical interpretation."

5.3.1.2 Context-dependency of Wh-interrogative Interpretation

Whether an RWHQ is positive or negative is context-dependent. Although the RWHQs in (29) and (30) can be easily interpreted negatively, by manipulating the contexts, these

RWHQs can accept positive responses as well. Here is how. Among a group of English-speaking tourists visiting Seoul, only John can speak both English and Korean. Everyone in the group is well aware of this fact. Now the group is debating how to bargain with shopkeeper at a souvenir shop who speaks only Korean. Someone in the group may say:

(34) The answer is obvious. Who understands Korean (in our group)?
≠ No one understands Korean.
= John understands Korean.

The RWHQ in (34) can easily be interpreted as meaning "John understands Korean. (Let's ask him for help.)" In fact, in this context, it is odd to interpret the rhetorical question negatively. This is certainly not an isolated example. For example, though Sadock claims that the RWHQ is the assertion of the opposite polarity (which is inadequate in light of the discussion in this section), he makes a different claim for rhetorical Yes/No questions. He says that there are circumstances where "Is Syntax easy?" could be understood as asserting "Syntax is easy." The same question could be interpreted as the negative assertion "Syntax isn't easy" under other circumstances.

The discussion shows that rhetorical questions are not restricted to the negative interpretation only. They can receive a positive rhetorical interpretation when the context is appropriate. In fact, as Caponigro and Sprouse (2007) argues, rhetorical questions are (syntactically and) semantically the same as ordinary questions.

(35) 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 distinction between rhetorical questions and ordinary questions is pragmatic in nature. In other words, the rhetorical interpretation can be reduced to being a pragmatic phenomenon. It is not necessary to distinguish them syntactically or semantically.

Last, I want to point out that *wh-the-hell* question is another type of *wh*-questions that has often been associated with the negative rhetorical interpretation. They seem to have a stronger tendency to bias towards the negative reading and are less contextually determined.

(36) Who the hell likes Brussels sprouts? (Lee 1994)

(37) Who the hell would buy that book? (den Dikken and Giannakidou 2002)

However, I do not think that this weakens the assumption that the rhetorical interpretation in general is contextually determined. First, Lee (1994) and den Dikken and Giannakidou (2002) acknowledge that *wh-the-hell* questions can be interpreted as information-seeking questions, despite the bias. Second, it is quite possible that the strong negative meaning is due to the presence of *the-hell* morpheme.

Lee (1994) claims that licensed by NegP[54], *wh-the-hell* "expresses the lack of existence of a set of individuals or entities." Because of the licenser NegP, (36) means no one in the set of human quantified by *who the hell* exists. As a result, the question requires a negative answer. Treating *wh-the-hell* as a polarity item, den Dikken and Giannakidou (2002) argues that *wh-the-hell* is licensed by the Q-operator in CP, making it more consistent with regular *wh*-questions. They attribute the negative meaning to the *the-hell* morpheme, conveying a negative presupposition toward the value of *wh-the-hell*.

[54] She argues that NegP exists in *wh-the-hell* questions.

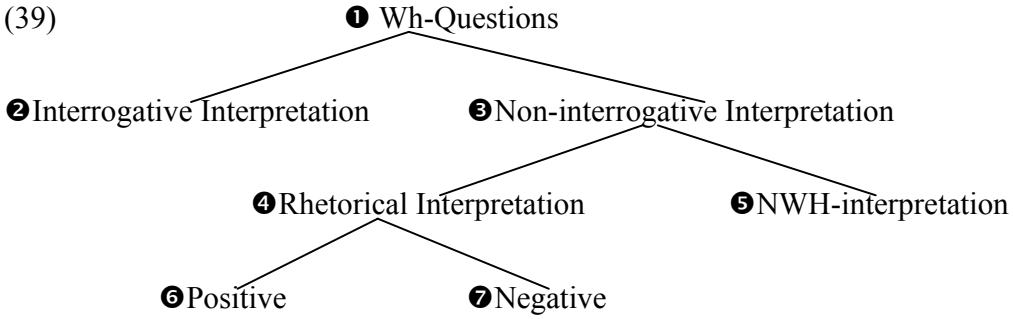
(38) Presupposition of negative attitude of *wh-the-hell* in (37):
If there is a person *x* in *w*, and *x* bought that book in *w*, *x* should not have bought the book in *w*.

In both studies, the negative rhetorical interpretation arises due to the lexical item *the-hell*. They only differ in that Lee assumes that the licenser NegP gives rise to the negative meaning, while den Dikken and Giannakidou analyze the negative meaning as the result of the lexical presupposition.

5.3.2 Rhetorical vs NWH-interpretation

How is the NWHC related to rhetorical interpretation? The diagram in (39) illustrates the relation between information-seeking questions, rhetorical questions, and NWH-sentences.

(39)



As the interrogative interpretation is clearly different from the rest in the hierarchy, the following discussion will focus on the relation between the rhetorical interpretation and NWH-interpretation.

Semantics and Pragmatics

In (39), the biggest similarity shared by the rhetorical interpretation and NWH-interpretation is their non-interrogative quality, i.e. the speaker does not expect an answer. This class is characterized by Fiengo's quote in (26). (Though Fiengo and some other linguists refer to the non-interrogative interpretation as rhetorical interpretation, I reserve it to the interpretation at node ❹.) That is why both the negative rhetorical interpretation and the NWH-interpretation can also be paraphrased with a negative

proposition. In this sense, both *wh*-constructions are sometimes perceived to be similar.

Nonetheless, the rhetorical and NWH-interpretation differ from each other in some crucial ways, including differences in at least two major pragmatic conditions. First, while the negative meaning of the rhetorical interpretation is determined by the context, the negative meaning of the NWH-interpretation is determined by the lexical semantics of the EAS-morpheme. As argued in Section 5.3.1.2, the rhetorical interpretation is a pragmatic phenomenon but the NWH-interpretation is not. By manipulating the context, an RWHQ can be turned into an IWHQ. On the other hand, NWH-sentences can only have the negative interpretation; no matter how the context is manipulated, one cannot make an NWH-sentence interrogative.

Second, the information carried by the NWHC and RWHQ are also very different. In Section 4.2, it has been demonstrated that NWH-sentences are uttered in the disagreement context. The speaker assumes that the DCP has come to a wrong conclusion. Quite often, the DCP is unaware of the speaker's opposite view before the NWH-sentence is uttered. The NWHC adds the new message to the common ground that the speaker disagrees with the DCP concerning the truth value of *p*. NWH-sentences are thus informative. In contrast, RWHQs are very often taken as uninformative. As observed by many linguists (Rohde 2006, Caponigro and Sprouse 2007), the typical scenario for RWHQs is that the speaker and the addressee both recognize the obvious answer to the question. The speaker and the addressee mutually have the same assumption. As a result, uttering an RWHQ does not add new information to the addressee. In this sense, an RWHQ is uninformative.

In the next two subsections, I keep the comparison of the morphology and syntax rather brief, as the differences and similarities are discussed at length in Chapters 2 and 3.

Morphology

RWH-expressions are the same as IWH-words, although there are important differences. While IWH-words can be easily built up together with other DPs and PPs recursively to form complicated phrases, e.g. *in which room of the building*, *until what time*, etc., the set of NWH-words is a small subset of the IWH/RWH-words (see Section 2.1). NWH-words lack the flexibility to combine with other words to form more complicated phrase. Most NWH-words are morphologically bare. They cannot be productively combined with other words to form a complex. One cannot even replace an NWH-word with the other

synonymous phrases like ‘where’ vs. ‘which place’ (see Section 2.5).

Syntax

The NWHC shares several important similarities with RWHQs, namely, the use of *wh*-words, placement of the *wh*-word (*wh*-movement vs. *wh*-in-situ), and the use of question particles and inversion (see Section 3.4). Nonetheless, they differ syntactically in the base position of the *wh*-words, the relative scope with other elements, and the possibility of embedding. First, the NWH-word is an adjunct to the top of IP; it cannot occur below IP. RWH-words, however, can be construed as arguments, VP-adjuncts or IP-adjuncts; their base positions are often much lower than IP. This is demonstrated by the relative positions of *wh*-words in *wh*-in-situ languages (see Chapter 3.2).

The second major difference is the licenser. In the current analysis, the licenser of RWH-words consists only of the Q-morpheme, and the negative or positive rhetorical interpretation is derived pragmatically. In contrast, the licensing of the NWH-word is fulfilled in two steps. Being a *wh*-word, the NWH-word must first be licensed by the Q-morpheme. In this step, a NWH-word functions just as a *wh*-question does. This explains why the NWHC shares many IWHQ properties. The major difference is that on top of IntP, the EAS-morpheme selects an interrogative *wh*-clause and effectively turns a set of propositions into a negative proposition.

Chapter 6 Conclusion and Remaining Issues

6.1 Conclusion

The current investigation establishes a new *wh*-construction that has not been previously discussed in the literature. Despite their superficial resemblance, the NWHC and the IWHQ/RWHQ can be distinguished by their morphological, syntactic, and semantic patterns. Several unique morphological, syntactic, and semantic properties of the NWHC are identified. The findings contribute to a more comprehensive understanding of *wh*-words and *wh*-constructions in general, as these properties are not observed in other *wh*-constructions.

Morphologically, NWH-words are restricted to a very small subset of *wh*-words. 'Where' is the most commonly used form. A handful of languages also allow 'what', 'which', 'when', and 'how.' What is rather puzzling is that the consultants of languages with more than one NWH-word failed to describe the semantic difference between different NWH-words. Furthermore, the quantification domains of NWH-words are different from the conventional domains with which these *wh*-words are associated. It is proposed that all NWH-words quantify a set of circumstances (or technically, propositions). Languages vary as to which *wh*-word(s) can be used to quantify propositions.

Syntactically, the NWH-word is adjoined to the top of IP. Evidently, in *wh*-in-situ languages like Cantonese and Korean, the NWH-word necessarily appears higher up in the structure as compared with IWH/RWH-words. For example, in Cantonese, NWH-words must occur before the modal but below topics, while IWH-words can occur below the modal. The NWHC displays the root phenomenon. Embedding an NWHC in any context is bad across languages, with the exception of German. Last, despite many unique properties, the NWHC does share with the IWHQ and RWHQ certain important aspects such as the typological correlation with the placement of *wh*-words (i.e. *wh*-movement vs. *wh*-in-situ), the use of question particles in Chinese, Korean, and Japanese, and its co-occurrence with inversion in English and Spanish. These phenomena provide crucial evidence supporting the analysis that the NWHC is underlyingly a *wh*-question.

Semantically, the NWHC is felicitous only in the disagreement context where the speaker believes that some party salient in the discourse mistakenly comes to the wrong conclusion concerning the proposition at issue. In the proposed semantic analysis, attention has been paid specifically to the derivation of the speaker's negation of *p*. The NWH-sentence is paraphrased as 'Under no circumstances is it true that *p*.' Formally, a circumstance is analyzed as the description of a set of possible worlds. This is essentially the same as treating the NWH-word as the antecedent of an indicative conditional. The antecedent takes scope over the proposition like an *if*-clause, explaining why the NWH-word occurs at the top of IP, thus taking scope over the sentence. Further, I posit that a silent EAS-morpheme, Force^0, selects the *wh*-interrogative involving the NWH-word and turns the question into a negative proposition. The overall semantics of the NWH-sentence amounts to asserting that the proposition at issue is false in a set of doxastic worlds.

6.2 Remaining Issues

The NWHC being an almost untouched phenomenon in the literature, this dissertation has raised more questions than answers. Here I will highlight a few unresolved issues that require further investigation.

NWH Morphology

Admittedly, our understanding of the NWH morphology is still limited. One central issue is why 'where' is the most popular candidate among all *wh*-words. Though evidence has been presented to show the existence of the peculiar circumstantial use associated with 'where' in English, Spanish, and German, more research is needed to substantiate why 'where' can be used in this special way. The circumstantial use of 'where' in relatives (i.e. *the context where* ...) by itself is also an interesting puzzle. More research into the phenomenon is needed.

Root Phenomenon

The explanation for the root phenomenon is that the root clause is more accommodating in hosting more clause types. The embedded ForceP is defective and fails to host the EAS-morpheme, thus preventing the licensing of the embedded NWH-clause. The root-embedded asymmetry requires further empirical evidence to be substantiated.

Felicity Conditions

In Section 4.2, we have discussed the specific biased context imposed by the NWHC. Note that the felicity conditions are highly specific; they pertain to very limited scenarios. Nevertheless, the conditions are consistently observed across languages. Our current semantic analysis only deals with the speaker's belief that ~*p*. The derivation of other conditions like the assumption that the DCP believes that *p* and the speaker's belief of the DCP's mis-conclusion is currently left open. ***

Unavailability of Wh + Circumstances in Wh-interrogatives

In the current analysis, NWH-words are assumed to quantify over circumstances. Aside from this assumption, they have been treated more or less like IWH/RWH-words. One would expect that the interrogative counterpart of "*wh*+circumstances" should exist. But this is simply not possible. In other words, we have never seen examples where "Where + John is 60 years old?" is interpreted as an information-seeking question: "Under what circumstances is John 60 years old?" The flip side of the puzzle is that no regular IWHQs can acquire the NWH-interpretation. The current analysis resorts to the stipulation that the EAS-morpheme selects *wh*-interrogatives containing NWH-words (i.e. excluding regular IWHQs). Still, we would want to understand why the EAS-morpheme is sensitive to the difference between NWH-words and regular IWH-words.

EAS-morpheme

Though the current analysis claims that the EAS-morpheme is a silent morpheme, one would expect that it may be pronounced at least in some languages. So far in the language survey, none of the languages has provided evidence for it. If the analysis is correct, further investigation of additional languages may be useful.

Appendix I

Another possible analysis of the base position is that the NWH-word originates from a position very low in the CP domain. This is an attempt to address two issues.

Adjacency Effect in the Cantonese NWHC

The NWH-word and the modal and auxiliary display an adjacency effect. Nothing other than the negation marker on the modal or auxiliary can appear between the modal and the NWH-word. If anything else appears in between, the well-formedness of the sentence is degraded.

(1)		Subject	NWH		(Neg)	Modal	VP
(2)	?/??	Subject	NWH	**Adv**	(Neg)	Modal	VP

(3) *Adjacency observed*

a John hai Meigwok bindou/dim *wui* maai jat gaa Hummer aa3?!
John at US where/how will buy one Cl Hummer Q
'No way will John buy a Hummer in the US.'

b John bindou/dim *wui* hai Meigwok maai jat gaa Hummer aa3?!
John where/how will at US buy one Cl Hummer Q
'No way will John buy a Hummer in the US.'

(4) *Adjacency violated*

c *John bindou/dim hai Meigwok *wui* maai jat gaa Hummer aa3?!
John where/how at US will buy one Cl Hummer Q
Intended: 'No way will John buy a Hummer in the US.'

(5) *Only the negation marker can intervene*

John bindou/dim m-*wui* maai jat gaa Hummer aa3?!
John where/how not-will buy one Cl Hummer Q
'No way will John not buy a Hummer in the US.'

If the NWH-word adjoins to the top of the IP, it is not clear why other adjuncts cannot occur between the NWH-word and the modal/auxiliary.

Impossible word order: *NWH-word + Subject + Modal/Aux + …

Another possibly related issue is that the structure in (9) [Chapter 3] predicts that that the word order "NWH-word + Subject + Modal/Aux + …" should be possible.

(35) *NWH Subject (Neg) Modal VP

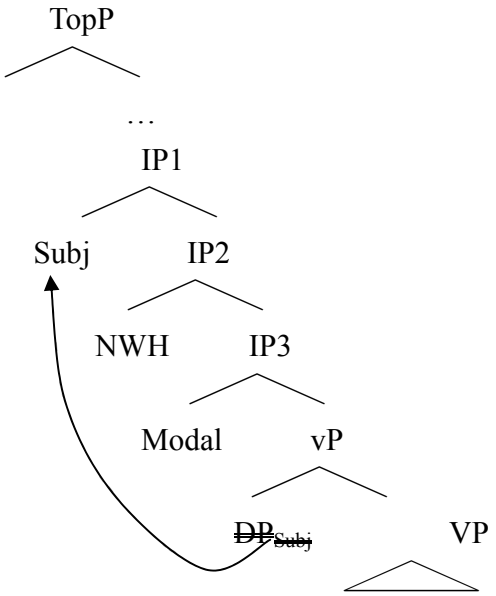
However, this prediction is not borne out. Note that in simple declarative sentence, the DP before the modal is not necessarily the topic. In (6), 'someone' and 'no one' are generally not good as topics. They suggest that there exists a subject position before the modal.

(6) a Jau jan (*ne) wui lei gaa3.
have people Top will come SP
'Someone will come.'

b Mou jan (*ne) wui lei gaa3.
Have.not people Top will come SP
'No one will come.'

It is unclear why "NWH-word + Subject + Modal/Aux + …" is not possible. One might suggest that the NWH-word must base-generate as follows.

(7)

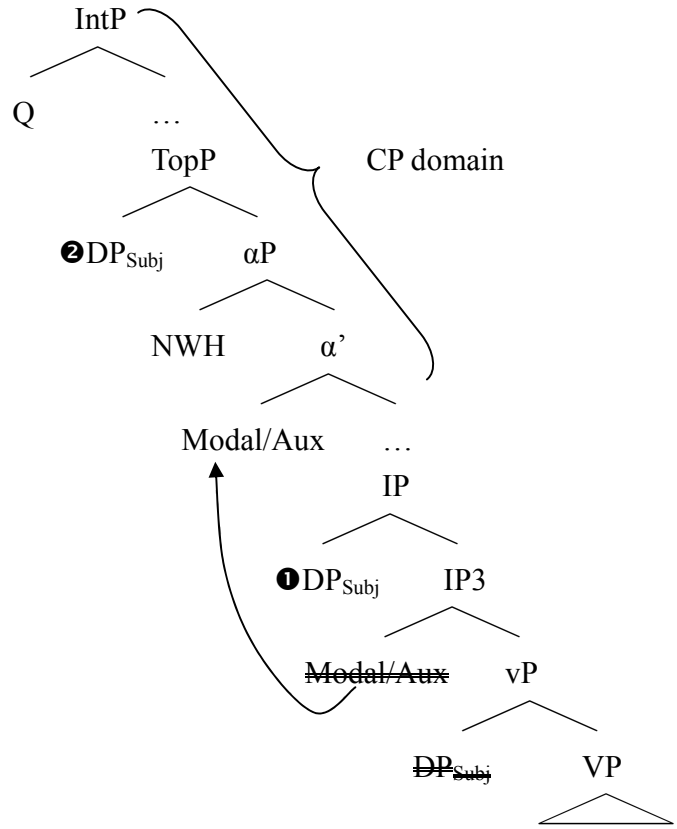


However, there is yet another problem with such an analysis. Quantified subjects cannot precede the NWH-word in Cantonese (see Section 3.2.2). The structure illustrated in (7) still does not capture the word order.

Proposal

The NWH-word originates in the SpecαP, which is a functional projection very low in the CP domain.

(8)



It must be stipulated that the head α^0 must be filled on a par with the C^0 in English interrogatives. The modal undergoes I-to-α movement, as in English root *wh*-interrogatives. The NWH-word is generated in SpecαP. In Cantonese, when the subject DP is topicalized, the DP precedes the NWH-word, giving rise to the post-subject word order. If the subject DP is in the vP shell or in the IP domain, the pre-subject word order can be obtained. In *wh*-movement languages, the NWH-word moves further from SpecαP to SpecIntP. This structure is given in (8).

The biggest advantage of this account is that it straightforwardly explains why the NWH-word and the modal must be adjacent, which is at the core of the adjacency effect and the word order issue. In this structure, there is no space for adjuncts or the subject to be inserted between the NWH-word and the modal/auxiliary.

There are, however, two disadvantages. First, more structure and stipulations are needed to accommodate the analysis. It is not clear if the I-to-α movement (or more generally, I-to-C movement) exists in Chinese. According to Rizzi's left periphery

analysis, topics can be generated anywhere in the CP domain (see Section 3.2.3). If αP is part of the CP domain, it is unclear why topics cannot be generated below αP.

In brief, the αP analysis has the merit of addressing the adjacency effect. However, it also requires further justification of the assumptions. Nothing in my dissertation crucially hinges on one analysis or the other. I decided to adopt the IP adjunction analysis for the sake of simplicity.

References

Aoun, Joseph and Audrey Y.-H. Li. (1993) *Syntax of Scope*. Cambridge, MA: MIT Press.

Bhatt, Rajesh. (1998) "Argument-Adjunct asymmetries in Rhetorical Questions." Paper presented at NELS 29 at the University of Delaware, Newark, Delaware, October 1998

Caponigro, Ivano. (2003) *Free Not to Ask: On the Semantics of Free Relatives and Wh-Words Cross-linguistically*. Ph.D. dissertation. University of California, Los Angeles.

Caponigro, Ivano. (2006) "On The Semantics Of Wh-Words And Rhetorical Questions." Handout of a talk given at University of Maryland (Feb 2006).

Caponigro, Ivano and Jon Sprouse. (2007) "Rhetorical Questions as Questions." *Proceedings of Sinn und Bedeutung* 11, E. Puig-Waldmüller (ed.), pp.121-133. Barcelona: Universitat Pompeu Fabra, 2007.

Chao, Y.-R. (1968) *A Grammar of Spoken Chinese.* University of California Press, Berkeley and Los Angeles.

Cheng, Lisa L.-S. (1991) *On the Typology of Wh-Questions*. Doctoral dissertation, MIT. Published 1997, Garland, New York

Cheng, Lisa L.-S. (1994) "Wh-words as Polarity Items." *Chinese Languages and Linguistics II*. Symposium Series of Institute of History and Philology, Academia Sinica, Taiwan. p. 615—640.

Cheng, Lisa L.-S. (1995) "On Dou-quantification." *Journal of East Asian Linguistics* 4(3): 197—234.

Choi, Jinyoung. (2005) “Another Type of Free Choice Effect: Korean *Amwu* N-*Lato*.” In *Proceedings of the 24th West Coast Conference on Formal Linguistics*. ed. John Alderete et al., 88-96. Somerville, MA: Cascadilla (Proceedings Project. www.lingref.com, document #1210.)

Chomsky, Noam and Howard Lasnik. (1977) “Filters and Control.” *Linguistic Inquiry* 8: 425–504.

den Dikken, Marcel & Anastasia Giannakidou (2002). From Hell to polarity: “Aggressively non-D-linked” wh-phrases as polarity itemrs. *Linguistic Inquiry* 33(1):31—61.

Emonds, Joe. (1970) *Root and Structure-Preserving Transformations.* Ph.D. Dissertation, MIT.

Fiengo, Robert. (2007) *Asking Questions: Using Meaningful Structures to Imply Ignorance*. Oxford University Press.

von Fintel, Kai and Irene Heim (2007) *Intensional Semantics*. MIT.

Giannakidou, Anastasia. (1998) *Polarity Sensitivity as (Non)veridical Dependency.* John Benjamins. Amsterdam.

Giannakidou, Anastasia. (2001) ‘The meaning of Free Choice’. *Linguistics and Philosophy* 24: 659–735.

Giannakidou, Anastasia and Lisa L.-S. Cheng. (2006) “(In)Definiteness, Polarity, and the Role of *wh*-morphology in Free Choice.” *Journal of Semantics* 23(2):135-183.

Haegeman, Liliane. (2003) “Conditional Clauses: External and Internal Syntax.” *Mind and Language* 18(4): 317–339.

Hagstrom, Paul. (1998) *Decomposing Questions*. PhD dissertation, MIT

Han, Chung-hye. (2002). “Interpreting Interrogatives as Rhetorical Questions.” *Lingua* 112(3): 201-229.

Haspelmath, Martin. (2008) ‘Indefinite Pronouns.’ In Martin Haspelmath, Matthew S. Dryer, David Gil & Bernard Comrie (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 46. Available online at http://wals.info/feature/46 Accessed on 2009-02-08.

Heim, Irene. (2000) Notes on Interrogative Semantics. (Class notes)

Heim, Irene and Angelika Kratzer. (1998) *Semantics in Generative Grammar*. Oxford: Blackwell.

Holmberg, Anders and Christer Platzack. (2005) “The Scandinavian Languages”. Cinque, Guglielmo and Richard Kayne (eds.) *The Oxford Handbook of Comparative Syntax*. Oxford: Oxford University Press.

Horvath, Julia. (1986). *FOCUS in the Theory of Grammar and the Syntax of Hungarian*, Foris.

Hsieh, Miao-Ling. (2001) *Form and Meaning: Negation and Question in Chinese.* Doctoral dissertation, University of Southern California.

Huang, C.-T. James. (1982) *Logical Relations in Chinese and the Theory of Grammar*. PhD Dissertation, MIT.

Iatridou, Sabine. (2000) “The Grammatical Ingredients of Counterfactuality.” *Linguistic Inquiry* 31(2): 231–270.

Jackendoff, Ray. (1972) *Semantic Interpretation in Generative Grammar*. MIT Press.

Karttunen, Lauri. (1977) “Syntax and Semantics of Questions.” *Linguistics and Philosophy* 1: 1-44.

Koopman, Hilda and Dominique Sportiche. (1991) “The Position of Subjects.” *Lingua* 85: 211–258.

Koshik, Irene. (2003) “Wh-questions Used as Challenges.” *Discourse Studies* 5: 51–77.

Lee, C. (1997) ‘Negative Polarity and Free Choice: Where Do They Come From?’ In P. Dekker et al. (eds), *Proceedings of the 11th Amsterdam Colloquium*. ILLC, University of Amsterdam, 217–222.

Lee, Felicia. (1994) *Negative Polarity Licensing in Wh-questions: The Case for Two Licensers.* MA thesis, UCLA, Los Angeles,

Lee-Goldman, Russell. (2006) “Rhetorical Questions and Scales: Just What Do You Think Constructions Are For?” Presented at the International Conference on Construction Grammar 4, Tokyo University.

Lewis, David. (1986) *On the Plurality of Worlds*. Oxford: Blackwell.

Li, Audrey (1992) “Indefinite Wh in Chinese.” *Journal of East Asian Linguistics* 1: 125—156.

Li, Charles and Sandra Thompson. (1981) *Mandarin Chinese: A Functional Reference Grammar*. Berkeley: University of California Press.

Mahajan, Anoop. (1990) *The A/A-bar Distinction and Movement Theory.* PhD dissertation, MIT.

Maienborn, Claudia. (2001) “On the Position and Interpretation of Locative Modifiers.” *Natural Language Semantics* 9(2): 191—240.

McConnell-Ginet, Sally. (1982) “Adverbs and Logical Form: A Linguistically Realistic Theory.” *Language* 58(1): 144—184.

Nishigauchi, Taisuke. (1990) *Quantification in the Theory of Grammar*. Kluwer, Dordrecht.

Obenauer, H.-G. (2004) "Nonstandard Wh-questions and Alternative Checkers in Pagotto." In H. Lohnstein and S. Trissler. (eds.) *Syntax and Semantics of the Left Periphery, Interface Explorations* 9. Berlin: Mouton de Gruyter, 343-384.

Pak, Miok. (2004) "Korean Particles and Clause Types." Ms., Georgetown University.

Paul, Waltraud. (2005) "Low IP area and Left Periphery in Mandarin Chinese." *Recherches linguistiques de Vincennes* 33 (2005) 111 -134.

Pullum, Geoffrey K. "Embedded Rhetorical Questions." http://itre.cis.upenn.edu/~myl/languagelog/archives/003714.html (October 29, 2006 06:15 PM)

Pullum, Geoffrey K. "Attested Subordinate Rhetorical Interrogatives." http://itre.cis.upenn.edu/~myl/languagelog/archives/003746.html (November 7, 2006 01:05 PM)

Rizzi, L. (1997) "The Fine Structure of the Left Periphery." In L. Haegeman (ed.) *Elements of Grammar*. Kluwer, Dordrecht, 281-337.

Rizzi, Luigi. (1999) "On the Position 'Int(errogative)' in the Left Periphery of the Clause." Università di Siena.

Rizzi, Luigi (2002) "Locality and Left Periphery." In A. Belletti, (ed.) *Structures and Beyond. The Cartography of Syntactic Structures*. Vol. 3. Oxford University Press.

Rohde, Hannah. (2006) "Rhetorical Questions as Redundant Interrogatives." *San Diego Linguistic Papers* 2: 134–168.

Ross, John R. (1967) *Constraints on Variables in Syntax*. Doctoral dissertation, Massachusetts Institute of Technology.

Sadock, Jerrold M. (1971) “Queclaratives.” In *Papers from the Seventh Regional Meeting of the Chicago Linguistic Society*, Chicago Linguistics Society pp. 223–232.

Sadock, Jerrold M. (1974) *Towards a Linguistic Theory of Speech Acts*. Academic Press, New York.

Schaffer, Deborah. (2005) “Can Rhetorical Questions Function as Retorts? Is the Pope Catholic?” *Journal of Pragmatics* 37: 433–460.

Shi, Yuzhi and Ping Chang. (1995) “Ne De Yufa Yiyi Ji Yu Yiwen Daici Gongxian De Tiaojian.” *Journal of Chinese Language Teachers Association* 30: 71—83.

Stalnaker, Robert (1968) “A Theory of Conditionals.” In Studies in Logical Theory, *American Philosophical Quarterly*, Monograph 2, 98–112.

Stalnaker, Robert (1975) “Indicative Conditionals.” *Philosophia* 5, 269–286

Stalnaker, Robert (1978) “Assertion.” *Syntax and Semantics 9*. p. 315—332. (Reprinted in Steven Davis, *Pragmatics: A Reader*. New York and Oxford: Oxford University Press, 1991.)

Stalnaker, Robert. (1998) “On the Representation of Context.” *Journal of Logic, Language and Information* 7: 3—19.

Stalnaker, Robert. (2002) “Common Ground.” *Linguistics and Philosophy* 25(5-6): 701—721.

Suñer, M. (1994) ‘V-Movement and the Licensing of Argumental Wh-phrases in Spanish’. *Natural Language and Linguistic Theory* 12: 335—372.

Torrego, Esther. (1984) ‘On Inversion in Spanish and Some of its Effects’. *Linguistic Inquiry* 15: 103—129.

Wang, Li. (1958/1988) *Hanyu Shigao.* In *Collection of Essays of Wang Li.* (Vol. 9) Jinan, Shandong Education Publisher.

Wu, Jianxin. (1999) Syntax and Semantics of Quantification in Chinese. Doctoral dissertation, University of Maryland, College Park.

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