ON THE TYPOLOGY OF WH-QUESTIONS

by

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Abstract

This thesis proposes that the typological distinctions among languages with respect to the formation of wh-questions can be attributed to the availability of question particles and the properties of wh-words. It is argued that the availability of question particles correlates with the lack of syntactic wh-movement. A theory of Clausal Typing is proposed to account for this correlation. In particular, languages employ either question particles or syntactic wh-movement to type a clause as a wh-question. It is shown that the Principle of Economy of Derivation predicts that (a) no language has the option of alternating between the two methods of Clausal Typing and thus there are no languages with "optional movement" of wh-words and (b) movement of one wh-word is sufficient to type a clause as a wh-question. Apparent counterexamples to the proposal are discussed. It is argued that in languages with apparent optional fronting of wh-words (e.g. Egyptian Arabic), sentences with a clause-initial wh-word are clefts. In addition, it is shown that in languages which front multiple wh-words in multiple questions, the wh-words are morphologically complex and need to satisfy a licensing requirement independent of Clausal Typing.

The internal structure of wh-words in an "in-situ" language, namely Mandarin Chinese is also examined. It is shown that wh-words in Mandarin are indefinite NPs, which lacks quantificational force, and they are polarity sensitive. In addition, Two LF operations are discussed: Quantifier Raising and LF wh-movement. It is shown that the lack of scope ambiguities in Mandarin can be attributed to lexical properties of indefinite NPs. Arguments for and against LF wh-movement as well as the landing site of wh-words at LF are examined. It is shown that evidence against LF wh-movement does not hold and arguments against adjunction of wh-words to IP at LF will be provided.

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Chapter 1

Introduction

1.0. Preliminaries

This thesis discusses some typological distinctions among languages with respect to the formation of wh-questions. In some languages, e.g. English, wh-questions show S-structure movement of the wh-word, in contrast to languages like Mandarin Chinese, in which wh-words remain "in-situ" at S-structure. Moreover, some languages, like Egyptian Arabic, are said to have the option of either leaving the wh-word in-situ or fronting it (Wahba 1984). The foregoing remarks apply to "single wh-questions", i.e. content question clauses which have just a single wh-word.[1] In multiple wh-questions, languages which have syntactic wh-movement are further divided according to whether or not all wh-words front at S-structure.

These distinctions raise the following questions:

(1) Why is it the case that wh-words in languages like Mandarin Chinese do not undergo syntactic wh-movement? Correspondingly, why is it the case that wh-words in English cannot stay "in-situ" in the S-structure representation of single wh-questions?

(2) Why is it the case that all the wh-words in languages such as Bulgarian have to front at S-structure in multiple wh-questions while in languages like English, only one wh-word is fronted in such cases?

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[1]This thesis is concerned solely with direct and indirect questions. So-called echo questions, in which wh-words appear in-situ, are not relevant to the present discussion. They are only superficially similar to the direct and indirect in-situ questions of the type employed regularly in Chinese languages and Japanese.

(3) Are there "optional movement languages"? Why do wh-words in some languages optionally front while wh-words in other languages must either stay in-situ (e.g. Mandarin Chinese) or undergo wh-movement (e.g. English)?

There are proposals in the literature which address either the question in (1) or that in (2) but not both together, and the question in (3) has not been addressed at all. I will briefly mention two proposals which attempt to answer the question in (1):[2] Fukui's (1986) theory of categorial projection and Kim's (1990) theory of the classification of wh-words In addition, I briefly summarize Rudin's proposal on question (2).

Fukui (1986), assuming that wh-words move to Spec of C^0 at S-structure (Chomsky 1986), proposes that languages such as Japanese and Mandarin Chinese do not have syntactic wh-movement because the category C in these languages does not project a Specifier position. Thus, there is no landing site for wh-words at S-structure.[3] Kim (1990) on the other hand, proposes that languages like Japanese and Mandarin Chinese lack syntactic wh-movement because they do not actually have wh-words. Instead, the equivalent of wh-words are quantifiers. Thus the question words in these languages undergo Quantifier Raising (QR), which takes place at logical form (LF). The approach taken by Fukui (1986) explores the difference between languages with respect to the C-

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[2]See also Kuroda (1986) for a proposal regarding some distinctions between languages like Japanese and languages like English. He proposes that languages like English are forced agreement languages, while languages like Japanese are not, and that the distinction between the two types of languages with respect to wh-movement follows from this distinction, assuming that agreement extends to the relation between a question feature in C^0 and the wh-word. The agreement relation is local, and wh-movement is required in order to bring the wh-word into the local Spec-head configuration with C^0.

[3]Fukui (1986) assumes that adjunction of a wh-element in syntax is not legitimate. On the other hand, wh-elements can adjoin to I' at LF.

projection while the approach taken by Kim (1990) explores the difference between languages with respect to the inherent properties of wh-words.

With respect to question (2), Rudin (1988) proposes that languages differ as to the level at which multiple adjunction to Spec of CP, and therefore multiple fronting, is allowed. In English for example, multiple adjunction to Spec of CP is not allowed at S-structure, in contrast with Bulgarian, in which multiple adjunction to Spec of CP is allowed. Her theory does not distinguish Polish-type languages from the English-type languages. Both disallow multiple adjunction to Spec of CP. Polish however does have multiple fronting, but not through multiple adjunction to Spec of CP.

In the chapters that follow, I address the questions (1)-(3) raised above. I suggest that both C^0 (in particular, questions particles in C^0) and inherent properties of wh-words contribute to the various differences exhibited across languages with respect to the formation of wh-questions.

1.1. A Brief Introduction to Mandarin Chinese

Throughout the whole thesis, I use Mandarin Chinese as a typical example of an "in-situ" language so called because wh-words in the language stay in-situ in wh-questions. I briefly review major properties of Mandarin Chinese here and discuss assumptions that I make regarding its structure (see Huang 1982, Li 1985, Cheng 1987 and Tang 1990 for detailed discussions of the structure of Mandarin Chinese).

Mandarin Chinese has SVO order at S-structure. The word order in a wh-question does not differ from its declarative counterpart:

(4) hufei mai-le yi-ben-shu
Hufei buy-ASP one-CL-book
'Hufei bought a book.'

(5) shei mai-le yi-ben-shu
who buy-ASP one-CL-book
'Who bought a book?'

(6) hufei mai-le sheme
Hufei buy-ASP what
'What did Hufei buy?'

Sentences such as (6) are typical examples showing that wh-words in Mandarin Chinese remain in-situ. Consider also embedded questions such as (7) in Mandarin Chinese:

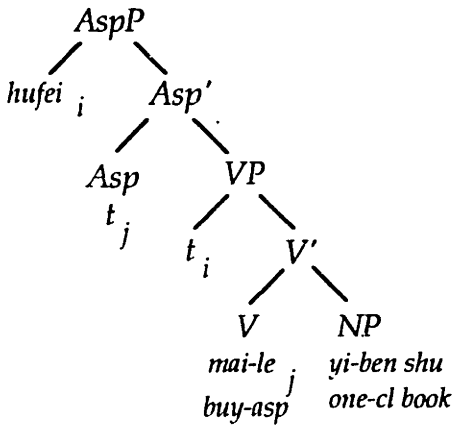
(7) qiaofong xiang-zhidao hufei mai-le sheme
Qiaofong want-know Hufei buy-asp what
'Qiaofong wonders what Hufei bought.'

Again, in (7), the wh-word in the embedded question stays in-situ at S-structure. In other words, wh-words in Mandarin Chinese are in-situ in both matrix and embedded questions.

Assuming the VP-internal subject Hypothesis (Hale 1980, Fukui and Speas 1985, Kitagawa 1985, Kuroda 1989, Koopman and Sportiche 1988 among others), sentences such as (3) have the structure in (8) (see Huang 1990 for arguments that subjects in Mandarin Chinese are base-generated in Spec of VP. I will discuss Huang's (1982) arguments briefly in Chapter 5).[4]

[4]See also Koopman and Sportiche (1988) for a proposal that subjects in Mandarin Chinese do not raise to Spec of IP.

(8)



I follow recent work of Pollock (1989) and Chomsky (1989), extending it to include the category Aspect and assuming that category heads an independent projection (Cheng 1989). Further, since there is no inflection in Mandarin Chinese, I assume that there is no INFL node in the language.[5] In (8), the subject NP *hufei* raises from Spec of VP to Spec of AspP. The Aspectual marker *-le* lowers to the verb at S-structure. As Cheng (1989) and Tang (1990) show, if the verb raises to Aspect, we would expect manner adverbs and benefactive PP's (which typically adjoin to VPs, see Li (1985) and Tang (1990)) to follow the verb. However, as (9) and (10) show, benefactive PP's and manner adverbs must precede the verb (example (10) is from Tang 1990):

(9) a. guojing manmande xie-le yi-feng xin
Guojing slowly write-asp one-cl letter
'Guojing slowly wrote a letter.'

b. *guojing xie-le manmande yi-feng xin
Guojing write-asp slowly one-cl letter

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[5]I do not think that INFL and Aspect are the same categories. Thus, in my usage, Aspect is not a substitute for INFL. I think that for languages that use both tense and aspect, tense and aspect may each head a distinct projection. See Laka (1988) for arguments supporting this view.

(10) a. ta ti wo mai-guo yi-ben shu
he for me buy-exp one-cl book
'He bought a book for me.'

b. *ta mai-guo ti wo yi-ben shu
he buy-asp for me one-cl book

Note that Aspectual markers such as *zai* do not lower. I suggest that Aspectual markers that are morphological affixes lower to the verb while the ones that are not affixes do not lower. Hence, we have sentences such as (11):

(11) a. guojing zai manmande xie nei-fong xin
Guojing ASP slowly write that-CL letter
'Guojing is writing that letter slowly.'

b. guojing zai ti wo mai yi-ben shu
Guojing ASP for me buy one-CL book
'Guojing is buying a book for me.'

There are two constructions in Mandarin Chinese which receive a lot of attention: topicalization and the *ba*-construction. (12) is a typical example of a sentence with a focus topic, and (13) is an example of the so-called aboutness topic:

(12) nei-ben shu, huangrong kan-wan-le
that-cl book Huangrong read-finish-asp
'That book, Huangrong finished reading.'

(13) yu, botong xihuan chi bigu
fish, Botong like eat pickerel
'As for fish, Botong likes to eat pickerel.'

The topic *nei-ben shu* 'that book' in (12) corresponds to the object of the verb in the sentence. On the other hand, the topic *yu* 'fish' in (13) does not correspond to any gap in the sentence. I will discuss topicalization further in Chapter 4.

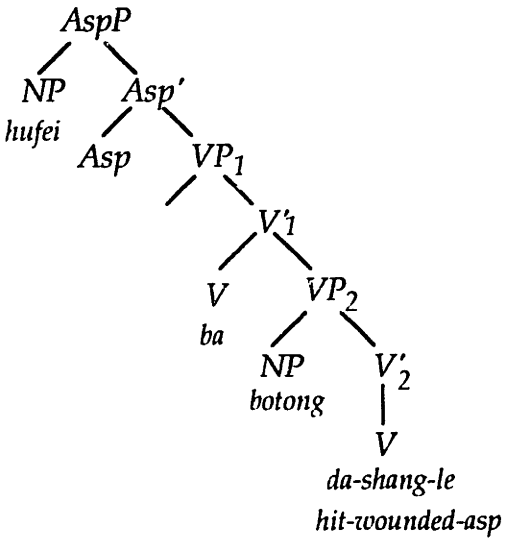
Lastly, the *ba*-construction is illustrated in (14b):

(14) a. hufei da-shang-le botong
Hufei hit-wounded-ASP Botong
'Hufei hit Botong and the latter got wounded.'

b. hufei ba botong da-shang-le
Hufei BA Botong hit-wounded-ASP
'Hufei hit Botong and the latter got wounded.'

In (14b), the object of the verb appears in a pre-verbal position and it is preceded by *ba*. *Ba* has been called a coverb, a preposition, a Case-marker (for restrictions on verbs which appear with *ba*, see Li and Thompson 1974, Huang 1982, 1989 and Cheng 1987). I follow Huang (1989) and assume that *ba* is a dummy Case-marker belong to the category V. (14b) has the structure in (15):

(15)



Given a structure such as (15), if *ba* is not inserted to Case-mark the object NP *botong*, the verb can raise and we will then have the sentence (14a).[6] I will return

[6]One question that arises given the structure in (15) is why the object appears in the Specifier position of a verb. One possible explanation is along the lines of

to topicalization and the *ba*-construction in Chapter 4. More details of the structure of Mandarin Chinese will be discussed in Chapter 4 and 5.

1.2. Outline of the thesis

In Chapter two, I explore a generalization which holds among languages which employ in-situ wh-words. Based on this generalization, I propose the Clausal Typing Hypothesis, which states that all clauses must be typed at S-structure. That is to say, each clause must be identified with one of the standard "sentence types", e.g. interrogative, declarative, and in some languages quotative, presumptive, etc. Languages with question particles can type a clause as a wh-question with a question particle. In contrast, in languages without question particles, a wh-word needs to undergo wh-movement to type a clause as a wh-question. Wh-movement thus also falls within the Last Resort Principle (Chomsky 1986, 1989). Further, based on the Principle of the Economy of Derivation (1989) and the Clausal Typing Hypothesis, I will argue that no language has the option alternating between the two methods of Clausal Typing. Predictions made by the Clausal Typing Hypothesis are discussed, and counterexamples to it will be discussed as well.

In Chapter three, I examine two types of languages which appear to be apparent counterexamples to the proposal made in Chapter two: optional fronting languages and multiple fronting languages. The optional fronting languages are counterexamples to the Clausal Typing Hypothesis because an optional fronting language, if it exists, is one which alternates between the two

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Marantz (1990). Marantz (1990) proposes that affected objects appear in the Specifier positions of VPs. As Cheng (1987) among others points out, the object NP associated with *ba* has to be an affected object. Thus, if affected objects necessarily appear in the Specifier position, (15) is simply an example of it.

ways of typing a clause as a wh-question. The multiple fronting languages are counterexamples to the Hypothesis, because movement of one wh-word is sufficient to type a clause as a wh-question, rendering mysterious the movement of more than one. I argue in this Chapter that the apparent fronting of a wh-word in the optional fronting languages does not involve syntactic wh-movement of a wh-word. I show that sentences with an apparent fronted wh-word have striking similarities with clefts and argue that the apparent fronted wh-word is base-generated as the subject of a cleft construction and no actual movement of the wh-word is involved. The optional fronting languages are thus simply in-situ languages.

In section 3.2, I examine the multiple fronting languages in detail. I show that in all multiple fronting languages, the wh-words are morphologically complex. I explore the internal structure of wh-words and propose that the multiple fronting nature of wh-words in these languages is a result of a licensing requirement of the wh-words. Hence, the wh-words front for reasons of licensing and not for the purposes of clause typing.

In the course of the discussion on the internal structure of wh-words in multiple fronting languages, I compare wh-words in these languages with languages such as Mandarin Chinese and Japanese. Chapter 4 is devoted to a discussion of the interpretation of wh-words in Mandarin Chinese. I extend Nishigauchi's analysis of wh-words in Japanese and propose that wh-words in Mandarin Chinese are indefinite NPs without inherent quantificational force. Nonetheless, wh-words in Mandarin Chinese differ from wh-words in Japanese in that they are polarity items, which, as usual in the case of such elements, need to be in some "triggering environment". Furthermore, I discuss indefinite NPs in Mandarin Chinese and in particular, the lack of indefinite subjects in that language.

Chapter 5 discusses LF operations: quantifier raising and LF wh-movement. I discuss the interactions between one quantifier and another, as well as interactions between a quantifier and a wh-word. I examine the lack of scopal ambiguities in Mandarin Chinese. I show that the proposal for indefinite NPs discussed in Chapter four accounts for the lack of scopal ambiguities in sentences with a quantifier and an indefinite NP.

Lastly, I discuss whether or not in-situ wh-words undergo LF wh-movement. I discuss Huang's (1982) and Pesetsky's (1987) arguments for LF wh-movement as well as the argument given in Aoun and Li (1990b) against LF wh-movement. I argue that the evidence given in Aoun and Li (1990b) falls within the rubric of D(iscourse)-linking. Given that D-linked wh-phrases, as argued by Pesetsky (1987), do not undergo LF wh-movement, Aoun and Li's argument does not show that all wh-phrases fail to undergo LF wh-movement. In addition, I discuss the landing site of LF wh-words. In particular, I argue against Kim's (1990) and Mahajan's (1990) proposals that wh-words adjoin to IP at LF and discuss problems with their analyses.

Chapter 2

Wh-movement and Clausal Typing

2.0. Introduction

In this chapter, I address the question of why languages differ with respect to syntactic wh-movement. That is, why is it the case that some languages, like English, have syntactic wh-movement while some, like Mandarin Chinese, do not. I propose that syntactic wh-movement serves to "type" a sentence as interrogative (and more specifically, a wh-question). Languages which do not have syntactic wh-movement have another way to "type" a clause as interrogative, namely, by the use of question particles. Furthermore, assuming the Principle of Economy of Derivation (Chomsky 1989), I suggest that no language uses both ways to 'type' a wh-question.[1]

I will take as a point of departure Baker's (1970) work on wh-movement. Baker states the following hypothesis regarding whether a language has a wh-movement rule or not:

(1) Only languages which position their particles for *yes-no* questions in clause-initial position permit a movement rule for questioned constituents. (Baker 1970, p.207)

Baker (1970) notes that Greenberg's (1966) data suggest a close relationship between the position of particles in yes-no questions (henceforth yes-no particles

[1]Some apparent counterexamples (e.g. languages that appear to have both particles and fronting of wh-words) will be discussed shortly below and in more details in Chapter 3.

and the position of interrogative words. He explores this relationship and argues that the position of yes-no particles predicts whether or not a language has a wh-movement rule.

The relationship that Baker notes between yes-no particles and wh-movement is an important one. However, given languages such as Hopi, Bahasa Indonesia and Hindi, which have initial yes-no particles but no syntactic wh-movement,[2] it appears that the position of yes-no particles does not predict whether or not a language has syntactic wh-movement.[3] Nonetheless, I will further explore the relationship between yes-no particles and syntactic wh-movement, though from a different angle. In particular, I suggest that the occurrence of a wh-word in a clause-initial position is not a good diagnostic of whether or not a language has syntactic wh-movement since wh-words can be in clause-initial position as a result of scrambling or some other operation. For instance, as we will see in Chapter 3, in the so-called "optional fronting languages", a wh-word can appear either in clause-initial position or in an argument position (in-situ). The question which arises with these languages is whether they are languages with syntactic wh-movement or not.

I suggest that if a language allows the wh-word in a wh-question to stay in-situ, the language is a language without syntactic wh-movement. I will call such a language an "in-situ language".[4] Note that this does not include wh-in-

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[2]See Jeanne (1978), Saddy (1991) and Mahajan (1990) respectively for Hopi, Bahasa Indonesia and Hindi facts. I will also discuss Bahasa Indonesia in Chapter 3.

[3]Note however that since Baker's hypothesis as stated in (1) only gives predictions regarding languages without clause-initial yes-no particles, languages like Hopi and Hindi are consistent with his claim.

[4]French is a counterexample to this. However, we only find in-situ wh-words in matrix questions in French, in contrast with languages like Mandarin Chinese and Japanese, which allow in-situ wh-words even in embedded questions. Thus,

situ in multiple questions since almost all languages allow in-situ wh-words in multiple questions (when one wh-word is already fronted).

Hence, I examine the relationship between the availability of yes-no particles and the possibility of leaving wh-words in-situ in wh-questions. I argue below that a language either allows wh-words to stay in situ or has syntactic wh-movement, and that no language alternates between the use of in-situ wh-words and syntactic wh-movement.

It seems to me striking that the use of in-situ wh-words correlates with the particular manner in which yes-no questions are formed. It is possible to show that in-situ languages invariably possess a way of forming yes-no questions by means of some overt element (particle, special inflection or agreement), or morpho-phonological process (local tonal accent), generally occurring at one or other periphery of the clause. This special device is often, but not always, used in wh-questions as well.[5]

The chart set out in (2) provides a list of particles which appear in yes-no questions and in wh-questions in some in-situ languages:[6]

French is not an "in-situ" language. I don't have an explanation as to why French allows wh-words to stay in-situ in matrix questions.

[5]Janet Pierrehumbert (p.c.) points out to me that the effect of a tonal accent may be simply intonation since it is hard to tell them apart. However, Ken Hale (p.c.) notes that in Winnebago, a special tonal accent is used in both yes-no questions and wh-questions, and therefore unlikely to be simple intonation, in the usually understood sense. Moreover, the tonal accent is confined to the domain defined by the last two moras of the clause and not to the clause as a whole, as usually the case for question intonation in languages which use that device in yes-no questions.

[6]Note that in Mandarin and Cantonese, I have put down "A-not-A" in the slot for yes-no questions. (i) is an example of an A-not-A question in Mandarin:

(i) hufei hui-bu-hui lai
Hufei will-not-will-come
'Will Hufei come?'

(2) Languages with in-situ wh-words

Language	yes/no question	wh-question
Hindi	kyaa	ø
Palauan	special agreement	special agreement
Iraqi Arabic	hal	ø
Egyptian Arabic	-ʃ/pronouns	ø
Gulf Arabic	ʔidha/lo	ø
Mandarin	ma/A-not-A	ne/ø
Cantonese	A-not-A	a
Navajo	daʔ...(-ísh)	-lá/-sh
Papago	n-	ø
Hopi	ya	ya
Japanese[7]	no-(ka)	ka/(no)-ka
Korean	ci	ci
Indonesian	apa(kah)	ø
Swahili	je	ø
Amharic	wey	ø
Lardil	kara	ø
Turkish	-mu	ø

One crucial characteristic of these particles and special markings is that they can all be used in matrix yes-no questions. Some languages use the same particle in both yes-no questions and wh-questions (for instance, Hopi, Japanese, and Korean) and some languages have an overt particle only in yes-no questions. I will call the particles used in wh-questions "wh-particles".

I state the generalization as follows:

(3) In-situ languages have special markings in yes-no questions.

See Huang (1982, 1989) for a detailed analysis of A-not-A questions.

[7]In Japanese, *no* is used preferably is matrix questions and *ka* in embedded questions, though they can co-occur in both matrix and embedded questions.

The question which arises here, given (3), is whether (4) also holds:

(4) Languages with special markings in yes-no questions are in-situ languages.

Based on the languages that I examine, (4) also holds. In the subsections that follow, I first propose to account for (3) and (4). We will then discuss the predictions of this proposal as well as some apparent counterexamples.

Note that a language with the properties indicated in (5) is a counter-example to (4):

(5) a. The language has a yes-no particle and wh-in-situ is not allowed; and
b. The language does not have multiple fronting of wh-words; and
c. The language allows multiple wh-questions.

Let's consider (5a)-(5c) in turn:

(5a): If a language has a yes-no particle (i.e. a yes-no marker in C^0 which can occur in the matrix to be discussed shortly below), and does not have wh-in-situ, it literally falsifies (4). However, two other factors should be taken into consideration as well, namely, those in (5b) and (5c).

(5b): As we will see in Chapter 3, wh-words in some languages need to be fronted for a licensing requirement on wh-words, which is independent of typical wh-movement of wh-words (I will discuss the motivation of typical wh-movement in the next section). Hence, if a language has a yes-no particle and all the wh-words have to be fronted in multiple questions, then the language is not a counterexample to (4) because movement of the wh-words is obscured by the licensing requirement.

(5c): Lastly, the language has to be a language with multiple questions. If the language does not allow multiple questions (like Italian and Irish), then it cannot be shown to be a counterexample to (4) because we cannot tell whether the wh-words in the language are subject to the licensing requirement alluded to above. Thus, the wh-words in the language can still be fronted for licensing purposes which is independent of the motivation for wh-movement.[8]

In sum, if a language has all the properties indicated in (5), then it is a counterexample to the generalization stated in (4).

2.1. The Clausal Typing Hypothesis

Given the generalizations stated in (3) and (4), consider now how we can account for them. The immediate question raised given (3) and (4) is why the formation of yes-no questions is connected with the formation of wh-questions. In order to answer this question, we need to make a certain hypothesis regarding wh-particles. In particular, in the languages with yes-no particles, when we do not see an overt wh-particle, a non-overt one is present. Consider the list provided in (2) again. We see that some languages have overt yes-no particles and overt wh-particles. On the other hand, in some languages, for instance Mandarin Chinese, the yes-no particle is overt while the overt wh-particle is used only optionally. I propose that in the cases when the overt wh-particle is not used in Mandarin Chinese, a non-overt counterpart (indicated as ø) is used. That is to say, in Mandarin Chinese, the wh-particle has an overt and a non-overt

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[8]It is not an absolutely true that such a language cannot be shown as a counter-example to (4) because the analysis in Chapter 3 is developed based on certain characteristics of wh-words. Thus, if the language lacks such characteristics, which will be discussed in section 3.2., then it is most likely the case that such a language is a counter-example to (4).

form. In addition, we see in (2) that some languages have only overt yes-no particles. There is never any overt marking in wh-questions. I extend the proposal on wh-particles in Mandarin Chinese to these languages. I propose that in these languages, even though we do not see a wh-particle in wh-questions, a non-overt one is present. Hence, the languages which have overt yes-no particles also have wh-particles, be it overt or non-overt. I will discuss in section 2.3.1 that languages with ambiguous question words, i.e. question words which have interrogative, existential and universal interpretations, require the presence of overt wh-particles while languages with non-ambiguous question words do not.

Let us turn now the question raised above regarding the connection between yes-no questions and wh-questions. We have seen that a language can have the same particle in both yes-no questions and wh-questions (e.g. Hopi and Japanese). And assuming that languages like Mandarin Chinese have non-overt wh-particles, we have also seen that a language can have an overt yes-no particle, together with wh-particles which can be either overt or non-overt (e.g. Mandarin). And we have also seen that a language can have an overt yes-no particle and a consistently non-overt wh-particle (e.g. Amharic). However, we do not find a language which uses an overt wh-particle and which lacks an overt yes-no particle. Hence, it appears to be the case that if a language has an overt particle, we can find it in yes-no questions. This suggests that there is an implicational relationship between yes-no particles and wh-particles: the presence of overt yes-no particles in a given language implies the presence of wh-particles (overt or non-overt). This implicational relationship holds assuming that there are non-overt wh-particles, as I have proposed. We can thus restate the generalizations in (3) and (4) as follows:

(6) In-situ languages have wh-particles. Languages with wh-particles are in-situ languages.

Let us now turn to the problem of accounting for this generalization. That is to say, what is the nature of connection between in-situ wh-questions and the existence in a particular language of wh-particles. Let us begin by considering the following sentence in Mandarin Chinese:

(7) hufei mai-le na-yi-ben-shu (*ne*)
Hufei buy-ASP which-one-CL-book Q_{WH}
'Which book did Hufei buy?'

In sentences like (7), we have an in-situ wh-phrase as well as a wh-particle (optional as indicated). The question that arises here is what the function of the particle is.[9] Leaving aside languages with optional fronting of wh-words for the moment, it appears that a language with a wh-particle is a language without syntactic wh-movement. Thus, it appears that the presence of a wh-particle serves the same purpose as syntactic wh-movement.

Following Chomsky and Lasnik (1977), I assume that the clause type of a sentence must be identified.[10] In other words, every clause must be typed. I propose that particles like *ne* are in fact present to indicate that the clause type of the sentence is a wh-question. Let's call this kind of particles Typing Particles.[11] They serve to indicate clause types of sentences. Now the next question is where

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[9]I will show in section 2.3.1 that the particle *ne*, as well as particles in some other languages also have the function of contributing interrogative force to certain types of wh-words. However, in the case of (7), the particle does not contribute interrogative force to the wh-phrase *na-yi-ben-shu* 'which book'. See Chapter 4.1 for details.

[10]Chomsky and Lasnik (1977) assume that [±WH] must be indicated. They state the intuitive content of the assumption as follows: "each clause must be identified as declarative ... or interrogative (a direct or indirect question)" (p.445).

[11]See also Grimshaw (1991). She calls sentence particles in Korean 'type particles'.

Typing Particles like *ne* are generated. Following Bach (1970) and Bresnan (1972) who assume that particles like *-ka* in Japanese occur in the complementizer position (=C^0), I assume that Typing Particles are generated in C^0.[12] In other words, in languages with in-situ wh-words, a wh-question always has a Typing Particle in the C^0 position to type the sentence as a wh-question, keeping in mind that particles in some languages can be null.

Now how do languages without particles "type" a sentence as a wh-question? I propose that in these languages, the typing of a clause as a wh-question is done by wh-movement. Consider now how wh-movement actually indicates clause types. First, let's look at the Typing Particles again. I assume that a wh-particle, which is in C^0, has some feature which indicates that the clause is a wh-question. Let's say that the feature is [+wh]. In languages with wh-movement, the same feature should be in C^0 after wh-movement has taken place. Assuming that a wh-word moves to Spec of C^0 and that Spec-head agreement takes place whenever the Spec position of an X^0 is filled (Chomsky 1986), C^0 acquires the [+wh] feature from the wh-word in its Spec position. In other words, movement of a wh-word into Spec of C^0 ensures that the C^0 has the [+wh] feature. Note that this implies that in languages like English, there is no [+wh] Q-morpheme base-generated in C^0. In section 2.5, I will discuss traditional arguments for the Q-morpheme as well as arguments which show that there is no need to have a Q-morpheme in English.

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[12]Nishigauchi (1990) among others also assumes that *-ka* is generated in C^0 though Kim (1990) argues that it is in INFL. Moreover, C. T.-C. Tang (1989) posits *ma*, the yes-no particle in Mandarin, and *ne*, the wh-particle in Mandarin, to be in C^0.

Hence, we have two ways to type a clause as a wh-question: 1) by a wh-particle and 2) by wh-movement. Let us now consider the generalization in (6), repeated below.

(6) In-situ languages have wh-particles. Languages with wh-particles are in-situ languages.

The question which arises here is whether having in-situ wh-words excludes the possibility of having syntactic wh-movement of the wh-words. Data from Mandarin Chinese and Japanese, among other languages, suggest that the answer is yes. That is, a language with in-situ wh-words is a language without syntactic wh-movement. Now what prevents languages with in-situ wh-words from having syntactic wh-movement?

The question raised above can be divided into three questions, as stated in (8):

(8) a. Given the presence of a wh-particle, what prevents the wh-word from moving to Spec of C^0?

b. Why is it the case that a language cannot use a question particle optionally? That is, what determines that a languages with question particles must use them in questions?

c. Assuming LF wh-movement of in-situ wh-words (Aoun, Hornstein and Sportiche 1981 and Huang 1982 among others, I will discuss LF wh-movement in Chapter 5), why can't an in-situ wh-word move at S-structure, given that they eventually have to move at LF?

Let's consider each question in turn.

Question (8a): To answer question (8a), we need to consider again where we find wh-movement. As we have noted earlier, it appears that if a language does not have a wh-particle, wh-words in the language have to undergo syntactic wh-

movement. On the other hand, if a language has a wh-particle, the language does not and cannot have syntactic wh-movement. Thus wh-movement here has a "last resort" and "least effort" flavor (Chomsky 1986, 1989). Assuming that every clause needs to be typed at S-structure (see section 2.2), I have proposed that a wh-particle types a clause as a wh-question. For languages without a wh-particle, movement of a wh-word serves to type a clause. Thus, wh-movement is a "last resort" to type a wh-question. On the other hand, given the presence of a wh-particle, wh-movement will not and cannot take place. I suggest here that the Principle of Economy of Derivation (Chomsky 1989), which incorporates both the "last resort" and "least effort" characteristics of movement, blocks syntactic wh-movement when there is a wh-particle present to type a clause.

Question (8b): The descriptive generalization is that if a language has a wh-particle, the language always uses it. There are two possible ways to account for this generalization. I will discuss them below. However, the exact answer to the question is still left open:

(I) The Earliness Principle (Pesetsky 1989): Satisfy filters as early as possible on the hierarchy of levels: (DS>) SS > LF > LP (Language-Particular).[13] In this view, Clausal Typing must be satisfied as early as possible. This predicts that the presence of a wh-particle will necessarily take place in languages with question particles since lexical insertion takes place before S-structure. If question particles are used, Clausal Typing will be satisfied at D-structure. In contrast, if syntactic wh-movement takes place, Clausal Typing is satisfied at S-

[13]Pesetsky (1989) proposes that *do*-insertion is not only a special type of rule, but also a rule that applies at a particular level, namely at the level of LP-structure (a level that is "set aside for Language-Particular insertion rules" (p.7)).

satisfied at S-structure. Given Earliness, languages with particles will use them to type a clause in order to satisfy The Earliness Principle.

(II) The Principle of Economy of Derivation (Chomsky 1989): Let's assume that an X^0 has to be filled (for instance, a C^0 is filled with an overt wh-particle) in order to project a phrasal category and that this is costless, in contrast with Move α, which is not costless. Then by the Principle of Economy of Derivation, languages with wh-particles will use them since it is costless in comparison to movement of a wh-word.

Question (8c): To answer this question, we need to consider why LF wh-movement takes place. I have proposed that wh-movement at S-structure is to satisfy Clausal Typing and for all languages Clausal Typing is satisfied at S-structure. Thus, LF wh-movement is not for Clausal Typing purposes. It has been proposed that LF wh-movement is for scope, selection and absorption purposes (see Aoun, Hornstein and Sportiche 1981, Higginbotham and May 1981 and Huang 1982 among others). I suggest that since LF wh-movement is for reasons different from Clausal Typing, the reason that in-situ wh-words do not move at S-structure for scope, selection and absorption is due to the Last Resort Principle (Chomsky 1986, 1989), since these conditions do not have to be satisfied until LF. Thus, given Last Resort Principle, movement of wh-words to satisfy scope, selection and absorption will take place at LF.

In short, the proposal above can be summarized as in (9):

(9) Clausal Typing Hypothesis
Every clause needs to be typed. In the case of typing a wh-question, either a wh-particle in C^0 is used or else fronting of a wh-word to the Spec of C^0 is used, thereby typing a clause through C^0 by Spec-head agreement.

Given this analysis, an in-situ wh-word in a multiple question such as (10) in English is just like an in-situ wh-word in Mandarin Chinese, as in (11):

(10) $[_{CP}$ Who$_i$ $[_{IP}$ t_i bought what]]?

(11) qiaofong mai-le sheme ne
Qiaofong buy-ASP what Q_{WH}
'What did Qiaofong buy?'

The wh-word *who* in English moves at S-structure to Spec of C^0 to type the clause as an interrogative. The wh-word *what* does not and cannot move at S-structure because the clause is already typed. Hence, the in-situ wh-word in (10) is just like the in-situ wh-word *sheme* 'what' in the Mandarin Chinese example (11), which stays in-situ because a wh-particle *ne* already types the sentence as a interrogative.[14]

2.1.1. Clausal Typing and the Vacuous Movement Hypothesis

Consider now the implication that the Clausal Typing Hypothesis has with respect to the Vacuous Movement Hypothesis (VMH). The VMH originally proposed in George (1980) states that wh-movement takes place except for subjects. In the examples given in (12), it is clear that (12a) involves syntactic wh-movement while (12b) is consistent with the assumption that movement does not take place.

(12) a. Who did Marcia see?
b. Who saw Marcia?

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[14]A question that arises here is why there are some languages which do not allow multiple questions. One such language is Italian. I do not have an explanation to this. See Calabrese (1984) for an account which derives the lack of multiple questions in Italian from the lack of multiple focus.

However, Chomsky (1986a) argues that only a modified version of the VMH can be adopted:

(13) Vacuous movement is not obligatory at S-structure.

Chomsky (1986a) shows that the adjunct and argument asymmetry we have in sentences like (14a) and (14b) can be accounted for if we assume that subject wh-words move at LF and that LF wh-movement is needed for scope, selection and absorption purposes.

(14) a. what do you wonder [$_{CP}$ who saw t]
b. *how do you wonder [$_{CP}$ who fixed the car t]

In (14a), the object wh-word *what* can move to the specifier of the embedded CP before it moves to the matrix CP. Since γ-marking of an argument trace takes place at S-structure, the trace of *what* can be marked [+γ] at S-structure. In contrast, in (14b), the trace of the adjunct *how* is not γ-marked until LF. If the intermediate trace of *how* remains in the embedded CP at LF, then after the movement of *who* at LF, the trace of *who* will not be properly governed. On the other hand, if the intermediate trace of *how* is deleted, the trace of *how* will not be properly governed. Thus, by assuming that the subject wh-word moves at LF, the difference between (14a) and (14b) can be explained.

Now given the Clausal Typing Hypothesis, which requires that every clause be typed at S-structure, the question which arises is whether the VMH as stated in (13) can be maintained. Consider an embedded question such as (15):

(15) I wonder who murdered Edward.

The Clausal Typing Hypothesis requires that the embedded CP be typed at S-structure. Thus, in (15), the embedded C^0 has to bear the [+wh] feature. The only way for the embedded C^0 to acquire the [+wh] feature is through the wh-word *who*. If this subject wh-word does not move at S-structure, the embedded C^0 will not have the [+wh] feature, assuming that C^0 can only acquire the [+wh] feature through Spec-head agreement. Hence, given the Clausal Typing Hypothesis, the subject wh-word has to move at S-structure. The VMH then cannot be maintained.

The ungrammaticality of (14b) will naturally follow and we predict (14a) to be marginal, given that it violates subjacency, and many native speakers do find (14a) to be mildly ill-formed.

2.2. Clausal Typing vs. selection

So far we have assumed that Clausal Typing is different from selection. Let us now examine whether or not syntactic wh-movement is to satisfy selection.

Consider first the issue of selection (leaving aside subcategorization of a verb for a certain category). Grimshaw (1979) provides convincing arguments that selection is semantic.[15] For instance, verbs like *ask* and *wonder* select a complement of the semantic type "interrogative". Consider the sentences in (16).

(16) a. I asked what time it is.
b. I asked the time.
c. I wonder what time it is.
d. I wonder about the time.

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[15]See Abney (1985) for counter-arguments.

Verbs like *ask* and *wonder* obligatorily select an interrogative complement. The complement, as we can see in (16), can be either a sentence, an NP, or a PP.[16] Thus semantic selection of a verb is independent of the categorial selection of a verb.[17]

Now consider at what level semantic selection is satisfied. I follow Pesetsky (1982) and Chomsky (1986) in assuming that semantic selection is satisfied at LF, since it is selection for a particular semantic type rather than selection for a categorial type. Let's turn to syntactic wh-movement. If wh-movement is to satisfy selection, it will be to satisfy semantic selection. Then it should be possible for a wh-word to move at LF to satisfy selection. For instance, in English, if wh-movement is to satisfy the selectional properties of a verb (leaving aside the question of matrix questions for the moment), then why do wh-words in English have to move at S-structure? If wh-movement is to satisfy selection, English should be just like Mandarin Chinese and Japanese.

Sentences such as (17) and (18) further show that wh-movement is not to satisfy selection:

(17) Who Ms Tiger despises is obvious.

(18) It is unclear why Mr. Paper dislikes Ms Tiger.

In (17), the sentential subject contains an indirect question and in (18), the indirect question is an extraposed clause. In neither of these two cases is the question clause selected. Thus, if wh-movement is to satisfy selection (leaving

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[16]The sentences like (16b) and (16d) are called "concealed questions". See Baker (1968).

[17]Pesetsky (1982) proposes that categorial selection can be reduced to Case-assignment.

aside the question of semantic selection), the movement of the wh-word in (17) and (18) cannot be explained.

Let's now turn to Clausal Typing. I have proposed that syntactic wh-movement is to type a sentence as a wh-question. Based on languages with syntactic wh-movement, it is clear that to ensure that wh-movement takes place in these languages at S-structure, Clausal Typing must take place at S-structure and not at LF, though at this point, it is not clear what the S-structure nature of Clausal Typing follows from.[18] I will only point out here that there are other conditions that are only in effect at S-structure, for instance, the licensing of a parasitic gap.

2.3. Properties of a Typing Particle

In the above discussion, we have seen that with the presence of certain particles, which I call "Typing Particles", no syntactic wh-movement takes place. The question which arises with Typing Particles is whether there are particles which are not Typing Particles? I will summarize here the properties of a Typing Particle and in the next subsection, I discuss another function of Typing Particles.

In the discussion above, I assume that particles are generated in C^0. Thus, in this analysis they are necessarily X^0s. Here I leave open the possibility of having a particle in INFL (I^0) which subsequently moves to C^0. With respect to Typing particles, I have noted earlier that the list of Typing Particles in (2) can all occur in matrix questions. The partial list in (19) shows the distribution of the Typing Particles in matrix and embedded questions:

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[18]Intuitively speaking, if there is such a thing as Clausal Typing, it is needed to provide information for phrasal phonological processes and not to interpretation in particular.

(19)

	yes-no questions		wh-questions	
Language	matrix	embedded	matrix	embedded
Egyptian	pronoun	ʔiza/law	ø	ø
Navajo	daʔ...(-ísh)	-ísh	-lá/-sh	-lá/-sh
Mandarin	ma/A~A	A~A	ne/ø	ø
Japanese	-no-(ka)	-no-(ka)	-ka	-ka
Korean	ci	ci	ci	ci
Indonesian	apa(kah)	apa(kah)	ø	ø

From the list in (19), it is clear that if a language has a Typing Particle, be it a yes-no particle or a wh-particle, it will always be able to appear in matrix clauses, whether or not it can also appear in embedded clauses.

One question which arises here is why Typing Particle have a "matrix clause" property, i.e. why it is the case that if a language has a Typing Particle, it will always be able to appear in matrix clauses. I suggest that a possible answer to this question is related to the fact that the presence of Typing Particles is not constrained by selection. As we have pointed out earlier, we find syntactic wh-movement and Typing Particles in clauses which are not selected (e.g. sentential subjects and extraposed clauses). And matrix clauses fall within the type of clauses that are not selected.[19] Thus, the presence of a particle in matrix clauses serves to indicate that the particle is not just any particle, it is a Typing Particle.

[19]This is in contrast with Emonds (1976) among others who proposes that matrix clauses are indeed selected.

2.3.1. Typing Particles and Interrogative force

Overt wh-particles also serve another function: they determine interrogative force for certain kinds of wh-phrases. This is true in languages whose wh-words function as indefinites as well as interrogatives. The latter function is signaled by the presence of a wh-particle. I will assume here following Nishigauchi (1990) that the wh-words in these languages lack inherent quantificational force.

The relationship between wh-words and indefinites will be discussed further in Chapters 3 and 4. In this chapter, I will only briefly discuss it in connection with the property of Typing Particles. Nishigauchi (1990) points out that Japanese wh-words can be interpreted as interrogative, existential and universal, as (20) shows.

(20) a. Dare-ga ki-masu-ka
who N come-Q
'Who's coming?'
b. Dare-ga ki-te mo, boku-wa aw-a-nai
who-N come Q I-T meet-not
'For all x, if x comes, I would not meet (x).'
c. Dare-kara-ka henna tegami-ga todoi-ta
who from strange letter-N arrived
'A strange letter came from god knows who (someone).'

In (20a), the wh-word *dare* is interpreted as an interrogative word 'who'. In (20b), it is interpreted as a universal. In (20c), it is interpreted as an existential. Hence, if we look at the word *dare* itself, there is nothing to indicate whether it should be interpreted as an interrogative, a universal or an existential. Nishigauchi (1990) proposes that the wh-words in Japanese do not have inherent quantificational force. Their quantificational force is determined by some other element in the sentence. In a wh-question, the interrogative reading of a wh-word is

determined by the particle *-ka*. I will discuss Nishigauchi's proposal further in Chapter 3.

Assuming Nishigauchi's analysis of wh-words in Japanese, the particle *-ka* not only types the clause as an interrogative, it also contributes quantificational force to the wh-word. Now we can consider the list in (2) again. In the languages which allow a non-overt wh-particle, the wh-words are never ambiguous; they are always interpreted as interrogative (e.g. Hindi, Bahasa Indonesia and Turkish among others). On the other hand, languages which have ambiguous wh-words always have an overt wh-particle (e.g. Japanese, Korean and Hopi among others). Hence, the presence of an overt wh-particle has a functional reason: to resolve ambiguity. The distribution of the overt wh-particle in Mandarin Chinese thus raises a question: Mandarin Chinese wh-words are also ambiguous but why is it the case that the overt wh-particle is only optional? I discuss the interpretation of in-situ wh-words in Mandarin Chinese in Chapter 4 where I will also address this question.

2.4. Predictions

Given the Clausal Typing Hypothesis, the Principle of Economy of Derivation makes the following predictions:

I. No language has yes-no particles (and thus wh-particles) and also syntactic wh-movement.

II. No language has the option of using either a wh-particle or syntactic wh-movement of wh-words to type a sentence as a wh-question.

III. No language fronts more than one wh-word for Clausal Typing.

Let us discuss these predictions one by one.

Prediction I: No language has yes-no particles (and thus wh-particles) and also syntactic wh-movement.

We have discussed this prediction earlier. To recapitulate briefly, under the Clausal Typing Hypothesis, the presence of yes-no particles imply the presence of wh-particles. If a language has a wh-particle, the wh-particle serves to type a clause as a wh-question. The wh-words are then allowed to stay in-situ at S-structure. The Principle of the Economy of Derivation rules out syntactic wh-movement of a wh-word in this case.

There are two types of potential counterexamples: (a) English: English has *whether* and *if* which have been considered to be yes-no particles (Baker 1970) and English has syntactic wh-movement; (b) Polish: Polish has a yes-no marker *czy*, which appears in both matrix and embedded yes-no questions, and Polish has syntactic wh-movement.[20] I discuss both English *whether* and *if* and Polish *czy* in section 2.6.

Prediction II: No language has the option of using either a wh-particle or syntactic wh-movement of wh-words to type a sentence as a wh-question.

As I have discussed in 2.1, we have a descriptive generalization: if a language has a wh-particle, the language uses it. I also discussed how the Principle of Economy of Derivation can account for this generalization. And given the Principle of Economy of Derivation, we expect that there are no optional movement languages. That is, there should be no language which either leaves a wh-word in-situ (thus using a particle to type the sentence) or move a wh-word at S-structure.

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[20]Polish not only has syntactic wh-movement, it is a language with multiple fronting of wh-words. See Chapter 3.2 for a discussion on the Polish-type languages.

However, there are languages which appear to have an option of either leaving a wh-word in situ or having it in a clause-initial position. Egyptian Arabic, Bahasa Indonesia and Palauan are examples of this type of so-called "optional movement languages". I will show in Chapter 3 that there is no fronting involved when a wh-word appears in a clause-initial position in these languages. Instead, sentences with a clause-initial wh-word are cleft construction with a base-generated wh-word as the subject of the clefts. Hence, these languages are not counter-examples to prediction II.

Prediction III: No language fronts more than one wh-word for Clausal Typing.

Since syntactic wh-movement is to type a clause as a wh-question, movement of one wh-word to the Spec of C^0 is sufficient. Thus, there should not be movement of more than one wh-word to Spec of C^0.

However, there are the so-called "multiple fronting languages" such as Polish and Bulgarian, which require that all wh-words be fronted. They thus appear to contradict this prediction. However, I will show in Chapter 3 that though it is true that all wh-words in these languages undergo fronting, they do not front to type a clause. Instead, the fronting is necessary to license the interrogative reading of the wh-words.

Lastly, I would like to point out that the Clausal Typing Hypothesis does not offer predictions with respect to other types of A-bar movement, for instance, relativization. That is, though Clausal Typing explains A-bar movement in forming a question, it does not have any bearing on A-bar movements such as relativization.

2.5. The Q-morpheme

As pointed out earlier, the Clausal Typing Hypothesis crucially assumes that in languages like English, there is no Q-morpheme or [+wh] feature base-generated in COMP or C^0. However, the Q-morpheme or the [+wh] feature has been assumed in most of the works on wh-movement (Chomsky and Lasnik 1977, Huang 1982, Lasnik and Saito 1984 among others). In this section, I first review the arguments for the existence of a Q-morpheme in English. I discuss Katz and Postal's (1964) motivation for positing a Q-morpheme as well as the arguments discussed in Baker (1970) and Bresnan (1972). I then review the arguments in Grimshaw (1977) showing that given the assumption that D-structure is not the level for semantic interpretation, there is no need to posit a Q-morpheme in English.

2.5.1. Katz and Postal (1964)

Katz and Postal's (1964) motivation of a Q-morpheme centers around the claim that transformations do not change meaning. However, sentences such as (21) appear to be counterexamples. (21) is derived from its declarative counterpart with a transformation which fronts wh-words. It is clear that (21) and its declarative counterpart do not mean the same thing.[21] Thus, they postulate a Q-morpheme in sentences such as (21), on a par with their imperative and negative morphemes which they also postulate for English sentences.

(21) who did Bill see?

By postulating a Q-morpheme in questions, declaratives and questions differ at D-structure and thus sentences like (21) are no longer counterexamples.

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[21]Note that for Katz and Postal (1964), a wh-word such as *who* consists of [wh+some/a] and a pro-form *one*.

Furthermore, they maintain that yes-no questions have the same Q-morpheme that they posit in wh-questions. The way that the two types of questions are differentiated is by the wh-feature on the wh-words.[22]

2.5.2. Baker (1970) and Bresnan (1972)

Baker (1970) proposes to treat indirect questions on a par with direct questions. In particular, the Q-morpheme should be assumed in indirect questions as well to distinguish between (22) and (23) (=Baker's (60) and (61)):

(22) We discovered that the police know who Clyde shot.

(23) We discovered who the police know that Clyde shot.

Baker points out that (22) and (23) differ in meaning and the only thing that distinguishes these two sentences is the position in which the Q-morpheme is generated. Hence, for Baker, (22) and (23) have the corresponding D-structures in (24) and (25):

(24) [we discovered [that the police know [Q Clyde shot who]]]

(25) [we discovered [Q the police know [that Clyde shot who]]]

Baker (1970) further argues for the existence of Q by claiming that English *if* and *whether*, as well as other words and particles in other languages, are lexical realization of the Q-morpheme. For Baker (1970), wh-movement of a wh-word can be either movement to a position adjacent to Q or movement to replace the Q-morpheme, as proposed by Jacobs and Rosenbaum (1968).

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[22]In fact they claim that yes-no questions are a particular type of wh-questions. We will discuss in 2.6.1. Larson's (1985) implementation of Katz and Postal's analysis of *whether*.

In addition, Baker (1970) treats Q as an operator which can bind one or more wh-phrases. When a wh-phrase has the same index as the Q, the latter determines the scope of the wh-word. Consider the well-known example of multiple questions in (26):[23]

(26) who remembers where we bought which book (=Baker's 67)

Baker states that (26) is ambiguous, since it has two possible answers, as indicated in (27) and (28).

(27) Anita remembers where we bought which book.

(28) Amanda remembers where we bought *Death in a Tenured Position*, Sara remembers where we bought *Indemnity Only* and Marcia remembers where we bought *There is Nothing to be Afraid of*.

He proposes to account for the readings in (27) and (28) by having Q as an operator binding different wh-phrases as in (29) and (30).

(29) $[Q_{(i)}$ [who$_i$ remembers $[Q_{(j,k)}$ [where$_k$ we bought which book$_j$]

(30) $[Q_{(i,j)}$ [who$_i$ remembers $[Q_{(k)}$ [where$_k$ we bought which book$_j$]

Bresnan (1972) offers syntactic evidence for the Q-morpheme. She proposes that the Q-morpheme belongs to the class of complementizers by showing that Q, *that* and *for* are in complementary distribution:

(31) *I know that whether he came.
*For whom to own a rifle doesn't affect me.
*It doesn't matter to them whether that you march.
*I asked what for John to do. (Bresnan (1972), p.30)

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[23]See Kuno and Robinson (1972) for a different explanation of the ambiguities exhibited in multiple questions.

If the Q-morpheme is in the complementizer position, the complementary distribution shown in (31) can be accounted for.

2.5.3. Against having a Q-morpheme in English

Grimshaw (1977) points out that in both Katz and Postal's (1964) and Baker's (1970) proposals of a Q-morpheme, there is one crucial assumption: all semantic interpretation takes place at "deep structure". Katz and Postal uses the Q-morpheme to distinguish declarative sentences from interrogative sentences. Baker also uses the Q-morpheme to resolve a problem of interpretation, as we have seen above. If semantic interpretation is not done at deep structure (D-structure), but rather at Logical Form (LF) (see Chomsky 1973, 1980 and 1981), there is no need for positing the Q-morpheme.

To distinguish an interrogative sentence from a declarative sentence is certainly not problematic, as Grimshaw points out. Since interrogative and declarative sentences differ at S-structure, they will be interpreted differently at LF. There is no need for a Q-morpheme. Similarly (22) and (23) are interpreted differently because they differ at S-structure. With respect to the ambiguity in multiple questions like (26), given LF movement of wh-words (Aoun, Horstein and Sportiche 1981 and Huang (1982) among others), there is no need to posit a Q-morpheme to resolve the ambiguity.[24]

Lastly, regarding the claim that the Q-morpheme, *that* and *for* are in complementary distribution, Grimshaw shows that the complementary

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[24]I will discuss in Chapter 3 and Chapter 5 the issue of D(iscourse)-linked wh-words, which under Pesetsky's (1987) theory does not move at LF. In particular, I will propose that in a discourse-linking environment, the [+wh] C^0 in languages without wh-particles will be able to "act" like a wh-particle in a certain way. Thus, there is also no need to posit a Q-morpheme in a D-linking environment.

distribution does not support the existence of a Q-morpheme. She draws examples from relative clauses in which the presence of a wh-word is incompatible with *that* or *for*. It is clear that we don't want to posit a Q-morpheme in relative clauses. Thus, the complementary distribution between a wh-word and other complementizers is independent of a Q-morpheme.

In sum, if we do not assume that semantic interpretation takes place at D-structure, there is no need for positing a Q-morpheme.

2.6. Yes-no particles in movement languages?

In this section, we examine the question words *whether* and *if* in English as well as *czy* 'whether' in Polish. I compare these question words with the particles in the in-situ languages.

2.6.1. English *whether* and *if*

Baker (1970) treats English *whether* and *if* on a par with particles in languages without syntactic wh-movement. If these two elements are yes-no particles, then English is a counterexample to the Clausal Typing Hypothesis because it is a language with syntactic wh-movement.

Let us consider first where *whether* and *if* occur. *Whether* and *if* can always appear in embedded questions and they never appear in matrix yes-no questions. Further, whether can appear in sentential subjects and extraposed clauses while if cannot, as we can see in (32)-(35):

(32) a. Amanda does not know whether Marcia is coming.
b. Amanda does not know if Marcia is coming.

(33) a. *Whether Marcia is coming?
b. *If Marcia is coming?

(34) a. Whether Marcia is coming is obvious.
b. *If Marcia is coming is obvious.

(35) a. It is unclear whether Marcia is coming.
b. *It is unclear if Marcia is coming.

Hence, with respect to the distribution, both *whether* and *if* differ from the Typing Particles that we have seen in that the former do not appear in matrix questions. Further, *whether* is similar to wh-phrases in that it can appear in sentential subjects and extraposed clauses, as we have discussed in 2.1.1.

If *whether* and *if* are yes-no particles, then they are exception to the "matrix clause property" of Typing Particles, which we have discussed earlier. Given the difference with respect to distribution between *whether* and *if* on the one hand, and Typing Particles on the other, I propose that *whether* and *if* are not Typing Particles. I will support this claim below by showing that *whether* is a wh-phrase which undergoes syntactic wh-movement and that *if* is not inherently interrogative.

Consider *whether* first. Katz and Postal (1964), Larson (1985) and Kayne (1990) show that *whether* is just like a wh-phrase: it is not an X^0 but rather an XP. Larson (1985), in the same spirit as Katz and Postal (1964), analyzes *whether* as the wh-counterpart of *either*. He proposes that "*whether* is a [+wh] scope indicator for disjunction." (p.238) Consider the sentence in (36), which has two readings indicated in (36a) and (36b).

(36) I know whether Bill should ask John to resign or retire.
a. What is known by me is either that Bill should ask John to resign or retire, or else that Bill should not ask John to resign or retire.
b. I know that Bill should ask John to resign, or else I know that Bill should ask John to retire.

(36a) represents the narrow scope reading of the disjunction while (36b) represents the wide scope reading of the disjunction. Larson proposes that the wide scope reading has the structure in (37) (adapted from Larson's (41b)):

(37) I know $[_{CP}$ whether$_i$ $[_{IP}$ Bill should ask $[_{CP}$ t_i $[_{IP}$ John to $[_{VP}$ $[e_i]$ resign or retire]]]]]

Whether is base-generated as a member of the disjoined phrase and it is similar to other wh-phrases in that it moves to COMP (=Spec of C^0 in our terms). And in (37), it moves successive cyclically through the embedded COMP to the matrix COMP. In this analysis, *whether* is an XP, just like other wh-phrases. In addition, as we have seen, *whether* can appear in indirect questions that are not selected and in this respect, *whether* is also like wh-phrases which can occur in these indirect questions and move to Spec of C^0 to type a clause. In short, *whether* is a a wh-phrase rather than an X^0, unlike Typing Particles.

With respect to the position it is generated, *if* is more like a Typing Particle than *whether*. Larson (1985), following Bolinger (1978), proposes that *if* is a complementizer. Kayne (1990) shows that *whether* can appear in wh-infinitive constructions while *if* cannot because the former is an XP (in Spec of C^0) while the latter is an X^0 (in C^0), which counts as a governor for the subject PRO. Now does *if* count as a Typing Particle? To answer this question, let us consider further Larson's analysis of *if*. Larson shows that embedded questions with *if* shows the same scope ambiguities as those with *whether*. Compare (38) with the example in (36) above.

(38) I don't know if John claimed that Bill left or not.
   a. What I don't know is either that John claimed that Bill left or else that John didn't claim that Bill left.
   b. What I don't know is either that John claimed that Bill left or else that John claimed that Bill didn't leave.

(38) is also ambiguous between a wide scope or narrow scope disjunctive reading. He extends the analysis of *whether* to account for (38) and proposes that there is an empty operator which is like *whether* in that it can move into an interrogative COMP.[25]

Since *if* certainly bears some relation to the conditional *if*, I propose that the empty operator in embedded questions with *if* is the one that provides the interrogative reading, Assuming that the feature [+Q] indicates an interrogative reading, *if* is not specified with respect to [±Q]. Borrowing a term from Phonology, *if* is underspecified with respect to the feature [±Q]. On the other hand, the empty operator is a null counterpart of *whether*, it is specified as [+Q]. When the empty operator moves to Spec of C^0, by Spec-head agreement, the plus value of the feature [±Q] will then be filled in for *if*. In other words, *if* is not an inherent interrogative element and it requires some other element to provide an interrogative reading for it.

In sum, I propose that *whether* and *if* are not Typing Particles. I have reviewed arguments in Larson (1985) which show that *whether* is a wh-phrase which undergo wh-movement. Further, I argue that *if* is not inherently interrogative.

2.6.2. Polish *czy* 'whether'

The yes-no question word *czy* in Polish is used in both matrix yes-no questions and embedded yes-no questions:

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[25]Iatridou (1991) proposes that there is no empty operator in the case of *if*. Instead, it is the word *whether* itself that does the job of the empty operator. And either member of the [whether if] combination deletes under the doubly filled COMP filter.

(39) czy pan dużo podróżuje
Q you much travel
'Do you travel a lot?'

(40) nie wie-m czy wyjecha-ć (czy nie)
not know-I whether leave-INF whether not
'I don't know whether to leave or not.'

Thus, *czy* differs from *whether* and *if* in English in that it can be used in the matrix. In terms of distribution, *czy* does look like a yes-no particle of the kind found in in-situ languages. If *czy* is a yes-no particle, Polish is a potential counterexample to the Clausal Typing Hypothesis. However, as we will discuss in Chapter 3, Polish is a multiple fronting language and the wh-words in the language front to satisfy a licensing requirement independent of Clausal Typing. Hence, given the theory that I propose in Chapter 3 regarding fronting of wh-words in multiple fronting languages, Polish is not a counterexample even if *czy* is a Typing Particle. Nonetheless, I will show below that in some respects, *czy* is similar to *whether* in English.

First, as (40) shows, *czy* can occur in infinitivals. Kayne (1990) argues based on examples such as (41) and (42), *whether* is an XP and *if* is an X^0.

(41) John doesn't know whether to leave or not.

(42) *Bill doesn't know if to leave

As (41) and (42) show, *whether* can appear in a wh-infinitival clause while *if* cannot. Kayne argues that *if* is a C^0 and thus it governs PRO. In contrast, *whether* is an XP and it cannot govern PRO. The ungrammaticality of (42) is thus a result of PRO being governed in the wh-infinitival.

The question which arises here is whether *czy* is an XP or an X^0. Though Kayne (1990) notes that wh-infinitival sentences cannot be a foolproof test, sentences such as (40) lead us to further investigate whether czy is an XP or an X^0. Consider examples like (43) and (44):

(43) czasami chodzę do kina czy teatru
sometimes I go to cinema or theater

(44) czy dostanie miejsce czy nie, i tak będzie zadowolony
whether he will get seat whether not, and thus he will be satisfied

Again, (43) shows that indicates disjunction. Note here that the disjunction here does not involve a question. (44) can be considered on a par with examples such as (45) and (46) in English (from Kayne 1990):

(45) Whether they give him a seat or not, he'll be happy.

(46) Wherever they put him, he'll be happy.

(47) *If they give him a seat or not, he'll be happy.

Compare (45) with (47). Kayne states that examples such as (45) are comparable to (46) and it suggest that *whether* is a wh-phrase. In contrast, *if* cannot be used in such an environment, as shown in (47).

Based on the data on *czy* above, it seems that *czy* in Polish can be used as *either* or *whether*. This can in fact support Katz and Postal's (1964) and Larson's (1985) analysis of *whether* in English. Hence, *czy* should be treated on a par with *whether* in English. It is a wh-phrase instead of a particle.[26]

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[26]It should be noted that the Clausal Typing Hypothesis is consistent with having particles which are XP's and by Spec-head agreement, the C^0 can acquire the feature of these particles and Clausal Typing can take place.

Lastly, one question that arises, given the view that Typing particles are X^0's, is whether yes-no particles in in-situ languages can occur in embedded infinitivals. In languages that I have investigated, some languages have no infinitivals (e.g. Mandarin Chinese, Bahasa Indonesia), some do not have infinitival questions (e.g. Turkish) and some do not use a yes-no particle in indirect yes-no infinitival questions (e.g. Hindi, which puts the equivalent of "or not" to the end of an embedded infinitival).

2.7. Typing particles and language acquisition

I have proposed in this Chapter that the presence of yes-no particles in a language implies that the language has wh-particles. Consider the implication of this in language acquisition. For a child acquiring a language like Japanese, once he or she knows that the language has a yes-no particle, the null hypothesis is that the language has a wh-particle, whether the child actually hears it or not. In contrast, for a child acquiring a language such as English, there is no evidence for the child to posit a wh-particle (a null one in this case).

Now for a child acquiring a language such as Egyptian Arabic which has both in-situ wh-words and a wh-word appearing in clause-initial position, how does the child know whether the language has syntactic wh-movement or not? Since Egyptian Arabic has a yes-no particle, once the child acquires the yes-no particle, the hypothesis is that the language also has a wh-particle. In other words, the child will treat the language as a language lacking syntactic wh-movement. The presence of yes-no particles thus provides positive evidence for positing wh-particles, which in turn lead to a hypothesis that the language is a language without syntactic wh-movement.

Children acquiring English and other apparent syntactic wh-movement languages appear to have syntactic wh-movement of wh-words very early (i.e.

around age 3) (See Crain and Thornton 1990 among others). For children acquiring Mandarin Chinese and Cantonese, I also find that they never front the wh-words.

Chapter 3

Optional and Multiple Fronting of Wh-words

3.0. Introduction

In this chapter, I examine two types of languages, optional fronting and multiple fronting languages, which seem to be contrary to the predictions made by the Clausal Typing Hypothesis of wh-movement stated in Chapter two. I will show that they are not counter-examples to the proposal made in Chapter two. I will argue that the apparent fronting of wh-words in optional fronting languages does not involve wh-movement of the wh-words (i.e. movement of a wh-word to Spec of C^0). In addition, in the multiple fronting languages, it is not the case that all wh-words are fronted for the sake of Clausal Typing.

I will discuss the following optional fronting languages: Egyptian Arabic, Bahasa Indonesia and Palauan. There are obviously many other optional fronting languages; the goal of the discussion here is to show that not all cases of apparent "fronting" involves movement of the wh-words to Spec of C^0. Thus, the analysis given here also leads us to question whether wh-fronting in other optional fronting languages is really wh-movement. I argue that in these three languages, the apparent fronting of wh-words is an instance of a cleft sentence (in the case of arguments) and topicalization (in the case of adjuncts).

In Section 3.2, I will examine multiple fronting languages including Polish, Bulgarian and Hungarian. I will argue that the obligatory fronting of all the wh-words in these languages is not triggered by Clausal Typing and thus these languages do not serve as a counter-example to the Clausal Typing Hypothesis put forth in Chapter two. I will show that the wh-words in these languages are

similar to those in Mandarin Chinese and Japanese in that they do not have inherent quantificational force. The former type differs from the latter type in that the determiner systems in the former type of languages provide proper binders, including a null interrogative binder. Further, the null interrogative determiner needs to be licensed by a [+wh] C^0. Thus, these languages multiply front wh-words to a position in which the null interrogative determiner can be licensed.

3.1. Optional Fronting Languages

3.1.1. Common Characteristics in Optional Fronting Languages

I will first discuss some properties that Egyptian Arabic, Bahasa Indonesia and Palauan have in common with respect to the fronting of wh-words. Then I will discuss each language in turn.

3.1.1.1. The Fronting of Wh-arguments

Sentences with a fronted wh-arguments in these languages have clear resemblance to relative clauses as well as clefts, as shown below. Examples in Egyptian Arabic, Bahasa Indonesia, and Palauan in this section are from Wahba (1984), Saddy (1990) and Georgopoulos (1989) respectively unless otherwise noted.

Egyptian Arabic
Relative clause and cleft

(1) a. il-raagil *illi* Mona shaafit-uh
the-man that Mona saw-him
'the man that Mona saw'

b. (dah) muhamad *illi* gih (Gary and Gamal-Eldin 1982)
this Mohammed that came
'It is Mohammed who came.'

Wh-question

(2) a. miin *illi* Mona darabit-uh
who that Mona hit-him
'Who did Mona hit?'

b. eeh *illi* Mona ʔarit-uh
what that Mona read-it
'What did Mona read?'

Bahasa Indonesia

Relative clause and cleft (from Dardjowidjojo 1978)

(3) a. gamelan *yang* mereka pakai (itu) dari Yogya
gamelan that they used (DEM) from Yogya
'The gamelan that they used is from Yogya.'

b. kamar itu (lah) *yang* harus kami hias
room DEM PART that must we decorate
'It is that room that must be decorated.'

Wh-questions

(4) a. siapa *yang* men-cintai Sally
who that pref-loves Sally
'Who loves Sally?'

b. siapa *yang* Sally cintai
who that Sally loves
'Who does Sally love?'

Palauan

Relative clause and cleft

(5) a. ak-umera *a* 'om-lekoi
R-1s-believe NOM IR-2-tell
'I believe what you say.'

b. *ng*-[Basilia] *a* mengaus er tia ei tet
CL-Basilia NOM R-weave P Dem L bag
'It's Basilia who's weaving this bag.'

Wh-questions

(6) a. *ng*-te'a *a* kileld-ii a sub
CL-who NOM R-PF-heat-3s NOM soup
'Who heated up the soup?'

b. *ng*-te'a *a* l-ulekod-ir a rubak
CL-who NOM IR-3-PF-kill-3s NOM old man
'Who did the old man kill?'

In (1)-(4), there is one element which keeps reoccurring. In Egyptian Arabic, this is the element *illi* which is treated as a complementizer in Wahba (1984). In Bahasa Indonesia, this is the element *yang* which is treated as a focus marker in Saddy (1990). In the Palauan data shown in (5)-(6), a relativized NP, a clefted NP or a fronted wh-word is separated from the rest of the sentence by a nominal marker *-a*. A clefted NP and a fronted wh-word are prefixed by the third person singular marker marker *ng-*. We will come back to *-a* shortly below.

Illi and *yang* are not typical complementizers used in embedded clauses in Egyptian Arabic and Bahasa Indonesia. A different complementizer is used in embedded clauses, as shown in (7) and (8).

(7) *Egyptian Arabic*
Mona iftakarit *inn* Fariid saafir
Mona thought that Fariid left
'Mona thought that Fariid left.'

(8) *Bahasa Indonesia*
Mary tahu *bahwa* Tom mem-beli buku
Mary knows that Tom pref-bought a book
'Mary knows that Tom bought a book.'

It should be noted that Wahba (1984) assumes that *illi* is a complementizer but does not address the question of why *illi* is used in wh-fronting consistently even in cases of embedded wh-fronting. Moreover, the question of why *illi* shows up

in relative clauses as well as clefts is also not addressed. Saddy (1990 and 1991), on the other hand, assumes that *yang* is a focus marker but he does not address the question of why this focus marker is used in relative clauses and clefts but it is not used in topicalization.

3.1.1.2. The Fronting of Wh-adjuncts

Besides the similarity found between the formation of relative clauses/clefts and wh-fronting, there is one significant characteristic that is shared by Egyptian Arabic and Bahasa Indonesia in terms of wh-fronting. That is, though the fronting of wh-arguments is like relativization and clefting, the fronting of wh-adjuncts is not like relativization. Instead, it is similar to topicalization of an NP, as shown in (9)-(10).

Egyptian Arabic
Wh-questions
(9) a. ma'a miin Mona raahit il-Qahirah
with whom Mona went to-Cairo
'With whom did Mona go to Cairo?'

Topicalization
b. fi-l-shari'dah, Mona kaanit bitdawwar 'ala sha??ah
on-the-street DEM Mona was looking for apartment
'On that street, Mona was looking for an apartment.'

Bahasa Indonesia
Wh-questions
(10) a. kenapa Jon mem-beli buku
why Jon pref-bought a book
'Why did Jon buy a book?'

Topicalization
b. buku itu Jon beli
book this John bought
'This book, John bought.'

In (9a) and (10a), we can see that the markers *illi* and *yang* which occur in relative clauses, clefts and wh-fronting of arguments are missing.

Palauan does not appear to have wh-adjuncts. Wh-words such as *oingera* 'when' and *ker* 'where' in Palauan are usually preceded by the nominal marker *-a* which is also used to mark other arguments. Further, they are Case-marked the same way that objects of prepositions are: by a preposition.

It should be noted that examples such as (9a) are not accepted by all native speakers of Egyptian Arabic. Some speakers always leave adjuncts in-situ.[1] I will come back to the differences between arguments and adjuncts in Egyptian Arabic and Bahasa Indonesia later.

3.1.1.3. Wh-in-situ in optional fronting languages

Wh-in-situ is also possible in these three languages, as shown in (11)-(13). The wh-in-situ in these languages are like Mandarin Chinese and Japanese in that it is allowed in both matrix and embedded clauses. Thus, it is not like French, which only allows wh-in-situ in matrix questions.

Egyptian Arabic

(11) a. Fariid hawil yi'mil *eeh*
Fariid tried to-do *what*
'What did Fariid try to do?'

b. Mona 'irfit Ali haawil yisaafir *feen*
Mona knew Ali tried to-travel where
'Mona knew where Ali tried to go.'

[1] I thank Ali Yousaf for providing me with native speaker judgements.

Bahasa Indonesia

(12) a. Sally men-cintai *siapa*
Sally pref-loves *who*
'Who does Sally love?'

b. Bill tahu bahwa Tom men-cintai *siapa*
Bill knows that Tom pref-loves *who*
'Bill knows who Tom loves.'

Palauan

(13) a. k-osiik er a *te'ang*
2s-look for p *who*
'Who are you looking for?'

b. ng-mele'ede' el kmo ng-mengiil er ngii el kmo meruul a *ngerang*
3s-wonder COMP R-3s-wait P him COMP R-go R-do *what*
'He is wondering what she is waiting for him to do.'

These languages thus look like optional movement languages because they allow typical wh-in-situ's as well as fronting of the wh-words. However, as we have seen in (1)-(6), the fronting of wh-words has striking similarity with relative clauses as well as clefts. The question is thus whether the fronting in these cases involves actual fronting of the wh-words to Spec of C^0. Given the hypothesis of wh-movement put forth in Chapter 2, the null hypothesis for the cases we see here is that the fronting of wh-words in these languages is not the same as the fronting of wh-words in English. I will argue that in the above "optional fronting" languages, the sentences with an apparent fronted wh-arguments are instances of cleft sentences. The apparent "fronted" wh-argument is base-generated as a subject of a cleft sentence and no movement of the wh-argument is involved. I will call sentences involving a wh-argument in a cleft position *wh-clefts*. This is in fact the analysis of the Palauan facts proposed in Georgopoulos (1989). In addition, I argue that the apparent fronting of wh-adjuncts is an instance of topicalization. I will discuss wh-adjuncts in 3.1.5.

In the following sections, I will discuss each language separately since these languages may differ with respect to island violations as well as the availability of resumptive pronouns. For ease of exposition, I will still use the term *wh-fronting* for wh-clefts as well as topicalization of wh-words.

3.1.2. Egyptian Arabic

We have seen that relativization, clefting and *wh-fronting* in Egyptian Arabic have one striking similarity: the use of *illi*. Leaving aside for the moment the structure of a cleft sentence and how a cleft sentence is generated, I will discuss two differences between clefting and *wh-fronting* which on the surface may appear to be problematic for a *wh-cleft* analysis. First, for *wh-fronting*, the demonstrative *dah* 'this' cannot show up for some speakers, as shown in (14) whereas *dah* 'this' is readily available in clefts, as in (15).

(14) *dah miin illi gih
this who that came

(15) dah Ali illi Mona darabit-uh
this Ali that Mona hit-him
'It is Ali that Mona hit.'

The restriction is not very strict for some speakers. Thus, (14) is in fact fine with certain speakers. Nonetheless, for speakers who do not allow (14), the difference is easily accounted for because they also do not allow indefinite NPs to co-occur with the demonstrative *dah* 'this' either, as shown in (16a), though an indefinite NP can also be clefted, as in (16b).

(16) a. *dah kitaab illi Ali sara?-uh
this book that Ali stole-it
'It is a book that Ali stole.'

b. kitaab illi Ali sara?-uh
book that Ali stole-it
'It is a book that Ali stole.'

Interrogative NPs such as *who* and *what* have been considered to be indefinite (Chomsky 1964, Katz and Postal 1964, Kuroda 1969, Stockwell, Schachter and Partee 1973 among others). Thus, if *dah* 'this' only appears with definite NPs in Egyptian Arabic, then it is predicted that wh-words are not allowed to appear with *dah* 'this'. The question which arises here is whether *dah* 'this' can co-occur with wh-phrases such as *anhi kitaab* 'which book'. For speakers who do not allow (14), they appear to interpret the wh-phase *anhi kitaab* 'which book' as 'what book'. Thus, the same restriction against the co-occurrence of *dah* and indefinites applies.

I propose that what we have here in the cases of *wh-fronting* and clefting of an indefinite (16a) is what McCloskey (1978) called "reduced cleft". In Irish, indefinite NPs in a cleft position may not appear with a copular and a pronominal element, as shown in (17) and (18) (from McCloskey 1978, p.90-91):

(17) a. Is é Seán Bán aL d'inis an scéal dom
copular him Seán Bán comp told the story to-me
'It was Seán Bán who told me the story.'

b. Seán Bán aL d'inis an scéal dom
Seán Bán comp told the story to-me
'It was Seán Bán who told me the story.'

(18) a. *Is capall mór bán aL chonaic mé
copular a horse big white COMP saw I
'It was a big white horse that I saw.'
b. Capall mór bán aL chonaic mé
a horse big white COMP saw I
'It was a big white horse that I saw.'

In (17a), the proper noun is in a cleft position and it is preceded by a copular and a pronoun. In (17b), the copular and the pronoun are not present. McCloskey calls (17a) a full cleft and (17b) and (18b) reduced clefts. McCloskey states the difference between a full cleft and a reduced cleft as follows: "These (referring to (17b) and (18b)) are 'reduced' clefts in the sense that the constituent in focus-position is not preceded by the copular, as it is in the case of 'full' clefts. They are also 'reduced' in the sense that definite NP in focus-position are not preceded by the pronominal augments that normally appear before definite NP in copular sentences in general and in full clefts in particular." (p.90) Further, McCloskey notes that indefinite NPs may not appear in full clefts, as (18a) shows. Thus, it appears that there is a restriction on the definiteness of NPs in a cleft in these languages. English, in contrast, allows indefinite NPs to be clefted. I will come back to the structure of the 'reduced clefts' shortly below.

The second difference between relative clauses/clefts and wh-fronting is with respect to island violations. Wahba (1984) states that relativization violates island constraints while wh-fronting does not. Thus, she argues that relativization does not involve movement while wh-fronting does; the former has resumptive pronouns while the latter does not. However, I would like to point out that for some speakers, wh-fronting also violate island constraints. Thus, according to the judgements of these speakers, relativization and wh-fronting are not different with respect to island violations.

Before we discuss the data on island violations, I will briefly summarize the distribution of resumptive pronouns in Egyptian Arabic. As Wahba (1984) states, the head of a relative clause in Egyptian Arabic must be associated with an overt pronoun, as shown in (19).

(19) a. il-raagil illi Mona shaafit-uh
the-man that Mona saw-him
'the man who Mona saw'
b. *il-raagil illi Mona shaafit
the-man that Mona saw

Wh-fronting is similar to relativization in that it also requires a pronoun to fill a gap (in the case of fronting an argument), as shown in (20).

(20) a. miin illi Mona shaafit-uh
who that Mona saw-him
'Who did Mona see?'
b. *miin illi Mona shaafit
who that Mona saw

Consider now examples in (21) and (22). (*) indicates that the judgements with respect to the sentences marked are not uniform: in the judgements that Wahba (1984) cites, (22a) and (22b) are ungrammatical; on the other hand, for some speakers that I consulted with, they are well-formed sentences.

Relativization

(21) a. dah il-beet illi baba ye'raf il-raagil illi bana-ah
this the-house that father knows the-man that built-it
'It is the house that my father knows the man who built it.'

b. dah il-beet illi baba kaan bi-yes?al miin illi bana-ah
this the house that father was asking who that built-it
'This is the house that my father was asking who built it.'

(22) a. (*)anhi kitaab illi Mona te'raf miin illi sara?-uh
which book that Mona know who that stole-it
'Which book does Mona know who stole?'

b. (*)miin illi Mona te'raf feen huwwa raah
who that Mona knows where he went
'Who does Mona know where he went?'

(21a) and (21b) show that relativization out of a relative clause and a wh-question is fine. In contrast, according to Wahba's judgements, both (22a) and (22b) show that a wh-word cannot be fronted out of a relative clause or a wh-question, even though an overt pronoun is also present.

Wahba (1984) analyzes the sentences in (21) and (22) as follows: The pronoun in (21a) and (21b) (i.e. in the relative clauses) is a resumptive pronoun while the pronoun in *wh-fronting* sentences is not a resumptive pronoun; it is a spell-out of a trace. She argues that since relativization can violate island constraints, it does not involve movement and the pronoun is thus a resumptive pronoun. In contrast, *wh-fronting* violates islands, it thus involves movement and the pronoun which corresponds to the gap in these cases is a spell-out of a trace.

Note that in Wahba (1984), only islands involving relative clauses and wh-questions are discussed. Consider sentences in (22) again. (22a) is an example of a wh-island violation, which is generally considered as a weak island. In particular, weak islands are not islands are all for extraction of complements (see Chomsky 1986, Cinque 1991 among others). Under Wahba's analysis, (22a) involves an extraction of the object complement out of a wh-island. Given that wh-island is a weak island, the sentence should be at most mildly ill-formed.

At this point, I do not know whether the difference in judgements is dialectal. However, I think that more data on island violations should shed light on the nature of the difference and a possible way to explain the discrepancy.

3.1.2.1. A Note on Reduced clefts

I briefly discuss the structures of a cleft and a reduced cleft in this section. I assume Browning's (1987) structure of clefts shown in (23). In the structure (23), the DP *Sharon* is the subject of the predicate CP *[that Marcia likes].*

(23) It is $[_{CP}[_{DP}$ Sharon] $[_{CP}$ OP_i that $[_{IP}$ Marcia likes $t_i]]$

Here CP can function as a predicate because it is an open sentence, with an operator-variable structure in it (see Baker 1989, Chomsky 1977, Higgins 1979 among others for different analyses of clefts). As we have seen above, a wh-cleft sentence in the languages we are examining is not a full cleft but a reduced cleft in McCloskey's sense. (24) is a structure of a reduced cleft adapted from McCloskey (1979).

(24) $[_{CP}[_{DP}$ miin$_i]$ $[_{CP}$ OP_i illi $[_{IP}$ Mona shaafit-uh$_i]]$
who that Mona saw-him
'Who did Mona see?'

(24) differs from (23) in that there is no copular and a subject NP. However, in (24), there is still a subject predicate relationship: the wh-word *miin* 'who' is the subject of the predicate *[illi Mona shaafit-uh]* 'that Mona saw him'. Furthermore, the wh-word in (24) is base generated in its S-structure position; in the predicate clause, an empty operator moves to Spec of C^0 to form an operator-variable structure.

Let us summarize the wh-cleft analysis of *wh-fronting* in Egyptian Arabic. I have shown that though there is a difference between a typical cleft and a wh-cleft, the difference is reduced to the difference between full clefts and reduced clefts. Further, based on judgements from speakers on island violations in *wh-fronting* sentences, I show that relative clauses/clefts and wh-fronting are the same and no movement of relativized NP or a wh-word is involved. There is a complete parallel between relativization/cleft and *wh-fronting*. Lastly, given a wh-cleft analysis, the use of *illi* in *wh-fronting* as well as relativization and clefting naturally follows: *illi* is used in clauses in which a predicate sentence is created.

3.1.3. Bahasa Indonesia

We have seen earlier that *wh-fronting* in Bahasa Indonesia is similar to relative clauses and clefts in the use of *yang*. I argue here that *wh-fronting* in Bahasa Indonesia is similar to wh-fronting in Egyptian Arabic in that it is an instance of *wh-clefts*; a wh-word in a wh-cleft is base-generated and it is the subject of a predicate clause containing an empty operator.

I first discuss a potential problem for a wh-cleft analysis. In 3.1.3.2, I discuss data on weak crossover and parasitic gaps. I show that a wh-cleft analysis can account for the data on weak crossover and parasitic gaps. Further, it can account for the distribution of *yang*.

3.1.3.1. Clefts vs. *wh-fronting*

One immediate problem of analyzing a wh-fronting sentence in Bahasa Indonesia as a cleft sentence is the fact that an NP in a normal cleft can have the suffix *-lah* but a fronted wh-word cannot, as shown in (25).[2]

(25) a. Mary-lah yang Bill cium
Mary-suf who Bill kissed
'It was Mary who Bill kissed.'
b. *apa-lah yang Bill beli
who-suf who Bill bought
'What was it that Bill bought?'.'

-Lah appears as an optional element in a cleft to add emphasis (see Dardjowidjojo 1978 and Macdonald 1976). It turns out that the difference between (25a) and (25b) is not a matter of grammaticality. According to my informant, (25b) is a grammatical sentence but it lacks a question interpretation.

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[2]I thank Hotasi Nababan for judgements on Bahasa Indonesia.

A wh-word with *-lah* yields a rhetorical question. Take (25b) as an example, it can be uttered in the following context: A and B are gossiping and it is known to both of them that Bill has bought something, for example a car. However, both A and B believe that Bill is very stingy and they don't believe that he can buy anything good. Then B can say: "apa-lah yang Bill beli" 'What can he buy!" Thus, it seems that *-lah* is not compatible with a question reading; it has an affirmative force. Nonetheless, a wh-word can occur with it, though with the interrogative force suppressed. In other words, the difference between (25a) and (25b) does not argue against a cleft structure for (25b).

Before I discuss weak crossover and parasitic gaps in Bahasa Indonesia, I would like to briefly discuss the element *yang*. Saddy argues that *yang* is not an interrogative counterpart of the complementizer *bahwa*, which appears in embedded sentences. Consider (26), in which an apparent "fronted" wh-word follows *bahwa*. Example (8) is repeated below:[3]

(8) Mary tahu bahwa Tom mem-beli buku
Mary knows that Tom pref-bought a book
'Mary knows that Tom bought a book.'

(26) Bill tahu bahwa siapa yang Tom cintai
Bill knows that who YANG Tom loves
'Bill knows who Tom loves.

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[3]Note that in (8) the prefix *meN-* is present. *MeN-* is a transitive marker. It is deleted when an object of a verb is "fronted". Furthermore, when an NP in an embedded sentence is "fronted", the prefix of the matrix verb is also deleted. The deletion of the prefix occurs in wh-clefts, clefts as well as relativization. In cases of passivization, a different prefix is present (i.e. *di-*). See Saddy (1990, 1991) for details.

(26) shows that *yang* can co-occur with *bahwa*. However, (26) does not show that *yang* cannot be a C^0 in a cleft sentence. That is, given a wh-cleft analysis, the clause following *bahwa* is a cleft sentence. Thus, (26) is comparable to (27):

(27) Bill knows that it is Mary that Tom loves.

As we have seen earlier, *yang* also appears in relative clauses and clefts. I suggest that *yang* is similar to *illi*; it is the C^0 that appears in clauses in which a predicate sentence is created.

3.1.3.2. Weak Crossover and Parasitic Gaps

Consider now data on weak crossover and parasitic gaps, which show that A-bar movement is involved.[45] I show that a wh-cleft analysis of the *wh-fronting* cases in Bahasa Indonesia can indeed account for the data since there is A-bar movement of an empty operator in a cleft sentence.

First, let's consider the weak crossover facts. Examples (28)-(30) show that weak crossover is induced if a wh-word stays in-situ or if a wh-word is "fronted".

(28) *dosen-nya$_i$ menyukai siapa$_i$
professor-his pref-likes who
'Who$_i$ does his$_i$ professor like?'

(29) *siapa yang dosen-nya suka
who COMP professor-his like
'Who$_i$ does his$_i$ professor like?'

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[4]I am grateful to Richard McGinn for checking data on Bahasa Indonesia with his informants.

[5]In Saddy (1990), the judgements on weak crossover and parasitic gaps are different from the ones in this Chapter. Saddy develops a different analysis of wh-fronting. He argues that the landing site of the "fronted" wh-word is a mixed position (an A and an A-bar position). I do not know whether the judgements here are dialectal.

(30) siapa$_i$ yang di-sukai dosen-nya$_i$
who COMP pass-like professor-his
'Who$_i$ is liked by his$_i$ professor?'

(28) shows that an in-situ wh-word induces weak crossover. In contrast, if a wh-word is fronted as in (29), then weak crossover is induced. (30) is an example of a passive sentence in which the wh-word is passivized and fronted; weak crossover is not induced.

Assuming the description of weak crossover stated in (31) (from Lasnik and Stowell 1989), let us consider the data in (29) and (30) (see Koopman and Sportiche 1982 and Reinhart 1983 for different theories of weak crossover):[6]

(31) In a configuration where a pronoun P and a trace T are both bound by a quantifier Q, T must c-command P.

The ungrammaticality in (29) is expected if we have a wh-cleft analysis. Consider the structure of (29) below (I assume here that a wh-cleft in Bahasa Indonesia is similar to a wh-cleft in Egyptian Arabic in that it is also a reduced cleft):

(32) [$_{CP}$ siapa$_i$ [$_{CP}$ Op$_i$ yang [$_{IP}$ dosen-nya$_i$ suka t$_i$]]]
who$_i$ that professor-his$_i$ like

In (32), the trace of the operator and the pronoun *nya* 'his' are both bound by the operator. Further, the trace of the operator does not c-command the pronoun *nya* 'his'. Based on (31), this is the environment which induces weak crossover. By contrast, (30) is a passive sentence. The trace of the operator in (30) is in a subject

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[6]See Stowell (forthcoming) for a theory of weak crossover over based on a different descriptive generalization. For the purposes of the discussion here, either Stowell's generalization or the one given in (31) can capture the data.

position, which c-commands the pronoun. Thus, weak crossover is not induced, as the structure in (33) shows:

(33) $[_{CP}$ siapa$_i$ $[_{CP}$ Op$_i$ yang $[_{IP}$ t$_i$ di-sukai dosen-nya$_i$]
who$_i$ that pass-like professor-his$_i$

Lastly, with respect to weak crossover with in-situ wh-words, if we assume LF wh-movement of wh-words (e.g. Huang 1982), then it is expected that weak crossover is induced in sentences such as (28): the in-situ wh-word moves at LF to Spec of C^0; the trace of the wh-word, as well as the pronoun will be bound by the wh-word and the trace does not c-command the pronoun in (28).

Now let us turn to parasitic gap constructions. Consider first an apparent contrast between a wh-cleft and topicalization:

(34) a. *siapa yang kamu cemburui karena saya berbicara
who that you be jealous of because I spoke to
'Who were you jealous of because I spoke to?'

b. buku itu saya beli setalah Jon bakar
book this I bought after Jon burned
'This book, I bought after Jon burned.'

(34a) contrasts with (34b) in that the former does not license parasitic gap. (34a) is an example of *wh-fronting* and we might conclude from this that *wh-fronting* does not license parasitic gaps. However, there are cases of wh-fronting which license parasitic gaps. Compare (34a) with the following sentences:

(35) a. tulisan mana yang John simpan sebelum dia baca
paper which that John file before he read
'Which paper did John read before he read?'

b. siapa yang John tolah sebelum dia wawancara
who that John reject before he interviewed
'Who did John reject before he interviewed?'

c. wanita mana yang Sue cemburui sebulum John berbicara
woman which that Sue be jealous of before John spoke
'Which woman was Sue jealous of before John spoke to?'

Sentences in (35) contrast with (34a). Parasitic gaps are indeed licensed in *wh-fronting* sentences. The crucial difference between the sentences in (35) and (34a) is that the former involve adjunct clauses with *sebelum* 'before' while the latter has an adjunct clause with *karena* 'because'. It appears that a parasitic gap in an adjunct clause with *karena* 'because' cannot be licensed. This may be a result of different attachment site for adjuncts. In particular, given the anti-c-command condition on licensing a parasitic gap (Taraldsen 1981, Engdahl 1983 and Chomsky 1982, 1986), the question that arises is whether or not adjunct clauses with *karena* 'because' is adjoined to a position that violates the anti-c-command condition. We need to look into different adjunct clauses to determine the structure involving *karena*-clauses. But one thing is clear here: parasitic gaps are indeed licensed in *wh-fronting* cases.

Consider the structure of (35a) given a wh-cleft analysis:

(36) [$_{CP}$ tulisan man$_i$a [$_{CP}$ Op$_i$ yang [John simpan t_i] [sebelum [Op dia baca e]
paper which that John file before he read

The trace of the operator in (36) does not c-command the parasitic gap [e]. The anti-c-command condition is satisfied.

The above data on weak crossover and parasitic gaps argue for a A-bar movement analysis of wh-fronting instead of A-movement. Given a wh-cleft analysis of wh-fronting in Bahasa Indonesia, the above data can be accounted for.

Furthermore, as I discussed earlier, given a wh-cleft analysis, the distribution of the element *yang* is explained as well.

3.1.4. Palauan

We have seen earlier that *wh-fronting* in Palauan shares with clefting the third person singular morpheme *ng-* and the nominal marker *a*. Furthermore, Georgopoulos (1989) shows that they are similar with respect to the distribution of resumptive pronouns, as well as island violations. In this section, I will simply review her arguments for analyzing wh-fronting cases in Palauan as clefting.

Palauan is a VOS language with subject agreement marked on the verb. The verb can be marked for realis mood and when it is unmarked, it is irrealis. Now let us turn to the distribution of resumptive pronouns in clefts and wh-fronting cases.

Clefted subjects and perfective objects leave a gap.[7] When the clefted constituent is the object of the preposition *er*, a resumptive pronoun is required:

(37) a. ng-[Basilia]$_i$ a mengau er tia er tet _ $_i$ (subject)
CL-Basilia NOM R-weave P DEM L bag
'It's Basilia who's weaving this bag.'

b. ng-[se'elik]$_i$ a bla le-berng-ii _ $_i$ a 'obekuk (perf object)
CL-my friend NOM IR-AUX IR-3-PF-hit NOM my brother
'It's my friend who my brother has hit.'

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[7] Georgopolous states that clefted subjects in NPs containing "possessor agreement" leave a gap as well. There is no example given, though gaps in relative clauses have the same distribution. (i) illustrates that relatived subjects in NPs containing "possessor agreement" leaves a gap.

(i) a biuk$_i$ [el k-'illebed-ii [a 'obok-ul __$_i$]] a se'el-ik
boy COMP IR-1s-PF-hit-3s NOM older brother-3s NOM friend-1s
'The boy whose brother I hit is my friend.'

(38) ng-[sualo]$_i$ a lo-ngaus er *ngii*$_i$ a reme'as (object of *er*)
cl-basket NOM IR-3-weave P it NOM women
'It's the basket that the women are weaving.'

The same distribution of resumptive pronouns is found in *wh-fronting* sentences, as shown below:

(39) a. ng-te'a$_i$ [a kileld-ii a sub _$_i$] (subject)
cl-who NOM R-PF-heat-3s NOM soup
'Who heated up the soup?'

b. ng-ngera$_i$ [a le-silseb-ii _$_i$ a se'el-il] (perf object)
cl-what NOM IR-3-PF-burn-3s NOM friend-3s
'What did his friend burn?'

(40) ng-ker$_i$ [a le-bilsk-au a buk er ngii$_i$ a Ruth] (object of *er*)
cl-where NOM IR-3-PF-gave-2s nom book P it NOM Ruth
'Where did Ruth give you the book?'

Thus, wh-fronting and cleft are similar not only in terms of the markers *ng-* and *a* but also with respect to the distribution of resumptive pronouns.

Now let us turn to island violations exhibited in wh-questions as well as clefts and relative clauses.

(41) a. ng-ngera$_i$ [a 'om-omes er [a rese'al $_j$] [el omtanget er ngii$_i$ _$_j$]]]
cl-what NOM IR-2-see P NOM boys COMP R-polish P it
'What are you watching the boys who are polishing (it)?

b. ng-te'a a milde'em-ii [a uel$_i$ [el m-ulmes er [a rese'al$_j$]
cl-who NOM R-caught-3s NOM turtle COMP IR-2-saw P NOM boys
[el omtanget er [a 'elibel _$_i$] _$_j$]]]]
COMP P-polish P NOM shell-3s
'Who caught the turtle that you saw the boys who were polishing its shell?'

(41a) is an example of questioning out of a relative clause and (41b) is an example of relativizing out of a relative clause. We can see from (41a) and (41b) that either a gap or a resumptive pronoun can be used in cases where island violations occur.

Georgopoulos argues that given the full range of island violations, the null hypothesis for the Palauan facts is that these constructions (relative clauses, clefts and wh-fronting) are based generated without movement. In the cases where gaps are used, it is simply the case that null pronouns are used instead of the overt one, as it is clear that "the distribution of null and overt referring pronouns is practically identical to the distribution of null and overt resumptive pronouns." (p.104)

In sum, wh-fronting in Palauan is also an instance of wh-clefts and the similarities manifested by the two constructions go beyond surface resemblance.

3.1.5. Wh-Adjuncts

As we have seen in 3.1.1, there are no adjuncts in wh-clefts. One question to address is why adjuncts cannot be clefted. Before we answer this question, let us first establish that the wh-fronting of adjuncts is an instance of topicalization, as we have indicated earlier, though keep in mind that for some speakers, wh-adjuncts always stay in-situ. I will only discuss adjunct cases in Egyptian Arabic here.

As shown in 3.1.1, topicalization sentences in Egyptian Arabic do not have the complementizer *illi* and resumptive pronouns are used in the topicalization of adjuncts only when island violations occur, (9b) is repeated as (42a) below:

(42) a. fi-l-shari'dah, Mona kaanit bitdawwar 'ala sha??ah (*hinaak)
on-the-street DEM Mona was looking for apartment (*there)
'On that street, Mona was looking for an apartment.'

b. fi-l-hayy dah, Ali kaan ye'raf [naas kiti
in-the-suburb DEM Ali used to-know people many
[kaanu 'ayshiin *(hinaak)
were living there
'In the suburb, Ali used to know many people who were living there.'

The obligatoriness of resumptive pronouns in (42b) is comparable to languages like Hebrew; resumptive pronouns are obligatory within islands. As (42a) shows, resumptive pronouns are not allowed in topicalization if they are not within islands. This is, however, different from the distribution of resumptive pronouns in relativization and clefting.

Consider now adjunct *wh-fronting* sentences, (9a) is repeated below:

(9) a. ma'a miin Mona raahit il-Qahirah
with whom Mona went to-Cairo
'With whom did Mona go to Cairo?'

(43) feen Mona raahit
where Mona went
'Where did Mona go?'

In both (9a) and (43), the complementizer *illi* does not occur, similar to the topicalization cases in (42). Given sentences like (9a) and (43), one might argue that they are clear instances of wh-movement of the wh-words (to Spec of C^0). However, if these are instances of wh-movement of wh-words, the question that arises is why this kind of movement is never possible for arguments. Wahba, on the other hand, argues that the adjunct *wh-fronting* is just like the argument wh-fronting. Nonetheless, the absence of *illi* in *wh-fronting* of adjuncts is unexplained.[8] On the other hand, if adjunct *wh-fronting* is an instance of

[8]I do not have an explanation as to why topicalization of wh-arguments is not possible.

topicalization, the absence of *illi* naturally follows given that there is no *illi* in topicalization sentences.

Now let us consider why the wh-cleft strategy is not available for adjuncts. Consider again a reduced cleft structure:

(44) $[_{CP}XP_i\ [_{CP}\ Op_i\ COMP\ [_{IP}\ ....t_i\ ]]$

As indicated in (44), there is an empty operator in the predicate sentence, which is co-indexed with the clefted constituent. We have seen that in reduced clefts, wh-adjuncts are not possible. Compare the following English sentences with the sentences with wh-adjuncts above:

(45) a. It is David that Joanna loves.
b. It is to New York that John went.

(46) a. It is for this reason that Bill left.
b. It was in this way that Terry solved the problem.

(47) It was very angrily that John left the room.

From the sentences in (45) and (46), it is clear that PPs and adjuncts can be clefted, in contrast with the Egyptian Arabic data.[9]

I suggest here that for some reasons which I do not yet understand, adjuncts do not appear in reduced clefts. The difference between English and Egyptian Arabic may be reduced to a difference between reduced clefts and full clefts. However, at the moment, I do not have the data on adjuncts in full clefts in Egyptian Arabic.

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[9]Note that not all adjuncts are possible. For instance, as (i) shows, the adjunct intentionally cannot be clefted.

(i) *It was intentionally that Nick insulted Steve.

In short, the fronting of adjuncts can be analyzed as a case of topicalization. Given this analysis, the unavailability of the complementizer *illi* in adjunct *wh-fronting* naturally follows. In contrast, if we assume a wh-movement analysis of *wh-fronting* as in Wahba (1984), the absence of *illi* in adjunct "wh-fronting" remains a mystery.

This concludes the discussion of optional fronting languages. We have argued for a wh-cleft analysis of the wh-fronting of arguments, which involves a base-generated wh-NP as the subject of a cleft construction. The fronting of adjuncts is argued to be parallel to topicalization. Hence, these languages are not optional movement languages with respect to wh-movement.

3.2. Multiple Fronting Languages

In this section, I examine languages which multiply front wh-words and show that these languages are not counterexamples to the proposal put forth in Chapter two regarding Clausal Typing. The languages which have multiple fronting include Slavic languages like Polish and Bulgarian, and non-Slavic languages like Hungarian.[10] I will first show that the wh-words in these languages are similar to wh-words in Mandarin Chinese and Japanese in that they do not have inherent quantificational force. I then argue that in the multiple fronting languages, the interrogative force of the wh-words is determined by a null determiner. The multiple fronting nature of wh-words will be shown to follow from the licensing of this null determiner.

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[10]Pesetsky (p.c.) informs that Yiddish is also a multiple fronting language. And there are some languages, such as Basque, which might also be a multiple fronting languages. I thank Javier Ormazabal and Myriam Uribe-Etxebarria for discussing Basque with me.

In addition, these languages have been argued to differ in terms of the landing sites of the multiply fronted wh-words. I will discuss how Rudin (1989) analyzes the differences and the problems with her analysis. I then propose a modification of her analysis to account for the different landing sites of the multiply fronted wh-words.

3.2.1. Multiple Fronting of Wh-words

Let us first review examples which show that languages such as Bulgarian, Polish and Hungarian are multiple fronting languages (see Rudin 1988 for examples in other multiple fronting languages). In multiple wh-questions, all of the wh-words have to be fronted. (The # or * markings are given by the authors cited.)

(48) Bulgarian (Rudin 1986)
  a. Koj kogo e vidjal
     who whom saw-3s
     'Who saw who?'
  b. #Koj e vidjal kogo (echo reading only)
     who saw-3s whom
     'Who saw who?'

(49) Polish (Wachowicz 1974)
  a. Co komu Monika dala
     what to whom Monica gave
     'What did Monica give to whom?'
  b. *Co Monika komu dala
     what Monica to whom gave
     'What did Monica give to whom?'

(50) Hungarian[11]
a. ki mit javasolt
who what proposed
'Who proposed what?'
b. *ki javasolt mit
who proposed what
'Who proposed what?'

In (48)-(50), if the second wh-word does not front, the sentence can only be interpreted as an echo question. Note moreover, that in Polish and Hungarian (and possibly Bulgarian), the second wh-word can stay in-situ if it has a D(iscourse)-linked reading (see Wachowicz 1974, Pesetsky 1987 and Csúri 1991). I will come back to the D-linked readings in section 3.2.5.

Though these languages all manifest obligatory multiple fronting of wh-words, they do not necessarily have the same landing sites for the wh-words. Rudin (1988) shows that the multiple fronting languages can be divided into two types in terms of where the words are at S-structure. I will come back to the differences exhibited between these two types. Let us now turn to the question of what multiple fronting languages have in common which leads to the multiple fronting of wh-words. The question we need to answer here is not only why these languages allow multiple fronting of wh-words, but also why they must front all the wh-words in the sentence. I will show below that the properties of wh-words themselves in the multiple wh-fronting languages contribute to the requirement of fronting all the wh-words.

3.2.2. Wh-phrases and Indefinites

The wh-words in the multiple fronting languages can be used to form indefinite NPs. In particular, the interrogative reading of the wh-words take a

[11]I thank Piroska Csúri for providing native speaker judgements.

bare form and the indefinite (non-interrogative) reading of the wh-words are derived from the bare form of the wh-words with certain particles which either prefix or suffix to the bare form. In certain languages, the bare form can also be used as polarity items in certain affective environments.[12] I will come back to the polarity reading in 3.2.5. Consider the data shown below from Polish, Bulgarian and Hungarian.

(51) Polish

kto	who	ktoś	someone
gdzie	where	gdzieś	somewhere
kiedy	when	kiedyś	sometime
jaki	what sort of	jakiś	some sort of

(52) Bulgarian

kój	who	njákoj	someone
kudé	where	njakude	somewhere
koga	when	njakoga	sometime
kakvó	what sort of	njakakvo	some sort of

(53) Hungarian

ki	who	valaki	someone
hol	where	valahol	somewhere
mikor	when	valamikor	sometime
mi	what	valami	something

In Polish, the suffix *ś* is attached to a wh-word to form an indefinite; in Bulgarian, the prefix *nja-* is used and in Hungarian, *vala-* is prefixed to a wh-word to form an indefinite.

The relationship we find here between a wh-word and an indefinite reading of a wh-word is certainly not new. Discussions on the relationship

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[12]I thank David Pesetsky for pointing this out to me.

between indefinite and interrogative NP can be traced back to Chomsky (1964), Katz and Postal (1964) and Klima (1964). It has been proposed that the interrogative NP *who* and *what* in English is derived from [Wh+someone] and [Wh+something]. Close parallel between interrogative and indefinite NPs can also be found in Mandarin Chinese, Japanese and Korean as well as Martuthunira, Diyari, and Panyjima.[13] The former three languages are non-movement languages (i.e. leaving wh-words in-situ in single questions), while the latter three require that a wh-word, when interpreted as interrogative, be in sentence-initial position. The difference between the multiple fronting languages and the other languages which show a wh/indefinite alternation is that the multiple fronting languages always have an affix in the case of the indefinite reading while non-multiple fronting languages have no morphological alternations, as shown below (I will discuss languages like English which have words like *somewhere* in section 3.2.5):

(54) Mandarin Chinese

shei	who	anyone
sheme	what	anything

(55) Japanese[14]

dare	who	anyone
nani	what	anything

(56) Korean

nwukwu	who	anyone
mues	what	anything

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[13]The latter three languages are all Australian languages. I thank Ken Hale for pointing out to me the similarity that these languages share with the Polish-type as well as the Chinese-type languages.

[14]*Dare* and *nani* need to be attached to *-ka* to have an indefinite NP reading. I discuss the Japanese case briefly in 3.2.3. and in Chapter 4.

(57) Martuthunira

ngana	who	anyone
nhartu	what	anything

(58) Diyari

wali	who	anyone
mina	what	anything

(59) Panyjima

ngana	who	anyone
ngananha	what	anything

I will come back to Martuthunira, Diyari and Panyjima in section 3.2.6. I discuss the interpretation of wh-words in Mandarin Chinese in detail in Chapter 4. Now, I will turn to a brief summary of Heim's (1982) proposal for indefinites as well as Nishigauchi's (1990) extension of Heim's proposal to account for the Japanese wh/indefinite alternation. I will then come back to the multiple fronting languages and show that a similar analysis can be given to account for the alternation. This analysis in turn provides the basis for the hypothesis that multiple fronting of wh-words is due to the inherent properties of wh-words in these languages.

3.2.2.1. Heim's Theory of Indefinites and The Interpretation of Wh-words

Nishigauchi (1990) argues that Japanese wh-words are like indefinite NPs in that they do not have inherent quantificational force and thus they always need a binder. Since he assumes Heim's theory of indefinite NPs, I will first summarize Heim's proposal.

Following Lewis (1975), Heim (1982) argues that indefinites do not have inherent quantificational force. Instead, their quantificational force is determined

by other elements with inherent quantificational force including adverbs of quantification, or an interpretive rule. (60) and (61) illustrate that an indefinite can be interpreted as either an existential or a universal quantifier. (60) and (61) are from Heim (1982).

(60) If a man owns a donkey he always beats it.

(61) Sometimes, if a cat falls from the fifth floor, it survives.

(60) and (61) have the paraphrases in (62) and (63).

(62) For every man and every donkey such that the former owns the latter, he beats it.

(63) Some cats that fall from the fifth floor survive.

In (60), both indefinites are interpreted as universal and in (61), the indefinite NP *a cat* is interpreted as existential. To account for the different interpretation of indefinites in sentences such as (60) and (61), Heim proposes that an indefinite is a variable in the logical sense and that it "never contributes anything more than this variable-reading to the meaning of the sentences in which it occurs,..." (p. 130). Adverbs of quantification (acting as unselective binders, binding more than one element at a time) such as *always* in (60) and *sometimes* in (61) are the ones that bind the variables and determine their quantificational force (cf. Lewis 1975). For indefinites which appear in sentences without overt binders or invisible necessity operators (see Heim (1982) for details), a rule of "existential closure" applies. Existential closure introduces a non-overt existential quantifier to a

sentence.[15] For instance, given a sentence such as (64), though there is no adverb of quantification, the indefinite NP *a cat* still gets interpreted existentially.

(64) Every man saw a cat.

Heim proposes that a rule of existential closure introduces a non-overt existential quantifier and thus *a cat* can be bound by it and be interpreted existentially.

Consider now some Japanese examples which show that Japanese wh-words are similar to indefinite NPs in lacking inherent quantificational force (from Nishigauchi 1990):

(65) a. Dare-ga ki-masu-*ka*
who N come-Q
'Who's coming?'

b. Dare-ga ki-te *mo*, boku-wa aw-a-nai
who-N come Q I-T meet-not
'For all x, if x comes, I would not meet (x).'

c. Dare-*ka*-kara henna tegami-ga todoi-ta
who from strange letter-N arrived
'A strange letter came from somebody.'

As shown in (65a)-(65c), the wh-word *dare* 'who' can be interpreted as interrogative, universal or existential. It is interpreted as an interrogative when there is a sentential *-ka* particle; a universal when there is *-mo* and existential when there is a non-sentential *-ka*.

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[15] I will discuss where existential closure applies in Heim's theory in Chapter 4 as well as Diesing's (1990) proposal regarding existential closure. For the discussion here, it suffices to know that there is a rule of existential closure which introduces an existential quantifier to a sentence.

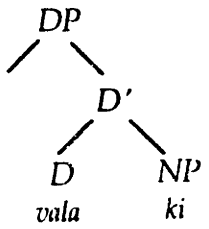
Nishigauchi extends Heim's theory of indefinites to account for the interpretation of wh-words. He proposes that wh-words in Japanese do not have inherent quantificational force. Their quantificational force is determined by the particles *-ka* and *-mo*. The former contributes interrogative or existential force while the latter contributes universal force. I will discuss the Japanese data further in Chapter 4.

3.2.2.2. Wh/Indefinites in Multiple Fronting Languages

Following Nishigauchi's analysis of Japanese wh-words, I propose to account for the wh/indefinite alternation in the multiple fronting languages along the same lines. Since the interrogative reading of a wh-word can alternate with an indefinite reading of a wh-word if a certain affix is present, the null hypothesis is that the wh-words themselves do not have inherent quantificational force.

Consider first what contributes existential force to the wh-words in the multiple fronting languages. In the examples in (51)-(53), we have seen that the indefinite reading of the wh-words are linked to the presence of an affix. Thus, it is reasonable to say that the affix itself contributes existential force. Take the Hungarian *valaki* 'someone' as an example. The word is make up of *vala* and *ki* Let's call *ki* the "*core*". The *core* is the part without any inherent quantificational force and *-vala*, is the part contributing the existential quantificational force. I propose to treat the affixes as determiners. *valaki* is thus a DP, as shown in (66).

(66)

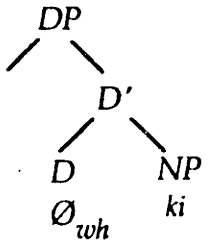


In (66), the core *ki* has no quantificational force. The determiner *vala* is equivalent to an existential quantifier and it binds the core *ki*. Now what about a bare wh-word?

With respect to bare wh-words, the multiple fronting languages are divided into two types: in languages like Hungarian, a bare wh-word can only have an interrogative reading; in languages like Polish, as noted earlier, a bare wh-word can be used either as an interrogative, in which case it has to front, or it can have a polarity reading (e.g. anyone, anything) when it is used in affective contexts (e.g. yes-no questions, conditionals), in which case it can stay in-situ. I will discuss the interrogative reading here and the polarity reading is discussed in 3.2.5.

Given that the core has no inherent quantificational force, the question that arises is what contributes interrogative force to it? Keeping in mind that languages like Polish and Hungarian do not have wh-particles, the core cannot get interrogative force from a wh-particle, as in the case of Mandarin Chinese and Japanese, which we will see in the next chapter. I propose that when the core is interpreted as an interrogative, a null determiner is occupying the D position. In particular, the null determiner has interrogative force: $[_D \varnothing_{[+wh]}]$. We can consider it to be the null counterpart of *which* in English. Consider (67).

(67)



The $[_D Ø_{[+wh]}]$ binds the core *ki* in (67) and contributes interrogative force to it.

Multiple fronting of wh-words in these languages can now be attributed to a licensing requirement. I propose that the $[_D Ø_{[+wh]}]$ which contributes interrogative force to the wh-words in these languages must be licensed. Let's first consider sentences with one wh-word. I have argued in Chapter two that languages like Polish do not have a C^0 yes-no particle and thus, no wh-particle. Further, in Hungarian, a multiple fronting language, there is no particle used in forming yes-no questions, as shown in (68).

(68) meg-látogat-ta János Péter-t
perf-visit-past3sgDef János Péter
'Did János visit Péter?'

Hence, in these multiple fronting languages, one wh-word needs to move to Spec of C^0 to type the clause as a wh-question. As mentioned in Chapter two, I assume that after a wh-word moves to Spec of C^0, Spec-head agreement takes place and the C^0 is marked [+wh].

I propose that the $[_D Ø_{[+wh]}]$ has to be licensed by a C^0 which is marked [+wh]. In the case of the $[_D Ø_{[+wh]}]$ in Spec of C^0, it is licensed by the C^0 by being in a Spec-head agreement relationship.[16] In the case of other wh-phrases in the

[16]Note that for the wh-phrase which moves to Spec of C^0 to type a clause, there is a "double-effect". The wh-phrase, being in Spec of C^0 triggers Spec-head

sentence (other DP's with $[_D \emptyset_{[+wh]}]$), the $[_D \emptyset_{[+wh]}]$ in the wh-phrases has to be in a local relationship (to be defined below) with the [+wh] C^0 to be licensed. It is the licensing of the $[_D \emptyset_{[+wh]}]$ which requires the fronting of all wh-words with an interrogative reading. This raises two questions: first, why does $[_D \emptyset_{[+wh]}]$ need to be licensed? Why is [+wh] C^0 the only element that can license it?

Regarding the first question, the licensing requirement on $[_D \emptyset_{[+wh]}]$ can be considered on a par with the licensing of empty pronominals (pro). The parallel between a determiner and a pronominal has been proposed in Postal (1964) and more recently Hale (1986) among others who argues that pronominals are determiners. Here, the parallel between the $[_D \emptyset_{[+wh]}]$ and pro is not a complete one. The clear difference between a $[_D \emptyset_{[+wh]}]$ and pro is that the former does have inherent features (i.e. [+wh]) while the latter does not. I extend the identificational requirement of pro given in Chomsky (1982) and Rizzi (1986) to $[_D \emptyset_{[+wh]}]$. In particular, the [+wh] feature of the $[_D \emptyset_{[+wh]}]$ also needs to be identified, though not by acquiring ϕ–features, but rather by feature matching (agreement). Note that the feature matching cannot be with any [+wh] element. Instead, it is with a [+wh] C^0. Here, we can incorporate Rizzi's (1986) proposal that pro needs to be governed by an X^0 and identified.[17] Further, the governing head of pro in Rizzi's system is also the head which has the features that pro is identified with. In the case of a $[_D \emptyset_{[+wh]}]$, a [+wh] C^0 both governs and identifies the $[_D \emptyset_{[+wh]}]$.

This in turn answers the second question: why is [+wh] C^0 the only element which licenses a $[_D \emptyset_{[+wh]}]$? Rizzi (1986) states that languages may vary

---

agreement and the C^0 acquires the [+wh] feature. By having the [+wh] feature, the C^0 can in turn license the $[_D \emptyset_{[+wh]}]$.

[17]The government of pro may be simply an instance of the requirement that all empty categories need to be governed, as indicated in Chomsky (1989).

as to which X^0 governs a pro. However, for the licensing of $[_D \emptyset_{[+wh]}]$, there does not seem to show any variation; the $[_D \emptyset_{[+wh]}]$ is all the multiple fronting languages is licensed by a a [+wh] C^0. The reason for this can be explained along the lines of Rizzi's theory of licensing of pro: a [+wh] C^0 is the licensing head which has the proper features to identify (agree with) a $[_D \emptyset_{[+wh]}]$. Lastly, this licensing is an S-structure requirement, as is the licensing of pro (see Chomsky 1982 and Rizzi 1986).

We have indicated here that the wh-phrase in Spec of C^0 is licensed by the C^0 by being in a Spec-head agreement relationship with the C^0. For other wh-phrases which get fronted, it is said that they are in a local relationship with C^0. The question which arises is what the local relationship is. Since C^0 has to govern the $[_D \emptyset_{[+wh]}]$, the local relationship has to satisfy government. Let's now turn to the landing sites of the fronted wh-words and see whether all of them are in positions that can be licensed (governed) by a C^0.

3.2.3. Landing Sites of Multiple Fronted Wh-words

Rudin (1988) proposes that the fronted wh-words in multiple fronting languages do not necessarily land in the same place. She argues that the languages are divided into two types: [+multiply filled SpecCP] ([+MFS]) languages and [-multiply filled SpecCP] ([-MFS]) languages. The former includes Bulgarian and Romanian. The latter includes Serbo-croatian, Polish and Czech. The [+MFS] languages differ from the [-MFS] languages in four ways:

1) [+MFS] languages can extract multiple wh-words from a clause.

2) [+MFS] languages can violate wh-islands.

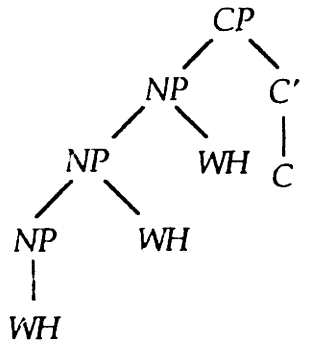
3) fronted wh-words in [+MFS] languages cannot be separated.

4) fronted wh-words in [+MFS] languages appear in a fixed order.

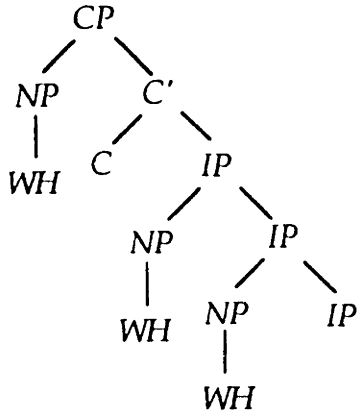
Based on these four differences, she proposes that the [+MFS] languages adjoin all the wh-words in Spec of CP, as in (69a) while the [-MFS] languages involves fronting one wh-word to Spec of CP and adjoining the other wh-words to IP, as in (69b).

(69)

a.



b.



I will now discuss the four differences in detail. I will show that given Rudin's assumptions, (69a) cannot account for the fronting of wh-words in the [+MFS] languages. I propose a modification of Rudin's proposal and show how it can account for all the properties of wh-fronting in [+MFS] languages. In addition, I discuss how the contrasts between [+MFS] and [-MFS] languages follow from the difference between (69a) and (69b).

3.2.3.1. Multiple Extraction of Wh-words from a Clause

Rudin notes that Bulgarian and Romanian can extract multiple wh-words from a clause while Polish, Serbo-Croatian and Czech cannot, as shown by the contrasts in (70).

(70) a. Bulgarian
Koj kude mislis [ce e otisul _ _]
who where think-2s that has gond
'Who do you think (that) went where?'

b. Romanian
Cine cui ce ziceai [ca i -a promis _ _ _]
who to whom what said-2s that to him has promised
'Who did you say imagines you discovered what?'

c. Serba-Croatian
*Ko sta zelite [da vam kupi _]
who what want-2p to you buy-3s
'Who do you want to buy you what?'

d. Polish[18]
*Co komu Maria chce, zeby Janek kupil
what to whom Maria wants that Janek buy
'What does Maria want Janek to buy for whom?'

e. Czech
*Kde kdy si myslís, ze budeme spát
where when refl think-2s that will-1p sleep
'Where do you think we will sleep when?'

Sentences in (70) show that the Bulgarian-type languages allow more than one wh-word to be fronted from an embedded clause and the Polish-type languages do not. Rudin argues that sentences such as (70a) and (70b) support the claim that Bulgarian-type languages allow multiple adjunction to Spec of CP. On the other hand, (70c)-(70e) support the claim that the Polish-type languages do not allow adjunction to Spec of CP. I will come back to the specific assumptions she makes.

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[18]Polish does not allow extraction out of a finite clause. So in this example, a subjunctive embedded clause is used.

3.2.3.2. No Wh-islands in Bulgarian-type Languages

Rudin maintains that Bulgarian-type languages can violate wh-islands but Polish-type languages cannot. She shows that (a) relativization out of indirect questions is allowed and (b) movement of interrogative wh-words out of an embedded wh-question is fairly acceptable with heavy wh-phrases, as in (71).

(71) a. Vidjah edna kniga, kojato$_i$ se čudga [koj znae [koj prodava $_i$]
saw-1s a book which wonder-1s who knows who sells
'I saw a book which I wonder who know who sells (it).'

b. ?Koja ot tezi knigi se čudiš koj znae koj prodava
which of these books wonder-2s who knows who sells
'Which of these books do you wonder who knows who sells?'

She notes that the difference between relativization and questioning is similar to some Scandinavian languages. She follows Lie (1982) and assumes that some semantic or pragmatic constraints lead to the difference between questioning out of a question and relativizing out of a question. She further supports the claim that Bulgarian-type languages can violate wh-islands by showing that in Romanian, a language which also allows multiple adjunction in Spec of C^0, questioning out of an indirect question is acceptable, as in (72).

(72) Pentru care clauză vrei să afli cine nu a decis Încă
for which paragraph want-2s to learn who not decided yet
ce va vota _?
what will-3s vote
'For which paragraph do you want to learn who has not decided yet what he will vote?'

In contrast, in the [-MFS] languages, either relativization or questioning out of a question is illegitimate. Sentences in (73) are examples in Serbo-Croatian:

(73) a. *šta si me pitao ko može da uradi
what have-2s me asked who can to do
'What did you ask me who can do?'

b.*...osoba, koja sam ti rekao gde (on) živi...
individual who have-1s you told where he lives
...the individual who you asked me where (he) lives ...

Hence, there is a contrast between the [+MFS] languages and the [-MFS] languages with respect to wh-island violations.

3.2.3.3. Constituent Structure of Fronted Wh-words

The third argument that Rudin gives is based on the fact that fronted wh-words in Bulgarian-type languages cannot be separated by clitics and parentheticals while those in Polish-type languages can, as shown in (74).

Clitics

(74) a. *Bulgarian*
***Koj** ti e **kakvo** kazal
who you has what told
'Who told you what?'

b. *Serbo-Croatian*
Ko mu je **sta** dao
who him has what given
Who gave him what?'

c. *Polish*
Kto sie **komu** podoba
who refl to whom like
'Who likes who?'

Parentheticals

(75) a. *Bulgarian*
?*Koh, spored tebe, kakvo e kazal
who according to you what has said
'Who, in your opinion, said what?'

b. *Polish*
Kto wedlug ciebie komu co dal
who according to you to whom what gave
'Who in your opinion gave what to whom?'

As Rudin points out, the examples with clitics are not strong arguments because clitics in both Bulgarian and Romanian are proclitic to the verb. On the other hand, examples with parentheticals show clearly that there is a difference between the Bulgarian-type languages and the Polish-type languages. The former cannot be separated by parentheticals and the latter can.

3.2.3.4. Order among the Fronted Wh-words

The fourth argument is based on the order of the fronted wh-words. Rudin shows that fronted wh-words in the Bulgarian-type languages have a fixed order. In particular, Bulgarian has the order NOM>ACC>DAT and wh-adverbs (i.e. adjuncts) follow the non-adjuncts (Rudin 1985), as sentences in (76) illustrates. On the other hand, according to Rudin (1988) there is no fixed order of fronted wh-words in the Polish-type languages.

Bulgarian[19]

(76) a. Koj kogo vizda
who whom sees
'Who sees whom?'

b. *Kogo Koj vizda
whom who sees

c. Koj kude e otisul
who where went-3s
'Who went where?'

d. *kude koj e otisul
where who went-3s

Polish

(77) a. Kogo komu przedstawiles
whom to whom introduced-2s
'Whom did you introduce to whom?'

b. Komu kogo przedstawiles
to whom whom introduced

Czech

(78) a. Kdo kdy koho pozval, nevím
whom when whom invited I don't know
'Who invited who when, I don't know.'

b. Kdy kdo koho pozval, neím
when whom whom invited I don't know

It should be noted that Polish speakers that I consulted with consider the ordering in (77b) to be illegitimate. Further, Polish speakers do not agree with respect to the ordering between subject and object wh-words; some have a strict ordering between the two and others can have free ordering. With respect to the

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[19]Rudin (1985) notes that the order [adverb + argument] is sometimes possible. The same facts are also found in Hungarian, which belongs to the Bulgarian-type according to the four tests discussed here. However, Csúri (p.c.) points out that the order [adverb + argument] in Hungarian requires a Discourse-linking reading (Pesetsky 1987) of the adverb. Hence, it is reasonable to say that the neutral order is fixed and wh-adverbs need to follow wh-arguments.

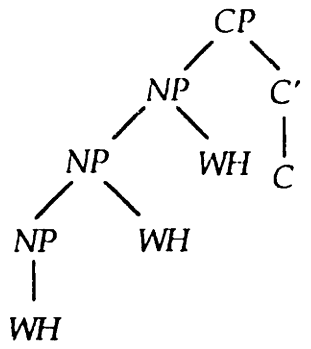
ordering between arguments and adjuncts, these speakers have a strict ordering: arguments precede adjuncts. I w come back to the ordering among fronted wh-words in Polish-type languages later.

3.2.3.5. Rudin's Account

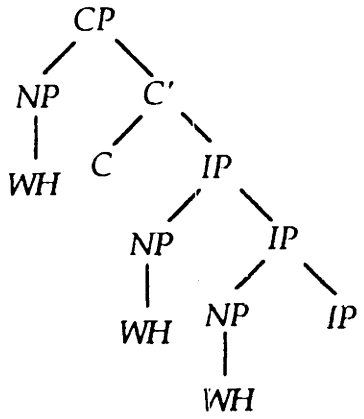
Now let's consider how Rudin accounts for the four contrasts above with the structures that she proposes, repeated below:

(69)

a.



b.



(69a) is the structure of the Bulgarian-type languages and (69b) is that of the Polish-type languages.

I. Multiple extraction and wh-island violations

Rudin argues that if a language allows adjunction to Spec of CP, then any number of wh-words can pass through it Thus multiple extraction from an embedded clause is allowed. On the other hand, if adjunction to Spec of CP is not allowed, and multiple fronting is as represented in (69b), then subjacency will be violated.

Similarly, since multiple adjunction to Spec of CP is allowed in [+MFS] languages, wh-island violations are voided because a wh-word can extract from

an indirect question by passing through the embedded COMP. And in [-MFS] languages, wh-island violations are predicted to be worse than then ones in [+MFS] languages since no multiple adjunction to Spec of CP is allowed.

II. Clitic and parentheticals

In (69a), the fronted wh-words form a constituent but in (69b) they do not. If clitics appear in C^0 at S-structure, then in the Polish-type languages, it is possible for a clitic to appear between the first wh-word and the rest of the wh-words, given (69b). On the other hand, in the Bulgarian-type languages, since all wh-words appear within Spec of CP, they will not be separated by an element in C^0.

Regarding parentheticals, Rudin assumes that they can appear at major constituent boundaries. Given (69a) for the Bulgarian-type languages, it is expected that parentheticals will not intervene between wh-words. On the order hand, given (69b), it is possible for parentheticals to break up between the first and the rest of the wh-words for instance. In fact, Cichocki (1983) shows that in Polish, given three wh-words, parentheticals can be between the first one and the second one, or follow the whole sequence. However, they cannot go between the second and the third one, as shown in (79).

(79) a. kto według ciebie komu co dał
who-NOM according to you who-DAT what-ACC gave
'Who, according to you gave what to whom?'

b. *kto komu według ciebie co dał
who-NOM who-DAT according to you what-ACC gave

c. Kto komu co według ciebie dał
who-NOM who-DAT what-ACC according to you gave

This nonetheless does not apply to Czech, as Rudin notes, since in Czech, parentheticals can appear anywhere in a wh-sequence.

IV. Word order

In (69a), the structure of Spec of CP involves adjunction to the right. The most embedded wh-word moves to Spec of CP first and subsequent wh-words adjoin to it. Rudin assumes the split ECP theory proposed in Aoun, Horstein, Lightfoot and Weinberg (1987) among others; an empty category must be governed by a lexical head at PF and an A'-anaphor (e.g. a trace of a wh-word) must be A'-bound in its Domain at LF. This adjunction pattern in (69a), according to Rudin, can account for the fixed ordering of wh-words as follows: the one which moves into Spec of CP first triggers Spec-head agreement and thus C^0 will have the same index as the first wh-word. C^0, having the same index as the first wh-word can act as a head-governor. This predicts that a subject has to move to Spec of CP before an object so that the former can be head-governed by the C^0 co-indexed with the subject wh-word and thereby satisfying the ECP.

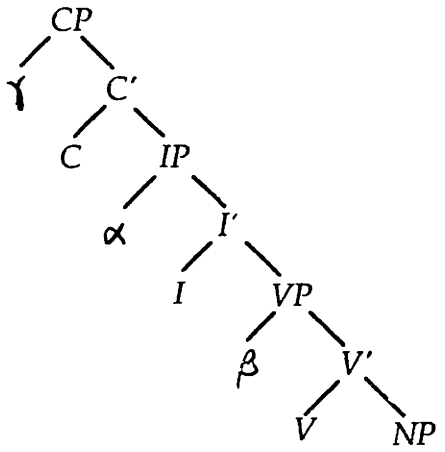
However, this kind of derivation will not explain the order [subject + adjunct]. Since adjuncts need to be head-governed as well, why can't it move into Spec of CP first? In fact, the order [subject + adjunct] will be ruled out under this analysis and the order [adjunct + object] will be predicted to be good, contrary to the facts in Bulgarian.

3.2.4. A Modified Multiple Adjunction Theory

I first discuss how Rudin's analysis can be modified to account for the word order among fronted wh-words. Then given the proposed landing sites of the wh-words, I come back to the licensing of $[_D \varnothing_{[+wh]}]$ by a C^0.

We have seen that the multiple adjunction structure can account for multiple extraction as well as wh-island violations. However, it cannot fully account for the ordering of multiply fronted wh-words. The problem, as stated above, is the order between an argument and an adjunct. I propose an account of the ordering facts here assuming the structures given in Rudin (1988). In particular, I propose to account for the ordering by the Principle of Economy of Derivation (Chomsky 1989, 1990 fall lectures). Chomsky argues that superiority violations can be accounted for by the Economy of Derivation. Consider the representation in (80).

(80)



Chomsky proposes that given a structure such as (80), movement from α to γ is a shorter derivation than movement from β to γ. Thus, by Economy of Derivation, movement of β to γ will be ill-formed.[20] A standard superiority violation such as "**what did who buy*?" is thus ruled out.

Let us turn to the fixed order of the subject and the object wh-words in the [+MFS] languages. If the object moves first, the output will be ruled out by

[20]Chomsky states that if β and α mutually m-command each other, then α to γ and β to γ are equal in terms of deriving the shortest move.

Economy of Derivation because there is a shorter movement, namely the movement of the subject. Thus, we predict that given a subject and an object, we have the order [subject + object].

Now consider the order between an argument and an adjunct. I propose that the order between an argument and an adjunct can also be accounted for by the Principle of Economy of Derivation if we assume, following Larson (1988), that adverbs are in the most embedded positions. That is, assuming a uniform rightward binary branching structure, an adjunct is generated in the most embedded position (and thus both the subject and the object of the sentence asymmetrically c-command the adjunct). By the Principle of Economy of Derivation, we predict that movements of the subject and the object to take place before the movement of the adjunct. Thus, the [argument + adjunct] ordering is derived.[21]

Consider now the ordering among fronted wh-words in the [-MFS] languages. According to Rudin (1988), the ordering among fronted wh-words in these languages are free. However, as I mentioned earlier, Polish speakers seem to have strict ordering except that for some speakers, the order between subjects and objects appear to be free. Given the account proposed above for the ordering facts in [+MFS] languages, we expect strict ordering among fronted wh-words in the [-MFS] languages as well since the c-command relationship between the subject and object as well as that between arguments and adjuncts are the same.

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[21]One reasonable question to ask here is what the ordering among fronted adjuncts are. As Rudin (1988) points out, if there is more than one fronted adjunct, the sentence is ill-formed (in both [+MFS] and [-MFS] languages). The only way to have more than two adjuncts is to have a preposed conjoined phrase containing two adjuncts (e.g. how and why ...).

Nonetheless, given the structures in (69a) and (69b), there is indeed a difference the [+MFS] languages and the [-MFS] languages, which might contribute to the different ordering facts. Given the structures in (69a) and (69b), in the [+MFS] languages, all the fronted wh-words "compete" for the same position (i.e. the Spec of C^0). On the other hand, in the [-MFS] languages, one wh-word is fronted to Spec of C^0 for Clausal Typing and the other ones adjoin to IP. If the Principle of Economy of Derivation constrains only movements to the same position, then the movements of wh-words in the [-MFS] will not be constrained by Economy of Derivation. On the other hand, if we assume the judgements given by the Polish speakers that I consulted with, then the Principle of Economy of Derivation does constrain movements to different positions. More data are needed to determine whether or not strict ordering is required among fronted wh-words in Polish-type languages. In particular, we need to find out whether or not the different ordering in Czech, given in Rudin (1988), shows differences in terms of Discourse-linked readings. I do not have the relevant data and at this point I will leave the answer to the following question open: does the Principle of Economy of Derivation constrain movements to different positions open.

Lastly, I would like to point out that given the structure in (69a) and (69b), it is not apparent that how multiple extractions are not ruled out in [-MFS] languages. Assuming that one wh-word first moves successive cyclically from an embedded clause to the matrix, the second wh-word can adjoin first to IP and then moves to the matrix crossing a CP. Since the second wh-word first adjoins to IP, IP is not a barrier for it (assuming a segment theory of adjunction proposed in May 1985). Further, the embedded CP, which is selected by the verb, is not a barrier either. Movement of the second wh-word to the matrix therefore should be well-formed. I propose that what rules out the movement of a second wh-

word in this case is not the ECP. Instead, it is a property of Quantifier Raising (QR). The movement of a second wh-word in the Polish-type languages first adjoins to IP. In other words, the wh-word first QR to IP. Since QR, for some reason which is still unknown, is clausebound, the wh-word which adjoins to IP cannot move further.

3.2.4.1. Licensing by C^0

Let's turn back to the licensing of $[_D \varnothing_{[+wh]}]$ by C^0. Given the above analysis of the landing site of the wh-words, the question which arises is whether both landing sites (i.e. position adjoined to Spec of C^0 and position adjoined to IP) are governed by C^0. Consider the position adjoined to Spec of C^0. Assuming a segment theory of adjunction (May 1985 and Chomsky 1986), adjunction does not add a barrier. Thus, regardless of how many wh-phrases are in Spec of C^0, all of them can be governed by C^0 and thereby licensed by it. Now what about the position adjoin to IP? Again, assuming a segment theory of adjunction, since an adjoined position is not dominated by every segment of a category, an IP-adjoined position can be governed by C^0 and thus the wh-word adjoined to IP can be licensed by C^0. In other words, both adjoined positions to Spec of C^0 and IP-adjoined positions are positions which C^0 can govern; wh-phrases which contain a $[_D \varnothing_{[+wh]}]$ can thus be licensed in these positions.

3.2.4.2. Adjunction to IP vs. Movement to Spec of CP

We have seen that there are two types of multiple fronting languages. Following Rudin (1988), I assume that the difference is a result of the condition on SpecCP adjunction applying in one type of the multiple fronting languages, as stated in (81).

(81) Condition on SpecCP Adjunction (Rudin 1988, p. 490)
*[SpecCP a Spec CP]
(nothing may be adjoined to Spec CP)

Rudin proposes that the Condition in (81) applies to Polish-type languages obey at S-structure but it does not apply to Bulgarian-type languages at all. For Rudin, this explains why Polish-type languages have the structure in (69b). However, a question which arises here is what prevents some wh-words in the Bulgarian-type languages from being adjoined to IP? I suggest that this follows from the Economy of Derivation (Chomsky 1989). Assuming that wh-words in general need to move to Spec of CP at LF for absorption (see Higginbotham and May 1981 among others), let us consider movement to Spec of CP vs adjunction to IP.[22]

In the multiple fronting languages, we know that the wh-phrases have to move to satisfy the licensing requirement of $[_D \varnothing_{[+wh]}]$. In the Bulgarian-type languages, adjunction to Spec of CP is allowed since the Condition in (81) does not apply to these languages. If wh-words all move at S-structure to Spec of CP, both the licensing of $[_D \varnothing_{[+wh]}]$ and absorption can be satisfied (i.e. at LF, no movement is necessary). On the other hand, if such a language opts to adjoin some of the wh-words to IP at S-structure (note that one wh-word has to move to Spec of CP for Clausal Typing), at LF, the wh-words that are adjoined to IP at S-structure need to move again to Spec of CP for absorption, assuming that absorption does not take place if the wh-words are not all in Spec of C^0. I suggest that the subsequent movement from IP-adjoined position to Spec of CP at LF creates a second instance of Form Chain (cf. Chomsky 1989 fall lecture). Then in the derivation in which all wh-words are moved to Spec of C^0 at S-structure,

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[22]This view assumes that wh-words that are adjoined to IP at LF cannot undergo absorption.

there is only one instance of Form Chain. By contrast, in the derivation in which some wh-words are first adjoined to IP at S-structure and they subsequently move to Spec of C^0 at LF, there are two instances of Form Chain. The Principle of Economy of Derivation rules out the latter derivation because there is a derivation in which only one instance of Form Chain takes place (the former derivation).

Now consider the Polish-type languages. Following Rudin (1988), I assume that languages of this type do not allow adjunction to Spec of CP at S-structure, though the Condition in (81) does not apply to these languages at LF. In these languages, we know that one wh-word has to move to the Spec of CP position for Clausal Typing. Since adjunction to Spec of CP is not allowed in these languages at S-structure, and since all wh-words need to satisfy the licensing requirement for $[_D \varnothing_{[+wh]}]$, the other wh-words need to move to a position which can be governed by C^0. A position adjoined to IP is such a position. Then at LF, the wh-phrases which are adjoined to Spec of IP positions move to Spec of CP for absorption. The question which arises here is whether or not the Principle of Economy of Derivation rules out such a derivation. Since adjunction to Spec of CP is not allowed at S-structure in these languages, there is no derivation which generates only one Form Chain operation in the case of wh-movement, the Principle of Economy of Derivation will not rule out such a derivation.

3.2.5. More on the Wh/indefinite Readings

In this section, I discuss two other readings of the wh-words in the multiple fronting languages: a polarity reading and a D-linked reading. In both readings, the wh-words appear in bare forms (i.e. no affix is attached). The question which arises given these two readings is that (a) since we posit a $[_D$

$\emptyset_{[+wh]}$] when we see a bare wh-form, how does the polarity reading arise? and (b) if an interrogative reading always requires a $[_D \emptyset_{[+wh]}]$ to contribute interrogative force, how can the wh-words stay in-situ in a D-linked reading, given that the $[_D \emptyset_{[+wh]}]$ of the wh-words has to be licensed? I propose that these two readings arise precisely when the wh-words occur without any determiner, i.e. only the *core* of the wh-words is present. At the end of this section, I discuss English wh-words, since on the surface, English looks like the multiple fronting languages in that it has words such as *somewhere* and *somehow*.

3.2.5.1. Polarity Reading

As we mentioned earlier, in languages like Polish (in contrast with Hungarian), a bare wh-form can also be interpreted as a polarity item under certain affective environments.[23] In particular, they can be interpreted as polarity items in yes-no questions and conditional sentences. However, they are not interpreted as polarity items under negation; the core is attached to a negative affix in the case of negation.[24] Consider the following sentences in which the bare form is interpreted as polarity items:

(82) czy Janek tam kogo zobaczył
whether Janek there who-acc saw
'Did Janek see anyone?'

---

[23]Anna Ciszewska-Wilkens (p.c.) informs me that the use of bare wh-forms as polarity items are archaic. Thus, some speakers do not consider (82) and (83) to be grammatical. For these speakers, the form with -'s is used instead. I thank Maria Bittner and Anna Ciszewsky-Wilkens for their judgements. I am also grateful to Robert Rothstein for discussing Polish with me.

[24]Pesetsky (p.c.) points out that Russian is different from Polish in that a bare wh-word can be licensed by negation and it can have a polarity reading.

(83) Jeżeli kto tu zapali papierosa, to ja się wścieknę
if who here will light cigarette, then I refl will get mad
'If anyone smokes here, then I will get mad.'

The analysis proposed in the earlier sections regarding the wh/indefinite readings can in fact be extended to account for these cases. Following Ladusaw (1977), I assume that polarity items have an existential reading. Consider now when a bare wh-form is interpreted as an existential. As noted earlier, a bare wh-form is interpreted as a polarity/existential in yes-no questions and conditionals, which are typical polarity licensing environments. Thus, they occur in environments where a polarity trigger (e.g. yes-no question or conditionals) is present.

I propose that when a bare wh-form is interpreted as an existential, it appears with no determiner. That is to say, only the *core* is present. Further, I propose that the *core* is a polarity item which needs to have polarity triggers. Yes-no questions and conditionals are polarity triggering environments (see Klima 1964, Ladusaw 1977 and Linebarger 1987). Thus, if the *core* occurs in a yes-no question or a conditional sentence, there is a proper trigger. Now the question which arises is that given the core is the part without inherent quantificational force, as we have argued in 3.2.2, what contributes existential force to the *core* in the case of a polarity reading (since it appears without any determiner)? Here we can appeal to the rule of existential closure, which introduces a non-overt existential quantifier. The non-overt existential quantifier can then bind the *core* and give it existential force.

In short, the *core* of the wh-word is a polarity item, and thus it is only licensed in a polarity triggering environment. Further, since the *core* does not have inherent quantificational force, it requires a binder, which provides

quantificational force. And in this case, the existential quantifier introduced by the rule of existential closure can contributes quantificational force.

One question which arises here is why negation cannot be the trigger as in the case of typical polarity items. In Polish, a negative prefix plus the *core* is used instead. It is possible that something along the lines of negative concord is involved here (see Zanuttini 1989).

3.2.5.2. D-linked Reading

I have noted earlier that in these languages, in the cases when a second wh-word does not front, it has to have a D-linked reading, as discussed in Wachowicz (1974) and Pesetsky (1987) among others. The question which arises here is if the wh-phrases stay in-situ, how can the $[_D \emptyset_{[+wh]}]$ be licensed? Here I extend Pesetsky's (1987) analysis of D-linking. He proposes that D-linked wh-phrases are not quantifiers and hence they can receive a Baker-style Q-binding interpretation. We have seen that in the multiple fronting languages, the $[_D \emptyset_{[+wh]}]$ contributes quantificational force. In other words, if the $[_D \emptyset_{[+wh]}]$ is present, the wh-phrase is necessarily a quantifier. However, we have seen above that the *core*, the part without inherent quantificational force, can appear by itself as well. I propose that in a D-linked reading, only the *core* is present. In other words, a D-linked reading of the wh-words in Polish arise when the non-quantificational *core* appears by itself. This captures the insight in Pesetsky's (1987) proposal in which he states that the D-linked wh-phrases are not quantifiers.

Now, how does the interrogative reading arise? Here I propose that Q-binding is comparable to binding by a wh-particle in languages like Japanese (which we briefly see above and in Chapter 2). Thus, when Q-binding occurs, the [+wh] C^0 acts like an operator which can bind a variable. In the case of the D-

linked reading of the wh-words in the multiple fronting languages, if only the *core* appears, it can be bound by the operator-like C^0. Note that we have shown that the *core* of a wh-word is a polarity item, the question which arises here is whether there is any trigger in a D-linked environment. I suggest here that the C^0 is the trigger as well as the binder and we will see that in Mandarin Chinese, the wh-particle is a trigger and a binder also.

In this analysis, the D-linked wh-phrase is the *core*, the non-quantificational part. I have shown how Pesetsky's analysis can be extended to the Polish cases.

3.2.5.3. English Wh/indefinites

Let's turn to English, which has forms such as *somewhere, somehow*. I propose that the [+wh] feature in English wh-words is incorporated with the *core* at the lexical structure. That is, the [+wh] feature is not a determiner at S-structure. Thus, there is no $[_D \varnothing_{[+wh]}]$ at S-structure Now what about forms like *somewhere* and *somehow*. I suggest that they are also lexically incorporated forms, just like compounds. Hence, though the morphological forms they take look like the ones we see in the multiple fronting languages, they differ from them in that the element which contributes quantificational force to the *core* is incorporated with the *core* at the lexical structure. The existential licenser is not separate from the core in syntax.

Further, there are words such as *someone* and *something* in English but not **somewho*. In the spirit of Chomsky (1964) and Katz and Postal (1964), I suggest that the wh-word *who* is the incorporated form of [WH + one] and *what* is the

incorporated form of [WH +thing]. Hence, we have the word *someone*, which is the incorporated form of [some + one]. The *core* of the wh-word *who* is thus *one*.[25]

In short, languages can differ as to whether or not incorporation of the [+wh] or other elements which carry quantificational force occurs at the lexical structure. English is a language that does have incorporation at the lexical structure while languages with multiple fronting of wh-words do not.

3.2.6. Some Speculations on The Wh/indefinites in the Australian Languages

We have seen earlier that wh-words in Diyari, Martuthunira and Panyjima can also have an indefinite interpretation. But these languages differ from the multiple fronting languages in that there is no affix attached to the wh-words in the indefinite reading. Instead, the two different readings depend on where the wh-words occur, as shown in (84)-(86).

Diyari (data from Austin 1978)

(84) a. waḷi yiṇa nandr̃a-ṇa wara-yi
who-erg 2sgO hit-part aux-pres
'Who hit you?'

b. mina-ali ngana ṇandr̃d'-ṇa- wara-yi
what-erg 1sgO hit-part aux-res
'Something hit me.'

Martuthunira (data from Dench 1987)

(85) a. ngana nganhu wartirra nyina-nguru karra-ngka muyinu-npi-rra
who that-nom woman sit-pres scrub-loc hidden-incl-CTemp
'Who is that woman hiding in the scrub?'

b. ngayu nyina-lha martama-l.yarra palykura-la nganangu-la
1sgNOM sit-past press-on-CTemp grounsheet-loc someoneGEN-loc
'I sat down on someone's groundsheet, holding it down.'

---

[25]Note that the word *somewhat* does not mean *something*, though the former appears to have some relation to [some +what].

Panyjima (data from Dench 1981)

(86) a. ngatha ngananhalu nhantha-nnguli-nha
1sgnom somethingINSTR bit-pass-pst
'I was bitten by something.'

b. ngananha-ma-rna nyinta ngunhalku
what-caus-pst 2sgNOM that Acc
'What have you done to him?'

Sentences in (84) do not show clearly that when the wh-word is fronted, it is interpreted as interrogative. However, examples in (85) and (86) show clearly that if a wh-word stays in its argument position, it is interpreted as an indefinite and if it is fronted, it has an interrogative reading.

I have proposed that in the multiple fronting languages, the $[_D \varnothing_{[+wh]}]$ of a wh-phrase contributes interrogative force to the bare wh-form. However, if a $[_D \varnothing_{[+wh]}]$ is also available in these Australian languages, how does it get an existential interpretation? Noted that there is no question particle in these languages. The way to form yes-no question is to use intonation. Thus, these languages differ from Mandarin Chinese and Japanese in that the latter type languages have question particles at the sentential level which contributes interrogative force. So what contributes either indefinite or interrogative reading?

I propose that these languages do not differ from multiple fronting languages in that they also have a $[_D \varnothing_{[+wh]}]$. However, what differentiates the Australian languages from the multiple fronting languages is that the former do not have an overt existential quantifier in the determiner system and that the *core* of the wh-forms in the former type of languages are not polarity items.

Consider first the interrogative reading. This reading arises because the $[_D \varnothing_{[+wh]}]$ binds the *core*. As in the case of multiple fronting languages, the movement of a wh-word to Spec of C^0 is necessary to type the sentence as a wh-

question. Further, the $[_D \varnothing_{[+wh]}]$ needs to be licensed and the licensing requirement can be satisfied in Spec of C^0. One question which arises here is whether the wh-words all front in multiple questions. Ken Hale (p.c.) points out that multiple questions are not very good in these languages in general. Thus, these languages may be like Italian and Irish in that no multiple questions are allowed, for reasons which I do not understand.

Turning now to the indefinite/existential reading. As we can see in (84b), (85b) and (86a), for the wh-words to obtain an indefinite reading, no affective environment is needed. I propose that in the cases that wh-words are interpreted as existential, only the *core* of the wh-words appear, similar to the polarity reading in Polish-type languages. The difference between the core of the wh-words in the Australian languages and the Polish-type languages is that the former is not a polarity item and thus it does not need to be in a polarity triggering environment. The rule of existential closure can introduce a non-overt existential quantifier which can bind the *core* of the wh-words; we thus have an existential reading of the wh-words.

In sum, though the wh-words in the Australian languages appear to be the same on the surface, the wh-words are divided into two forms. One form consists of the $[_D \varnothing_{[+wh]}]$ and the *core* and the other consists of only the *core*. The former yields an interrogative reading while the latter, with existential closure, yields an interrogative reading. The seemingly non-ambiguous forms are indeed ambiguous in structures and thus in meaning as well.

We have seen that languages can differ as to whether there is lexical incorporation of the [+wh] feature. English is a language with lexical incorporation while Polish is not. Further, languages can differ as to whether the core is a polarity item or not. Thus, we have the Polish-type languages versus the Australian languages. Lastly, given the analysis proposed above, the wh-words

in the multiple fronting languages need to move for reasons independent of Clausal Typing. Hence, multiple fronting of wh-words does not pose a problem for the Clausal Typing Hypothesis.

Chapter 4

Wh-words in Mandarin Chinese

4.0. Introduction

This chapter discusses the interpretation of wh-words in Mandarin Chinese. As we have briefly mentioned in Chapter 3, wh-words in Mandarin Chinese can be interpreted as indefinite NPs. I will examine here the environments in which wh-words in Mandarin Chinese can be interpreted as interrogative, existential or universal. I will further discuss Nishigauchi's analysis of wh-words in Japanese and show how Nishigauchi's analysis of wh-words in Japanese can be extended to account for the interpretation of wh-words in Mandarin Chinese with some modifications. The analysis proposed here in turn answers the question of why Mandarin Chinese allows the wh-particle to be used optionally.

Furthermore, I address the proposal in Kim (1990) briefly mentioned in Chapter 1. Kim states that languages like Japanese, Korean and Mandarin Chinese do not have syntactic wh-movement because these languages do not have wh-words comparable to wh-words in English; the words in these languages are quantifiers which undergo QR and hence these languages lack syntactic wh-movement. I argue in this Chapter that the wh-words in these languages do not have inherent quantificational force. Thus they do not undergo QR at LF. The differences between languages with syntactic wh-movement and those without syntactic wh-movement cannot be reduced the latter having quantifiers instead of wh-words.

4.1. Lexical Ambiguities of Wh-words

Wh-words in Mandarin Chinese can be interpreted as interrogative words, existential quantifiers and universal quantifiers. I will discuss the environments in which each reading arises in turn.

4.1.1. Interrogative Reading of Wh-words

Wh-words are interpreted as interrogative, with or without the wh-particle *ne*, as shown in (1) (see Chao 1968 for a discussion of the wh-particle *ne*):[1]

(1) hufei chi-le sheme (ne)
Hufei eat-ASP what Q_{WH}
'What did Hufei eat?'

In (1), the wh-word only has an interrogative reading; any other readings are unavailable.

4.1.2. Wh-words as Existential Quantifiers

As noted by Huang (1982) and R. Cheng (1984) among others, wh-words in Mandarin Chinese can be used as polarity items in affective contexts. In this respect, Mandarin Chinese is similar to languages like Polish. As noted in Chapter 3, I follow Ladusaw (1979) in assuming that a polarity item is an existential quantifier. (2) gives a list of wh-words and the equivalent polarity/existential reading.

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[1]The wh-particle *ne* in Mandarin has rarely been mentioned in the literature. See Aoun and Li (1990), whose theory crucially relies on the wh-particle *ne*. For the wh-particle in Cantonese, as well as other particles, see Law (1990) for a detailed discussion.

(2) (Huang's 108, p. 241)

examples	as question words	as quantifiers
shei	'who'	'anybody'
sheme	'what'	'anything'
na	'which'	'any'
heshi	'when'	'any time'
nali	'where'	'any place'
zeme	'how'	'any way'
weisheme	'why'	'any reason'
A-not-A	'whether A or not'	'no matter whether A or not'

Wh-words are interpreted as existential quantifiers either optionally or obligatorily in the following contexts: under the scope of negation, in yes-no questions (including A-not-A questions) and conditionals:[2]

(3) qiaofong mai-le sheme ma
Qiaofong buy-ASP what Q_{YN}
'Did Qiaofong buy anything?'
*'For what thing such that Qiaofong bought it or not?'

(4) qiaofong you-mei-you mai sheme
Qiaofong have-not-have buy what
'Did Qiaofong buy anything?'
*'Which of buying or not buying does he do to what?'

(5) guojing mei-you mai sheme
Guojing not-have buy what
a. 'Guojing didn't buy anything.'
b. 'What didn't Guojing buy?'

---

[2]See Klima 1964 for a discussion on affective environments. For ease of exposition, I use negation and yes-no questions in this discussion. It should be noted that conditionals work the same way. See Huang (1982) for examples of conditionals and wh-words.

As shown in (3) and (4), wh-words are obligatorily interpreted as existential quantifiers in yes-no questions. In contrast, in sentences with negation, a wh-word can be interpreted either as an existential quantifier or as an interrogative word, as shown in (5).

It should be noted that the list in (2) includes the wh-demonstrative *na* 'which'.[3] However, a wh-phrase with *na* 'which' cannot be interpreted as an existential quantifier, as we can see in (6)-(8):

(6) *hufei hui mai na-yi-ben-shu ma
Hufei will buy which-one-CL-book Q_{YN}
'Will Hufei buy any book?'

(7) *hufei hui-bu-hui mai na-yi-ben-shu
Hufei will-not-will buy which-one-CL-book
'Will Hufei buy any book?'

(8) hufei mei-you mai na-yi-ben-shu
Hufei not-have buy which-one-CL-book
'Which book didn't Hufei buy?'
*'Hufei didn't buy any book?'

Both (6) and (7) are ungrammatical: the wh-phrase cannot be interpreted as an existential quantifier; the sentence also cannot be interpreted as both a wh-question and a yes-no question. (8) is grammatical but it has to be interpreted as a wh-question. The wh-phrase in (8) cannot be interpreted as an existential quantifier.[4]

In addition, as Huang (1982) points out, subjects cannot be interpreted as existential quantifiers, as shown in (9) and (10).

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[3]The wh-demonstrative *na* 'which' differs from the demonstrative *na* 'that' only in tone. The former has a third tone while the latter has a fourth tone.

[4]Thus, *na* 'which' in Mandarin Chinese is not like *dono* 'which' in Japanese. The latter can be interpreted as *some*. See Nishigauchi (1990) for details.

(9) *shei xiang chi pingguo ma? (=Huang's 115, p.244)
who want eat apple Q
'Does anyone want to eat apples?

(10) *shei xiang-bu-xiang chi pingguo?
who want-not-want eat apples
'Does anyone want to eat apples or not?'

Huang (1982) maintains that subjects in (9) and (10) cannot be interpreted as existential quantifiers because they are not in the scope of an affected element. I will discuss examples such as (9) and (10) in detail in section 4.2.3.

4.1.3. Wh-words as universal quantifiers

Besides being able to be interpreted as interrogative and existential quantifiers, wh-words can also be interpreted as universal quantifiers when they occur with the adverb *dou* 'all', as shown in (11) and (12).[5]

(11) botong sheme dou chi
Botong what all eat
'As for Botong, he eats everything.'

(12) shei dou kan-guo zhe-ben-shu
who all read-ASP this-CL-book
'Everyone read "

In (11), the wh-word *sheme* 'what' can only be interpreted as *everything* and similarly, *shei* 'who in (12) can only be interpreted as *everyone*. I will examine the adverb *dou* 'all' in detail in 4.5. and more data on the interactions between wh-words and *dou* will be examined.

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[5]The object NP *sheme* 'what' in (11) is not in the object position. I will discuss the structure of sentences such as (11) later. In brief, (11) consists of an aboutness topic, *Botong*, and a typical topical *sheme* 'what'.

In sum, wh-words in Mandarin Chinese can be interpreted as interrogative words, existential quantifiers or universal quantifiers. I will argue below that the wh-words in Mandarin Chinese are polarity items. Further, since the language has a wh-particle, the particle is a binder which determines interrogative force to the wh-words.

4.2. Wh-words as Indefinites

Consider again Nishigauchi's analysis of Japanese wh-words. As we have seen in Chapter three, Japanese wh-words are similar to Mandarin Chinese wh-words in that they can also be interpreted as interrogative, existential or universal quantifiers. To recapitulate, in Japanese, if a wh-word is suffixed with the particle *-ka*, it is interpreted as existential. If the wh-word is in the scope of the particle *-mo*, then it is interpreted as universal. And lastly, if the sentence is marked with the wh-particle *-ka*, then the wh-words are interpreted as interrogative.

Before we turn to Nishigauchi's analysis of Japanese wh-words, which assumes Heim's (1982) theory of indefinites, I will discuss Diesing's (1990) modification of Heim's theory. In section 4.2.2, I will show that given Diesing's modification, Mandarin Chinese wh-words are not totally equivalent to indefinites in English. In particular, indefinites in English may have quantificational force but Mandarin Chinese wh-words never have any quantificational force.

4.2.1. Heim (1982) and Diesing (1990)

To recapitulate Heim's theory, Heim (1982), following Lewis (1975), argues that indefinites do not have inherent quantificational force and they serve as variables in the logical representation. Their quantificational force is determined

by other elements with inherent quantificational force, including adverbs of quantification, or by a rule of existential closure which introduces a non-overt existential quantifier.

Heim, moreover, proposes that quantified sentences in general have the tripartite logical forms shown in (13). (14) is an example of the tripartite logical form of a quantified sentence.

(13) quantifier restrictive clause nuclear scope

(14) a. Every private investigator solves a case.

b. Every (x) (x is a private investigator) (a case (y)) $\wedge$ x solves y
Quantifier *Restrictive Clause* *Nuclear Scope*

The restrictive clause specifies the set of things that the quantifier *every* quantifies over. In the case of (14a), the quantifier *every* quantifies not over every *thing* but every thing that is an *investigator*. The rule of existential closure can apply to the nuclear scope. The output of the rule applying to (14b) is (15).

(15) Every (x) (x is a private investigator) $\exists$(y) (case (y)) $\wedge$ x solves y

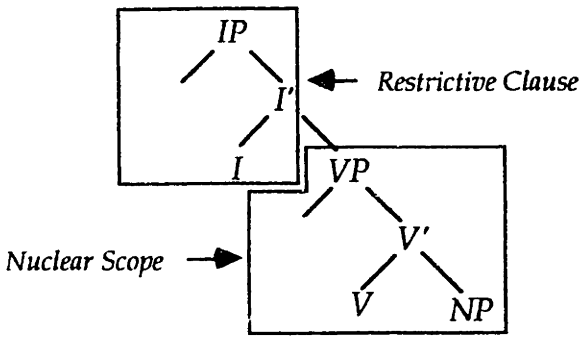
Furthermore, for Heim (1982), existential closure applies to the entire text as well.

Diesing (1990) argues that indefinites cannot be treated uniformly. That is, it cannot be maintained that indefinites are uniformly without quantificational force. Instead, she proposes that there are two types of indefinites based on two types of readings. I will discuss these two readings shortly below. In addition, Diesing proposes a theory which derives the tripartite logical representation by mapping the two major parts (i.e. the Restrictive Clause and the Nuclear Scope) of the logical representation to the structure of the clause. The Mapping Hypothesis she proposes is stated in (16):

(16) Mapping Hypothesis:
Material from VP is mapped into the Nuclear Scope.
Material from IP is mapped into a Restrictive Clause.

This mapping is indicated in (17):

(17)



In (17), the tree is split into two parts. The part which includes the Spec of IP is mapped into the Restrictive Clause and the part which includes the Spec of VP as well as the object of the verb is mapped into the Nuclear Scope.

In addition, following Kadmon (1987) among others, Diesing assumes that the rule of existential closure only applies to nuclear scope.[6] Diesing (1990) proposes to map nuclear scope to VP and thus existential closure applies only to the elements inside VP in this theory. Thus, an indefinite NP in the Spec of IP, for instance, is not subject to existential closure (I will come back to how indefinite subjects in English get cardinal reading in 4.2.3Let us now turn to the two types of readings associated with indefinite NPs in Diesing's theory. Diesing proposes that one reading is a cardinal reading, which is equivalent to the indefinites that Heim discusses. This is the type that has no inherent

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[6]Kadmon (1987) notes that if existential closure applies to text, then sentences like (i) will yield the wrong reading: Oscar owns sheep that Otto vaccinates, indicated in (ii):

(i) Oscar owns sheep. Otto vaccinates them.

(ii) $\exists x$ [sheep (x) $\wedge$ own (Oscar, x) $\wedge$ vaccinate (Otto, x)]

quantificational force, and it can be bound by the existential quantifier introduced by existential closure. The other reading is a presuppositional reading, which is equivalent to typical quantifiers and hence is subject to Quantifier Raising (QR). In other words, this is the type that has independent quantificational force. She further correlates these two types of indefinites with Milsark's (1974) semantic distinction between strong and weak quantifiers. The presuppositional reading correlates with strong quantifiers and the cardinal reading correlates with the weak quantifiers.

Consider an example that Diesing uses to argue for the two types of indefinites.

(18) Every violinist plays some variations.

Diesing argues that given a sentence such as (18), there are three possible readings: (a) the indefinite NP has wide scope presuppositional reading; (b) the indefinite NP has narrow scope presuppositional reading; and (c) the indefinite NP has cardinal reading. (19a)-(19c) indicate each reading:

(19)

Presuppositional readings:

a. There is a pre-established list of variations and the violinists all play the same variations. (indefinite NP: wide scope)
[some$_y$ [vars. (y)] every$_x$ [violinist (x)] x played y]

b. There is a pre-established list of variations and each violinist picks a set of variations from this list. (indefinite NP: narrow scope)
[every$_x$ [violinist (x)] some$_y$ [vars. (y)] x played y]

Cardinal reading:

c. Every violinist plays some variations and they are not from a pre-established list of variations. (indefinite NP: narrow scope)
[every$_x$ [violinist (x)] $\exists_y$ vars. (y) $\wedge$ x played y]

In Diesing's theory, the above readings are derived as follows:
In (19a), the first step is to adjoin the subject NP to IP and then the object NP undergoes QR and adjoins to IP. Thus, we have the representation in (20):

(20) $[_{IP}$ some vars.$_y$ $[_{IP}$ every violinist$_x$ $[_{IP}$ t_x $[_{VP}$ t_x played t_y

Given (20), in Diesing's system, a tree-splitting operation applies and it "peels off the first IP layer, forming a Restrictive Clause" containing "variations (x)". And this step is repeated since there is another layer of IP which is not affected by tree-splitting. Then "the VP is mapped into a Nuclear Scope, with the traces functioning as variables". We thus have a representation as (19a), repeated below:

(19) a. [some$_y$ [vars. (y)] every$_x$ [violinist (x)] x played y]

The reading in (19b) is derived similarly. The reading in (19c) differs from (19a) and (19b) in that the indefinite NP does not undergo QR. Recall that according to Diesing, indefinite NPs can be either quantificational or non-quantificational. The readings in (19a) and (19b) are both readings which are associated with a quantificational indefinite. In both cases, the indefinite NP has a presuppositional reading and the difference between (19a) and (19b) is that in the former, the indefinite has wider scope than the universal, while in the latter, the indefinite has narrower scope than the universal. In (19c), the indefinite has a cardinal reading. Thus, it is associated with the non-quantificational use of the indefinite NP. Since the indefinite in (19c) is non-quantificational, it does not undergo QR. The rule of existential closure applies and the existential quantifier introduced binds the indefinite NP; the latter receives existential force from the existential quantifier.

It should be noted that Diesing assumes the VP internal subject Hypothesis (Hale 1980, Fukui and Speas 1985, Kitagawa 1985, Kuroda 1989, Koopman and Sportiche 1988 among others). Consider again the representations in (20) and (19a):

(20) $[_{IP}$ some vars.$_y$ $[_{IP}$ every violinist$_x$ $[_{IP}$ t_x $[_{VP}$ t_x played t_y

(19) a. [some$_y$ [vars. (y)] every$_x$ [violinist (x)] x played y]

In (20), given the VP-internal subject Hypothesis, there are two traces associated with the subject NP: one in Spec of IP and the other in Spec of VP. Since it is the VP that is mapped onto the Nuclear Scope, the trace in the Spec of IP is in fact not considered as a variable in the logical representation. As suggested by Irene Heim (p.c.), one way of think of this is to view the trace in the Spec of IP as an intermediate trace of the quantifier and it does not play any role in the logical representation here. And the trace in the Spec of VP is interpreted as a variable.

Let's now turn to Nishigauchi's analysis of wh-words in Japanese. Consider the examples in (21)-(23), some of which appear in Chapter three:

(21) Dare-ga nani-o itu doko-de kai-masi-ta ka?
who-N what-A when where-at buy-P Q
[For which [x, y, z, k] [x a person, y a thing, z a time, k a place] such that x bought y at z and at k?

(22) Dare-mo-ga nani-ka-o tabe-te-iru
everyone-N something-A eating-be
[For all x [x is a person]], [some y [y a thing], x is eating y.

(23) Dare-(o)-mo ais-a-nai
who-A-ever love-not
[For all x [x is a person]] it is not the case that I love x.

Based on sentences like (21)-(23), Nishigauchi (1986, 1990) extends the analysis of indefinites in Heim (1982) to account for Japanese wh-words. He proposes that the wh-words in Japanese do not have any inherent quantificational force. Their quantificational force is determined by the unselective binders such as *-mo* or *-ka*.[7] The sentential wh-particle *-ka* is associated with interrogative force; the non-sentential *-ka* is associated with existential force and *-mo* is associated with universal force.

4.2.2. Wh-words as Polarity Items

Now we can turn to Mandarin Chinese wh-words. As we have seen in section 4.1, wh-words in Mandarin Chinese can be interpreted in three different ways. They can be interrogative words, existential quantifiers and universal quantifiers. From the discussion above on indefinites and wh-words in Japanese, it is clear that the behavior of wh-words in Mandarin Chinese is similar to indefinites. Let us consider now how Nishigauchi's analysis of Japanese can be extended to Mandarin Chinese.

Let us first summarize the data as follows:

(24) a. Q_{wh}..... wh (interrogative reading)
b. $Q_{yes/no}$ ....wh (polarity/existential reading)
c. Neg.....wh (interrogative or polarity/existential reading)
d. wh .....dou (universal reading)

The interpretation of a wh-word varies depending on another element in the sentence. The elements which can determine the reading of a wh-word are: a wh-particle (*ne* or its null counterpart), a yes-no particle (or A-not-A question), a

[7] *-mo* is used in conjunction environments such as 'A and B' while *-ka* is used in disjunction environments such as 'A or B'.

negative marker and *dou* 'the universal marker'. There are no affixes on the wh-words. Thus, wh-words in Mandarin Chinese on the surface look like those of the Australian languages we see in Chapter three. However, Mandarin Chinese has a wh-particle and the wh-particle is associated with the interrogative reading of the wh-words; the yes-no particle and negation are associated with the existential reading while *dou* is associated with the universal reading.

Consider first the existential reading. The environments in which this reading arises fall within the standard polarity environments. We have seen in Chapter three that the bare wh-form in Polish (without $[_D \varnothing_{[+wh]}]$) are polarity items. The contrast shown in (25a) and (25b) illustrates that the wh-words in Mandarin Chinese are similar to the bare wh-forms in Polish: they are polarity items needing a trigger (i.e. they need to be licensed by a polarity trigger).

(25) a. botong kan-wan-le yi-ben wuxia-xiaoshuo
Botong read-finish-ASP one-CL Kungfu-novel
'Botong finished reading a Kungfu novel.'

b. botong kan-wan-le sheme
Botong read-finish-ASP what
'What did Botong finish reading?'
'*Botong finished reading something.'

(25a) shows that an indefinite NP can appear in the object position and it can be interpreted as existential by being bound by existential-closure. In contrast, an existential reading of the wh-words is not possible when a wh-word appears without a negative marker or a yes-no question morpheme, as in (25b). In (25b), only an interrogative reading is possible.

Comparing (25a) and (25b), it is clear that wh-words are not simply indefinites. It is clear that they differ from indefinites in that they always need to have triggers (e.g. yes-no markers or negation). In other words, they are indeed

polarity items. Since they are similar to indefinites in that they lack inherent quantificational force, the question which arises is what contributes quantificational force to the wh-words when they are interpreted as existential quantifiers? Given that the domain of the rule of existential closure is VP, the existential force can be contributed by existential-closure. Thus, when a wh-word is interpreted as an existential, we need to have either the yes-no particle or negation as a trigger and existential closure as the binder. In this analysis, a wh-word in Mandarin Chinese, being a polarity item and an indefinite NP, requires a trigger (to license it as a polarity item) and a binder (to determine the quantificational force). (26a) and (27a) show examples of wh-words with $Q_{yes/no}$ and the negative marker. (26b) and (27b) show how they are interpreted.[8]

(26) a. jialuo mai-le sheme ma
Jialuo buy-asp what Q
'Did Jialuo buy anything?'
b. $Q_{yes/no}$ [jialuo$_x$] $\exists$y (y a thing) [x bought y]

(27) a. jialuo mei-you mai sheme
Jialuo not-have buy what
'Jialuo did not buy anything.'
b. $\neg$[[jialuo$_x$] $\exists$y (y a thing) [x bought y]]

Note that the existential reading of wh-words do not come from an overt binder such as *-ka* in Japanese or -ś in Polish. In other words, Mandarin Chinese wh-words do not have an existential reading which is separated from the polarity reading.

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[8]Here, I do not indicate how a yes-no question is in fact interpreted. I keep the yes-no Q-morpheme so that it is clear what the trigger of the wh-word is. See Karttunen (1977) among others for how yes-no questions should be interpreted.

Now consider the interrogative reading. As mentioned earlier and also in Chapter 2, the wh-particle *ne* in Mandarin Chinese is used optionally. I proposed in Chapter 2 that in wh-questions which do not have the overt wh-particle *ne*, there is a non-overt wh-particle present. Following Nishigauchi's analysis of the interrogative reading, I propose that in cases where the wh-words are interpreted as interrogative, the wh-particle (overt or null) serves as the binder and contributes interrogative force to the wh-words. Thus, the wh-particle (overt or null) in Mandarin Chinese is similar to the wh-particle *-ka* in Japanese. The question which arises here is if wh-words are polarity items, is there a trigger in wh-questions? I suggest here that the wh-particle is both a trigger and a binder for the wh-words. That is to say, given the wh-particle, there is no need to have another trigger. Furthermore, the wh-particle is an unselective binder, just like the Japanese wh-particle *-ka*. It can bind more than one wh-word at a time, as (28) shows:

(28) shei mai-le sheme (ne)
who buy-ASP what Q_{WH}
'Who bought what?'

In (28), both *shei* 'who' and *sheme* 'what' are interpreted as interrogative words.

With respect to existential and interrogative readings of wh-words, as mentioned above, when a wh-word appears under the scope of negation, it can be interpreted either as a polarity item or as an interrogative word (if there is no overt wh-particle). This can be accounted for based on the analysis proposed here. Since a wh-word is a polarity item, the negative marker is the trigger and existential closure binds the wh-word and thus we have an existential reading. On the other hand, the presence of a negative marker does not preclude the presence of a null Q_{wh}, thus it is also possible to have a null Q_{wh} to be the

trigger. Since a Q_{wh} is both a trigger and a binder, a wh-word in a negative sentence can also be interpreted as an interrogative word. Consider the contrast exhibited between (29) and (28) (repeated below):

(28) shei mai-le sheme (ne)
who buy-ASP what Q_{WH}
'Who bought what?'

(29) shei mei-you mai sheme (ne)
who not-have buy what
a. 'Who didn't buy what?'
b. 'Who didn't buy anything?'

In (28), both wh-words have to be interpreted as interrogative. But in (29), it is possible for the second wh-word to be interpreted as an existential/polarity quantifier. The lack of ambiguity in (28) may look surprising at first. If the wh-particle is a trigger (for polarity items), why can't the wh-particle act as the trigger for the wh-words while the existential closure binds the wh-word (and therefore contributes existential force to the wh-word)? Given the contrast between (28) and (29), it appears that when the wh-particle is the trigger for a wh-word, it also serves as the binder of that wh-word. On the other hand, if it is not the trigger of a wh-word, existential-closure can bind the wh-word. Thus, a wh-particle is always a binder for the wh-words it licenses as a polarity item. This can be derived from the Principle of economy of derivation (Chomsky 1989). Consider the situation in which the particle is both the trigger and a binder, then the presence of a wh-particle is sufficient for polarity licensing and for determining the quantificational force of the wh-word. On the other hand, if the wh-particle is present but existential closure introduces a binder, it means that the rule of existential closure applies. Assuming that applying the existential closure is on a par with Move α, then the derivation in which existential closure

applies is more costly than the one which involves only the wh-particle. Hence, the rule of existential closure applies only when no other binder is available.

Lastly, since wh-words in Mandarin Chinese are polarity items, the adverb *dou* 'all' which contributes universal quantification to wh-words has to be both a trigger and a binder also, since there is no other trigger in the sentence when *dou* binds a wh-word. Hence, *dou* is similar to the wh-particle in being able to license the wh-words as a polarity item and determining their quantificational force. I will discuss quantification by *dou* in detail in section 4.6.

To summarize, wh-words in Mandarin Chinese do not have any inherent quantificational force. In this aspect, they are like indefinites. However, they always need to have a trigger. Thus, they are not simply indefinites. They are polarity items. One question which arises here given that the interrogative interpretation of wh-words is dependent on the wh-particle, is whether wh-words in Mandarin Chinese undergo LF wh-movement or not. I will address this question in Chapter 5.

4.3. Indefinites in Mandarin Chinese

Let us now turn to the reason why subject wh-words cannot be interpreted as polarity items, as Huang points out. Sentences (9) and (10) are repeated below.

(9) *shei xiang chi pingguo ma? (=Huang's 115, p.244)
who want eat apple Q
'Does anyone want to eat apples?

(10) *shei xiang-bu-xiang chi pingguo?
who want-not-want eat apples
'Does anyone want to eat applies or not?'

Huang claims that subject wh-words are not in the scope of a polarity licenser. However, regardless of how we treat *ma*, the yes-no particle, since it is a question marker which has sentential scope, it is hard to imagine that an object is in its scope while a subject is not. The same applies to the A-not-A question in (10).

Recall that a polarity reading is an existential reading. The generalization here is thus: subjects cannot have an existential reading even when there is a trigger. This is reminiscent of the fact that subjects in Mandarin Chinese cannot be indefinite (Li and Thompson 1981, Duanmu 1988). I will now turn to subjects in Mandarin Chinese and propose an account of why indefinite subjects are not allowed in Mandarin Chinese. This proposal in turn explains why subject wh-words cannot have a polarity/existential reading.

4.3.1. Indefinite Subjects

Li and Thompson (1981) among others have claimed that Mandarin Chinese subjects are topics. In particular, an indefinite NP cannot appear in the subject position. An unmarked NP (i.e. an NP without a numeral marker) is interpreted as generic. This is shown in (30) and (31).

(30) a. nei-ge-ren lai-le
that-CL-person come-ASP
'That person came.'

b. *yi-ge-ren lai-le
one-CL-person come-ASP
'A person came.'

c. you yi-ge-ren lai-le
have one-CL-person come-ASP
'A person came/there came a person.'

(31) gou xihuan chi dan
dog like eat egg
'Dogs like to eat eggs.'

(30b) shows that an indefinite NP cannot be in the subject position. (30c) shows that the indefinite subject is allowed if you 'have' is present (I will come back to (30c) shortly below). In (31), we can assume, following Wilkinson (1986) that there is a generic operator which binds the NP and thus the subject NP in (31) is interpreted as a generic NP.

Now why can't there be an indefinite subject in Mandarin Chinese? Recall that Diesing (1990) claims that there are two types of indefinite NPs: one is non-quantificational and one is quantificational. The former can bound by existential-closure while the latter can undergo QR. Further, Diesing argues that existential-closure applies only in the domain of VP. Elements which are outside of VP cannot be bound by existential-closure. Assuming this analysis of existential closure, I propose that indefinites in Mandarin Chinese are never quantificational. Thus, an indefinite NP in Mandarin Chinese can never undergo QR. The only way for an indefinite to be interpreted in Mandarin Chinese is to be bound by existential-closure. However, if an indefinite appears in the subject position (outside of VP), it cannot be bound by existential closure since the latter is mapped onto VP. Thus, the ungrammaticality of (30b) follows.

It should be noted that in Diesing's analysis, an indefinite subject in English also has two readings, a cardinal and a presuppositional reading. Since in Diesing's analysis, an indefinite can be quantificational, the presuppositional reading is derived by Quantifier Raising of the indefinite. On the other hand, a cardinal reading requires that the indefinite be non-quantificational and be bound by existential closure. To derive this reading for subjects, Diesing proposes that in English an indefinite in subject position can lower to the Spec of

VP at LF and be bound by existential-closure. The question which arises here is why the lowering option is not allowed in Mandarin Chinese. If lowering of an indefinite subject is allowed in Mandarin Chinese, we would expect (30b) to be grammatical since an indefinite in Spec of VP can be bound by existential closure. However, (30b) is not grammatical and it shows that the lowering of an indefinite subject is not permissible in Mandarin Chinese.

If we assume that lowering of the subject at LF is allowed in general, we need to account for why it is not allowed in Mandarin Chinese. In accounting for the behavior of indefinite subjects in Dutch, Diesing (1990) maintains that indefinite subjects in Dutch cannot lower.[9] She assumes following Reuland (1988) that the Spec of IP position in Dutch cannot be empty. We can extend this account to Mandarin Chinese as well. However, I suggest that the lowering of the subjects in Mandarin Chinese is ruled out by the Principle of Economy of Derivation. Consider again (30b) and (30c).

(30) b. *yi-ge-ren lai-le
one-CL-person come-ASP
'A person came.'

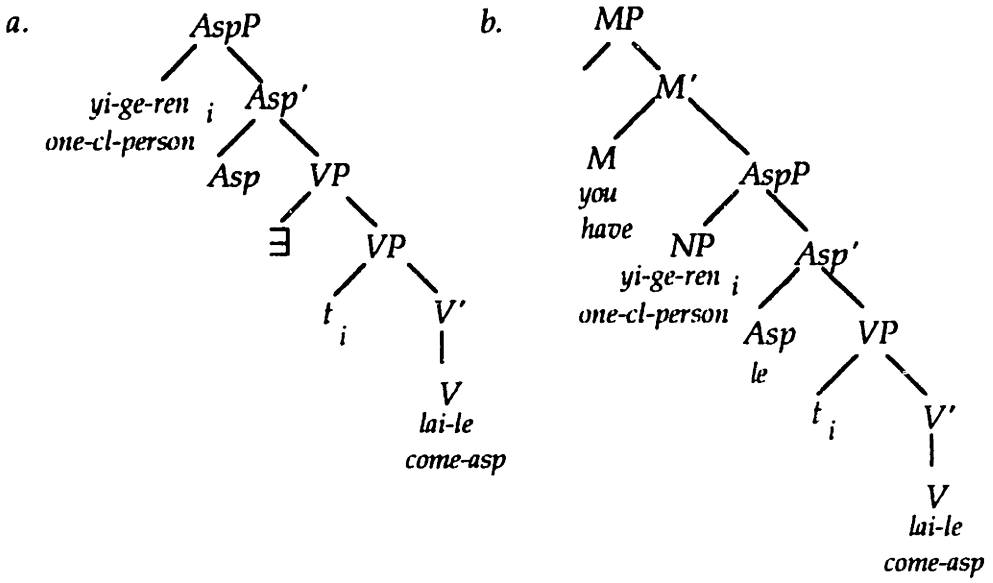
c. you yi-ge-ren lai-le
have one-CL-person come-ASP
'A person came/there came a person.'

I suggest that in (30c), *you* 'have' is comparable to an existential quantifier. It is the binder for the indefinite subject. I follow Huang (1988) in assuming that *you* is a modal which takes an IP (=AspP, in the structure of Mandarin Chinese that I

[9]Though it is possible for Dutch to have indefinite subjects, they have to appear in the VP-internal subject position. In these cases, there is an expletive appearing in the Spec of IP position.

am assuming,) as its complement.[10] Consider the structure of (30b) and (30c) below:

(32)



As I have briefly discussed in Chapter 1, the subject NP is base-generated in Spec of VP and then raises to Spec of AspP. Thus, given (32a), if lowering of the subject does not take place, the existential closure cannot bind the indefinite NP. (32b) is the structure of (30c). The modal *you* 'have' heads a modal phrase and it selects an AspP.[11,12] Given that (30c) is grammatical, the indefinite subject in the

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[10]I differ from Huang in that I assume the modal *you* 'have' to be generated as a modal head while Huang assumes that it is generated as an INFL.

[11]One might argue that *you* is in fact an Aspect and it selects a VP. This is however not possible because elements which normally occur between the subject and the VP still appears between the subject and the VP in sentences such as (30c). (i) and (ii) illustrate this. See Chapter 1 for comparison.

(i) you yi-ge ren manmande xie-le yi-fong xin
have one-CL person slowly write-ASP one-CL letter
'There is a person who wrote a letter slowly.'

(ii) you yi-ge ren ti wo mai-le yi-ben shu
have one-CL person for me buy-ASP one-CL book
'There is a person who bought a book for me.'

sentence receives existential quantificational force. I suggest that the force is contributed by the modal *you* 'have' which is equivalent to an existential closure. In addition, I propose that the availability of sentences such as (30c) precludes lowering of subject NPs in Mandarin Chinese. The lowering of subject NPs is ruled out the by Economy of Derivation: generating a structure such as (30c) with a modal is costless (just as generating any sentence), in contrast with lowering of the subject at LF. Note that the lowering of the indefinite subject, if it were to take place, is to get into the scope of existential closure, thereby receiving existential force. The presence of modal *you* 'have' serves the same purpose, i.e. the indefinite subject can receive existential force from the modal *you*.

In short, indefinite subjects in Mandarin Chinese cannot lower at LF to Spec of VP and therefore they are not generated under the modal *you* 'have', they cannot be interpreted, due to the lack of quantificational force.

4.3.2. Subject Wh-words

Assuming the analysis of indefinites in Mandarin Chinese given above, the impossibility of interpreting subject wh-words as polarity/existential quantifiers follows. As we have seen earlier, wh-words in Mandarin Chinese do not have inherent quantificational force. Thus, they always need a binder. Now consider wh-words appearing in the subject position. A wh-particle can bind a subject wh-word; it is thus legitimate to have a subject wh-word interpreted as interrogative. *Dou* 'all' can also bind a subject because *dou* can serve as a trigger

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As pointed out in Chapter 1, adverbs such as *manmande* 'slowly' and PP's such as *ti wo* 'for me' appear adjoined to the VP. Hence, given sentences such as (i) and (ii), it is clear that the indefinite subject in these cases cannot be in Spec of VP.

[12]Some modals like *you* can appear with verbs which has aspectual markings while some modals cannot. See Tang (1990) for a discussion of the difference between epistemic and deontic modals in Mandarin.

and a binder, as we have seen. Thus, subject wh-words can be interpreted as universal. Can subject wh-words be interpreted as existential? The answer is no because (a) wh-words in Mandarin Chinese are like indefinite NPs; they do not have inherent quantificational force; (b) assuming that indefinite NPs in Mandarin Chinese cannot undergo QR, wh-words in Mandarin Chinese also will not undergo QR, and (c) existential closure applies to the VP domain and lowering of the subject NP to VP is not possible in Mandarin Chinese. Thus subject wh-words cannot be bound by existential-closure.

Hence, even though there are triggers in sentences such as (9) and (10) (in yes-no questions), subject wh-words cannot be interpreted. Thus subject wh-words cannot have a polarity/existential reading.

4.3.3. The Null Wh-particle in Mandarin

In Chapter two, we have noted that for languages with yes-no particles, some have overt wh-particles and some do not. Languages which have ambiguous wh-words have overt wh-particles. In contrast, languages which do not have ambiguous wh-words, wh-particles are non-overt. The question which arises is why Mandarin Chinese allows a non-overt wh-particle.

We have seen that wh-words in Mandarin Chinese have an existential reading only when they are in a polarity environment. In other words, the environments in which they occur can in fact disambiguate the readings. The only situation in which ambiguity arises is when a wh-word occurs in the scope of negation; it can be either existential or interrogative. However, in this case, the presence of an overt wh-particle will serve to disambiguate it.[13]

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[13]One related question that can be raised here is why Japanese wh-words cannot be interpreted as existential without the particle *-ka*. That is, given existential closure, a Japanese wh-word (in particular, a wh-word in an object position)

4.4. *Any* in English

Given the analysis of indefinites in Heim's theory, we may wonder whether other elements which have ambiguity with respect to quantification can be treated the same way. In this section, I briefly consider the possibility of treating polarity *any* and free choice *any* in English as one lexical item. As we have seen, Mandarin Chinese wh-words can be interpreted as three different types of elements, the question here with respect to *any* in English is whether an analysis such as the one proposed for Mandarin Chinese wh-words is possible for *any* in English.

Ladusaw (1979) argues that there are two different *any's*. One is a polarity item. It has narrow scope reading always. The other one is the so called free choice *any*. It is a universal quantifier and it need not be triggered.[14] I propose that polarity *any* and free choice *any* are in fact one lexical item. The varying scopal properties are due to the lack of inherent quantificational force. In other words, *any* is just like Mandarin Chinese wh-words. Let us consider polarity *any* and free choice *any* in turn. Examples (33) and (34) are typical examples of polarity *any*.

(33) Bobby didn't hurt anyone.
(34) Did Kinsey find any clue?

(33) and (34) can be treated the same way that Mandarin Chinese wh-words are treated above. The "Any-NP" does not have inherent quantificational force. It

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should be able to be interpreted as existential. However, if a wh-word shows up in a sentence without any of the licensing particles (*-ka* or *mo*), the sentence is ungrammatical (Nishigauchi (p.c.)). I do not have an explanation for this.

[14]See Hintikka 1977, Lasnik 1972 for a uniform treatment of free choice *any* and polarity *any*.

appears in the nuclear scope and thus existential closure applies to it. The "Any-NP" then is interpreted as existential quantifiers in both (33) and (34). Moreover, they are similar to indefinite NPs in Mandarin Chinese in that they never have any quantificational force; they cannot QR to take wide scope. Hence, this explains why they always take narrow scope.

Let us turn now to free choice *any*. Ladusaw (1977) points out that free choice *any* doesn't seem to be triggered. Although free choice *any* is usually occurs in sentences with modals, for a sentence to be acceptable with a free choice *any*, it is crucial that the sentence "receives a kind of non-event or generic reading". Further, he points out that a universal reading of free choice *any* is not altogether satisfactory since it does not account for the meaning of "your choice" in sentences such as (35a), paraphrased in (35b).

(35) a. Any Chinese immigrant will tell you that the head tax is oppressive and discriminatory.
b. Any Chinese immigrant that you pick out will tell you that the head tax is oppressive and discriminatory.

If contrary to Ladusaw's proposal, we assume free choice *any* to be the same lexical item as polarity *any*, what contributes the "free choice" or "universal" reading of *any*? Since the reading of a free choice *any* is not completely without triggers as Ladusaw among others has noted, I propose that there is an invisible modality operator similar in nature to the invisible necessity operator that Heim (1982) proposes for conditionals. This operator is the one that contributes the "free choice" or "universal" reading of *any*. Further, this modality operator is the one that gives this kind of sentences a non-event and generic reading. Note that this modality operator is not only a binder but also a trigger. Since *any* is a polarity item, it always needs a trigger. Given sentences such as the ones in

(35a), a binder for the polarity item is not enough. Thus, the modality operator is a binder and a trigger.

This analysis of *any* unifies two *any's* which are different on the surface. The apparent differences are due to the different binders. The traditional polarity *any* is a result of having triggers such as a yes-no question or a negation. On the other hand, free choice *any* is a result of having a modality operator trigger and binder.

4.5. Wh/indefinites and lack of syntactic movement

One natural question to ask at this point is whether it is the case that all non-wh-movement languages have wh-words like Mandarin Chinese, Japanese or Korean. As I have briefly mentioned in Chapter two, the answer is in fact no. Turkish is a good example; we can find other examples from non-movement languages as well, such as Bahasa Indonesia.

Below are some Turkish examples. We can see from these examples that wh-words and existential quantifiers are morphologically different elements.[15] *Who* in Turkish is *kim* and *what* is *ne*.[16]

(36) john ne-yi al-ma-di
John what-acc buy-neg-past
'What didn't John buy?'
'*John didn't buy anything.'

(37) john kim-i gôr-me-di
John who-acc see-neg-past
'Who didn't John see?'
'*John didn't see anyone.'

---

[15]I thank Hitay Yükseker and Jaklin Kornfilt for constructing these examples.
[16]The third person singular marker is null.

(38) john hiç-bir-şey alma-di
John non-one-thing buy-neg-past
'John didn't buy anything.'

(39) john hiç-kimse-yi gôr-me-di
John one-person-acc see-neg-past
'John didn't see anyone.'

Thus it is not the case that the languages which do not have wh-movement all have wh-words as indefinites or polarity items. Further, given the analysis proposed above, wh-words in Mandarin Chinese do not QR since they never have inherent quantificational force. This presents problems for Kim's (1990) theory, which claims that languages which do not have syntactic wh-movement do not have wh-words (instead, they have quantifiers). Turkish, a languages with in-situ wh-words (see Kornfilt 1984 among others), is a counterexample to Kim's claim. In fact, the languages which have non-overt wh-particles in the list (2) in Chapter 2, are all counterexamples to Kim's claim.

4.6. The Adverb *Dou*

We have seen that the adverb *dou* 'all' contributes universal quantificational force to wh-words. In order to understand the role that *dou* plays in quantification, it is necessary for us to know what *dou* is. In particular, is it a floating quantifier, as Chiu (1990) claims, or is it an adverb of quantification as Lee (1986) argues? I review these two analyses of *dou* in section 4.6.2. In section 4.6.3., I discuss more data on *dou* and propose an analysis of *dou* similar to Lee's in spirit. The constraints on elements quantified by *dou* (including wh-words) as well as the positions that *dou* can occur in will be discussed in detail.

4.6.1. General Properties of *dou*

As pointed out in the literature, *dou* occurs preverbally and only quantifies elements to its left (see Chao 1968, Li and Thompson 1981 among others).

(40) *wo dou xihuan tamen
I all like they
'I like them all.'

(41) *wo xihuan dou tamen
I like all they

(42) *wo xihuan tamen dou
I like they all

(43) tamen wo dou xihuan
they I all like

In (40), there is no phrase that can be associated with *dou* since *dou* requires a plural NP, a mass noun or a phrase that can be interpreted as distributed.[17] Moreover, as shown in (43), for an object to be quantified by *dou*, it has to move to a preverbal position. I will discuss the position of *tamen* 'they' in (43) in section 4.6.4.[18]

There is no adjacency requirement between *dou* and the element it quantifies, as in (44).[19]

(44) *zhe-xie-xuesheng* wo *dou* xihuan
this-CL-student I all like
'I like all of these students./All of these students, I like.'

---

[17]Lee notes that *dou* can be associated with time adverbials and adverbials denoting events.

[18]It should be noted that there is no plural marking on noun phrases in Mandarin Chinese. However, plural pronouns are marked by a plural marker -*men*.

[19]*xie* is a plural classifier.

(45) *shei renwei wo dou hui lai
who think I all will come
'Everybody thinks that I will come.'

However, it cannot be too far away, as we see in (45). I will discuss the locality condition in section 4.6.3.

In sum, *dou* has four distinct properties: a) it occurs preverbally; b) it quantifies an NP to its left; c) it can quantify an NP even when the NP is not adjacent to it and lastly d) it is associated with plural interpretation only.

4.6.2. Previous Analyses of *Dou*

In this section, I discuss analyses in Lee (1986) and Chiu (1990) (see also Huang 1982 and Klipple 1989 for a discussion of the element *dou*). Lee argues that *dou* is an adverb while Chiu argues that it is a floating quantifier which forms a constituent with the NP that it quantifies over.

4.6.2.1. Lee's (1986) Analysis

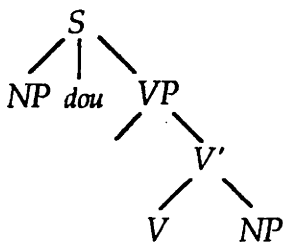
Lee (1986) proposes that *dou* is an adverb and it is subject to the coindexing rule stated in (46):

(46) Dou-coindexing
Coindex with *dou* any leftward constituent it m-commands.
(A m-commands B iff neither dominates the other and the first maximal projection dominating A also dominates B).

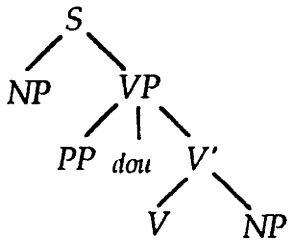
In this analysis, *dou* is directly dominated by S (a sentence adverb) or VP (a predicate adverb), as shown in (47).

(47)

a.



b.



Though the element quantified by *dou* does not have to be adjacent to it, as noted above, it cannot be separated by a *ba*-phrase, as observed in Lee (1986). (48) and (49) exemplify this clearly.

(48) guojing ba *tamen dou* tui-dao-le
Guojing BA they all push-fall-ASP
'Guojing pushed them all and all of them fell.'

(49) a.**tamen* ba guojing *dou* tui-dao-le
they BA Guojing all push-fall-ASP
'They all pushed Guojing.'
b. *tamen dou* ba guojing tui-dao-le
they all BA Guojing push-fall-ASP
'They all pushed Guojing.'

Lee (1986) accounts for the contrasts between (49a) and (49b) by the Dou-coindexing rule and by assuming that in (48) and (49b), *dou* is adjoined at the VP level, as in (47b). Consider first (48). Assuming the *ba*-phrase is a PP, *dou* being adjoined at the VP level m-commands the NP in the PP. In contrast, in (49a), though *dou* m-commands the NP in the *ba*-phrase, the latter is incompatible with *dou* since it is a proper name. On the other hand, the subject NP, which is semantically compatible with *dou* cannot be coindexed with *dou* because it is not m-commanded by *dou* as we can see given a structure such as (47b). (49b) is grammatical because *dou* occurs preceding the *ba*-phrase and thus it adjoins at the S-level. Hence, it m-commands the subject NP.

In addition, Lee points out that although *dou* doesn't have to be adjacent to the element it is coindexed with, they have to be in the same clause, as shown in (50).

(50)*tamen shuo [zhe ge laoshi dou likai le] (=Lee's (86), p. 23)
they say this CL teacher all leave ASP

We will come back to the question of whether the relation between *dou* and the NP it quantifies is clause-bound.

4.6.2.2. Chiu's (1990) Analysis

Chiu (1990) argues that Lee's analysis of *dou* as an adverb is incorrect. She points out two major problems with Lee's analysis. I will first review her arguments against Lee's proposal and then discuss her proposal that *dou* is a floating quantifier. The problems she states are as follows:

(A) If *dou* is a sentence adverb and a VP adverb, it should share properties of these adverbs. Chiu maintains that sentence adverbs such as *dagai* 'probably' can appear either before or after the subject, as shown in (51). However, *dou* cannot appear before the subject, as shown in (52).

(51) a. zhexie shu Lisi dagai meiyou du-guo (Chiu's 23)
these book Lisi probably not-have read-guo
'Lisi probably hasn't read these books.'

b. zhexie shu dagai Lisi meiyou du-guo (Chiu's 25)
these book probably Lisi not-have read-guo
'Lisi probably hasn't read these books.'

(52) a. zhexie shu Lisi dou meiyou du-guo (Chiu's 24)
these book Lisi all not-have read-guo
'Lisi hasn't read all these books.'

b. *zhexie shu dou Lisi meiyou du-guo (Chiu's 26)
these book all Lisi not-have read-guo
'Lisi hasn't read all these books.'

It should be noted that Chiu assumes that *dou* has a lexical property which requires that it incorporate with a verbal or functional head. If we implement a similar idea in Lee's analysis, we can account for why *dou* cannot appear before the topic and the subject. This particular lexical property is in fact not inconsistent with the proposal that *dou* is an adverb.

(B) Chiu points out that there is a contrast in the distribution of *dou* between simple declarative sentences and sentences involving either A or A-bar movement. Consider the following paradigm presented in Chiu (# stands for a possible position for *dou* while * an impossible position for *dou*):

(53) a. neixie ren # meiyou # zixide *du-guo neiben shu
those people not-have carefully read-GUO that book
'All those people didn't read that book carefully.'

b. neixie shu_i Lisi # meiyou # zixide # du-guo t_i
those book Lisi not-have carefully read-ASP
'Lisi didn't read all those books carefully.'

c. Lisi * meiyou * ba neixie shu_i # mai-le t_i
Lisi not-have BA those book sell-LE
'Lisi didn't sell all those books.'

d. neixie ren_i # meiyou # bei Lisi # henhende # ma-guo t_i
those people not-have bei Lisi cruelly scold-GUO
'Those people were not cruelly scolded by Lisi.'
(from Chiu's examples (31)-(34))

According to Chiu, (53b) involves topicalization and (53d) involves passivization. The contrast in (53a) and (53b) shows that *dou* cannot appear after a VP adverb if it is not associated with a topic (i.e. if there is no A-bar movement in the

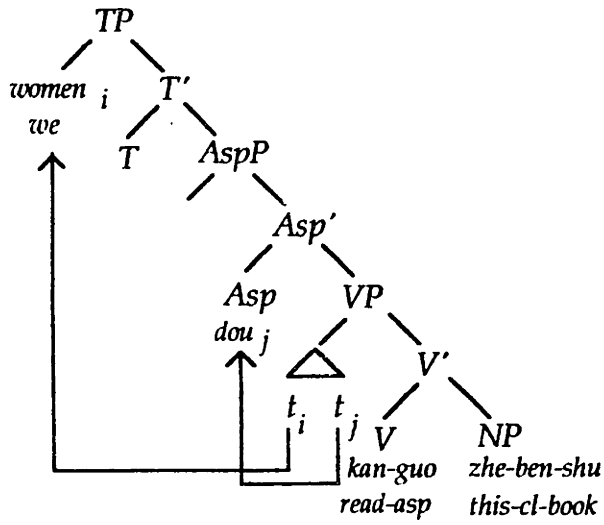
sentence).[20] (53c) and (53d) show the contrast between sentences without and with A-movement. The latter allows *dou* everywhere. Note however that (53c) is not an adequate example since the subject Lisi is not a possible NP for *dou*. If we replace *Lisi* with a plural NP for instance, the positions before and after the negation are in fact possible positions for *dou*.

Chiu proposes a floating quantifier analysis of *dou* following Sportiche (1988). She argues that *dou* and the element that it quantifies over form one constituent at D-structure. Assuming Koopman and Sportiche's (1987) version of the VP-internal subject analysis, she states that sentences such as (54a) are derived by the subject NP moving from the VP position to the Spec of TP. Further, *dou* is said to have a lexical property which requires that it incorporates leftward to an inflectional or a verb head. (54b) is the S-structure representation of (54a).

(54) a. women dou kan-guo zhe-ben shu
we all read-ASP this-CL book
'We have all read this book.'

[20]The position for *dou* after the adverb in (53a) and (53b) are both impossible for me. To the extent that *dou* is allowed after the adverb in (53b), it is also allowed in (53a).

b.

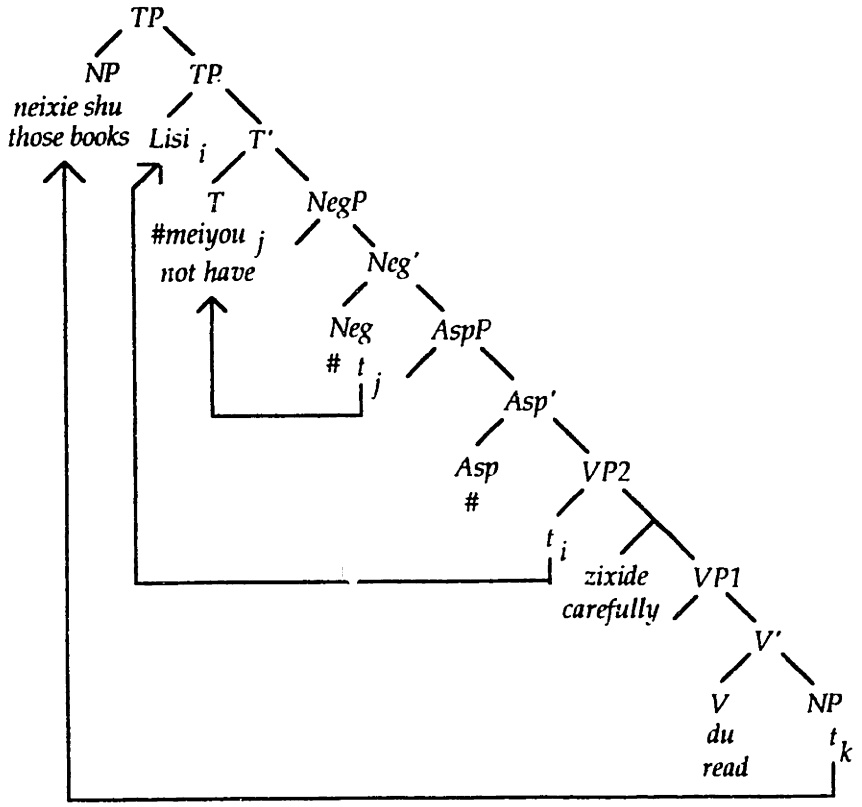


Chiu assumes both a TP and an AspP are present. Further, subjects are base-generated in Spec of VP and raise to Spec of TP at S-structure. When the subject *women* 'we' in (54) moves to Spec of TP, it can leave *dou* behind. The latter then incorporates to a higher head, in this case, Aspect.[21]

Consider a topicalization sentence such as (53b). Under her analysis, (53b) has the structure given in (55).

[21]Chiu (1990) follows Cheng (1989) and assumes that Aspect lowers to the verb at S-structure. Thus, in a structure such as (54b), *dou* is incorporated with a trace. This may be problematic if adjunction to a trace is not allowed, as Chomsky (1990) argues.

(55) (=Chiu's (45))



The movement of the object to the topic position is via adjunction. At any adjunction site, the NP can leave *dou* behind. *Dou* is then incorporated with the next higher head. If the "separation" occurs at the VP-adjunction level, *dou* is incorporated with Aspect. Note that if the "separation" occurs right at the object position, then *dou* is incorporated with the verb.

There are two problems with Chiu's analysis that she discusses. First, the incorporation of *dou* appears to have a prerequisite. That is, we do not find sentences in which *dou* is associated with an object and the former has incorporated with the verb, as shown in (56) (=Chiu's 46).

(56)*Lisi meiyou zixide dou$_i$ du-guo [neixie shu t$_i$]
Lisi not-have carefully all read-guo those book
'Lisi didn't carefully read all of those books.'

Thus, to account for (56), it is necessary to claim that the NP that *dou* quantifies over needs to be moved before *dou* can be incorporated.[22] Second, if *dou* and the NP that it quantifies over form a constituent, it should be possible to have more than one such constituent. However, a sentence with more than one *dou* is not grammatical.

In addition to the problems that she herself notes, it should be noted that the interaction between *dou* and wh-words as well as *mei-ge* 'every' NP is not taken into consideration in Chiu's analysis. As noted in Lee (1986), *dou* cannot quantify over a topic if the subject is a wh-word, as shown in (57).

(57) nei-xie-xuesheng shei dou xihuan
that-cl-student who all like
'Those students, everyone likes them.'
'*All these students, who likes them?'

In (57), *dou* cannot be associated with the topic *nei-xie-xuesheng* 'those students'. Instead, it is obligatorily associated with the wh-word. Given a floating quantifier analysis of *dou*, it is not clear how this can be accounted for. One might attempt to establish some kind of blocking effect in (57). Keeping the spirit of the floating quantifier analysis, this may be stated as a constraint on movement (i.e. the topic cannot move across a wh-word). However, sentences in (58) show that this cannot be the case.

(58) a. nei-xie-shu shei xihuan
that-CL-book who like
'Those books, who likes (them)'.

---

[22]Pesetsky (p.c.) points out that this prerequisite makes sense if movement of the NP removes its barrier status for *dou*.

b. nei-xie-shu hufei xiang-zhidao shei hui mai
that-cl-book hufei want-to-know who will buy
'Those books, Hufei wants to know who will buy.'

If the constraint is stated as a coindexing constraint (i.e. an NP cannot be associated with *dou* across a wh-word), then it is departing from the floating quantifier analysis. I will discuss data sentences such as (57) in section 4.6.4.

Lastly, Chiu crucially assumes that topicalization in Mandarin Chinese is a result of movement. However, as Xu and Langendoen (1985), Xu (1986) and Henry (1988) argue, topicalization in Mandarin Chinese does not result from movement. Instead, it is comparable to left-dislocation in English; the topic is base-generated and it is associated with an empty pronominal (in the English case, it is an overt pronoun). Consider the following sentence, which involves topicalization out of a relative clause:

(59) zhe-xie hua, wo dou mei-jian-guo xihuan de ren
these pictures I all not see-ASP like de person
'For all these pictures, I have not seen a person who likes them.'

For Chiu, since *dou* 'all' in (59) quantifies over the topic *zhe-xie hua* 'these pictures', the former has to be moved with the topic from the relative clause. However, if the topic actually moves from the relative clause, island violations will be induced. On the other hand, if we assume following Xu and Langedoen (1985) among others that topicalization does not involve movement, then the fact that *dou* can quantify over the topic in (59) is unexplained in Chiu's analysis. I will further discuss examples like these shortly below.

4.6.3. The Locality Condition on *dou*

In this section, I will examine the distribution of *dou* in detail. I will propose an account which shares with the above two analyses certain basic

insights. However, given the problems pointed out above, I will not pursue the floating quantifier analysis of *dou*. Instead, following Li and Thompson (1981) and Lee (1986), I assume that *dou* is syntactically an adverb.

4.6.3.1. Where is *dou* Generated?

It has been pointed out by Li and Thompson (1981) and Lee (1986) that *dou* can quantify the topic, the subject of a sentence or perhaps both at the same time, as in (60). However, it is not clear that we really get (60c). I will discuss this later.

(60) nei-xie-shu women dou kan-guo
that-CL-book we all read-ASP
a. 'All of those books, we have read.'
b. 'We all have read these books.'
c. 'All of us have read all of these books.'

As noted above, if the subject and *dou* are separated by a *ba*-phrase, then only the NP in the *ba*-phrase can be quantified over by *dou*. Sentences (48) and (49) are repeated below. In (48), *dou* modifies *tamen* 'they', the NP of the *ba*-phrase. In (49a), *dou* cannot modify the NP of the *ba*-phrase, *Guojing*, because proper names cannot have plural interpretation. However, in this case, *dou* cannot modify the subject either. Thus, the sentence is ungrammatical.

(48) guojing ba *tamen dou* tui-dao-le
Guojing BA they all push-fall-ASP
'Guojing pushed them all and all of them fell.'

(49) a.**tamen* ba guojing *dou* tui-dao-le
they BA Guojing all push-fall-ASP
'They all pushed Guojing.'
b. *tamen dou* ba guojing tui-dao-le
they all BA Guojing push-fall-ASP
'They all pushed Guojing.'

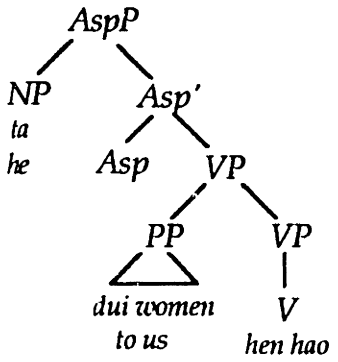
Not all PP's behave like the *ba*-phrase, as Lee (1986) points out. Some other PP's allow *dou* to either quantify the NP in the PP or the subject NP. In (61), the NP in the PP is modified by *dou* while in (62), the subject NP is modified by *dou* since the NP in the PP is a singular pronoun.

(61) ta dui *women dou* hen hao
he to us all very nice
'He is nice to all of us.'

(62) *tamen* dui *wo* dou hen hao
they to me all very nice
'All of them are very nice to me.'

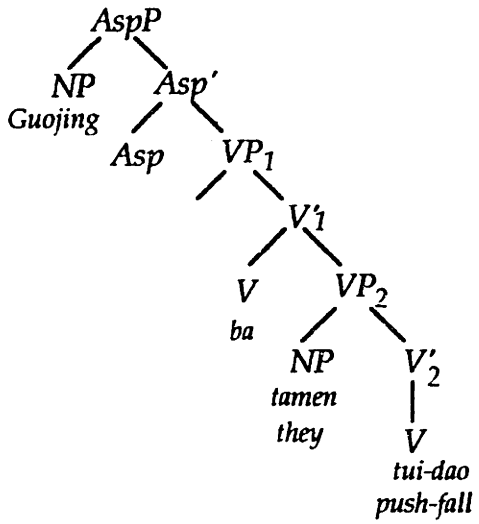
Let us now consider the structure involving involving PP's other than the *ba*-phrase. As mentioned in Chapter 1, typical PP's have been argued to occur in an adjoined position to VP. Thus, a typical PP which modifies a VP has the following structure:

(63)



In a structure such as (63), we cannot tell whether *dou* appears as an adjunct to VP or to V'. Adjunction of *dou* to either VP2 or V' can generate sentences such as (61). Now consider the structure of a *ba*-phrase (see Chapter 1):

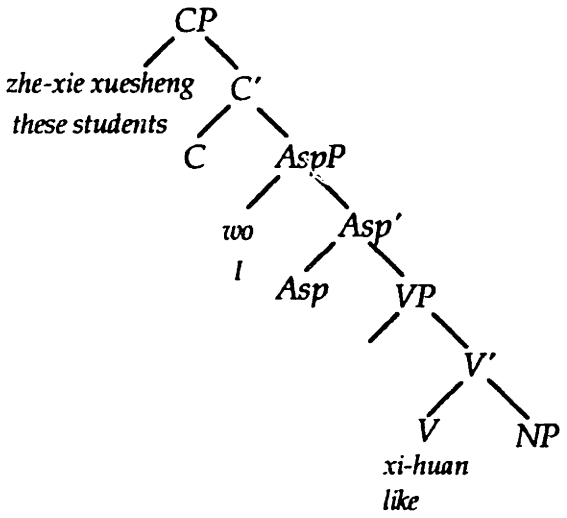
(64)



Given a structure such as (64), *dou* cannot appear as an adjunct to VP2 because it will generate a sentence in which *dou* occurs before the NP *tamen* 'they' and after *ba*. As we see in (48), *dou* has to appear after the whole *ba*-phrase. Thus, *dou* has to appear as an adjunct to the lower V' (V'2).

Consider next a sentence with a topic. In such a sentence, as we have seen, *dou* can modify either the subject or the topic.

(65)



Given a structure such as (65), again it is not clear where *dou* is adjoined to if we want to generate sentences such as (60). Is *dou* adjoined to Asp' or V'? Since we know from sentences with a *ba*-phrase that a possible site of adjunction for *dou* is V', the question now is this: is Asp' also a possible adjunction site for *dou*? The following set of data shows that *dou* can adjoined to Asp', if we assume that aspect markers such as *zai* 'progressive marker' appear in ASPECT.[23]

(66) a. tamen dou zai kan dianshi
they all ASP watch TV
'They are all watching TV.'
b. *tamen zai dou kan dianshi
they asp all watch TV
'They are all watching TV.'

(66a) and (66b) show that *dou* cannot appear after *zai*. Thus, besides adjoining to V', *dou* can also adjoin to Asp'.[24]

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[23]It should be noted that *zai*, the progressive aspectual marker, does not lower because it is not an affix. The future marker *hui* 'will' basically shows the same pattern, as shown in (i) (see also Huang 1982 for a discussion of hui as an INFL):

(i) tamen dou hui lai 'They will all come.'
they all will come

Note that (ii) is not a counterexample to the claim here because as Tang (1990) points out, *hui* has two usages, one as a deontic modal and the other as an epistemic modal. It is possible that the two different *hui* are generated in difference places.

(ii) tamen hui dou lai 'They will all come.'
they will all come

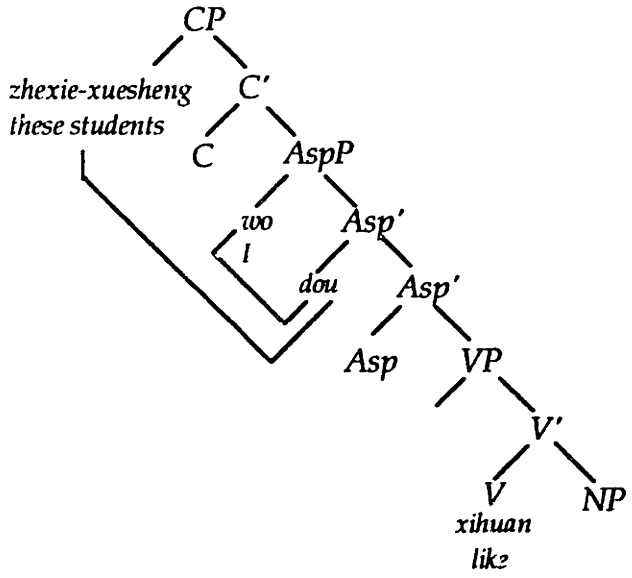
(ii) means that it is possible that they all come.

[24]A question that arises is why dou cannot be generated as an adjunct to C'. See footnote 24.

4.6.3.2. A Proposal

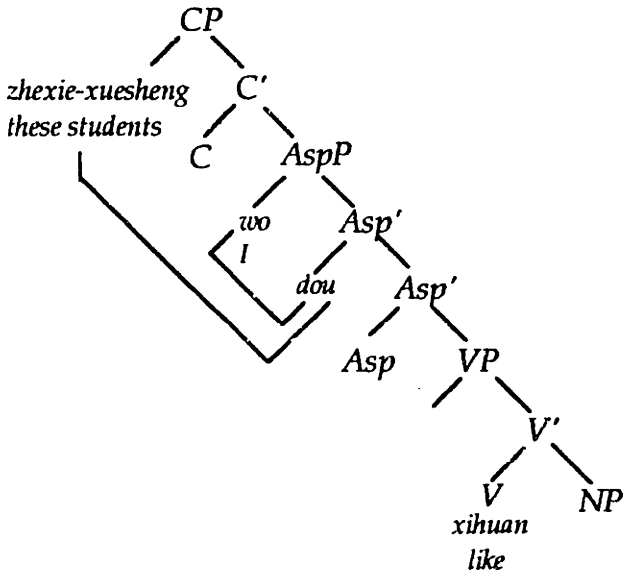
Now that we know where *dou* is generated, let us consider what the locality condition is. Consider again the different structures above. In a topicalization structure, *dou* can either modify the subject or the topic. In other words, the relationship between the element being modified and *dou* can be separated by an XP, as shown in (67).

(67)



Consider the structure with a *ba*-phrase again. In (68), *dou* has to adjoin to the most deeply embedded V'.

(68)



The NP *tamen* 'they' is the closest NP to *dou* and no maximal projection intervenes. In contrast, the subject NP is separated from *dou* by two VP's and as we have seen, it is the subject NP that cannot be modified by *dou* if a sentence contains a *ba*-phrase.

I propose that *dou* is a distributor semantically.[25] Following Heim, Lasnik and May's (1991) analysis of *each* in English, I argue that at LF *dou* adjoins to the phrase that it quantifies over. I assume that *dou* is an adverb; the movement of *dou* is on a par with movements of adjuncts. Furthermore, *dou*, being a quantifier, has some characteristics like quantifiers, namely, its movement is clause-bound.[26]

Consider first sentences with a *ba*-phrase. As we have seen in (48) and (49), *dou* which appears after a *ba*-phrase can modify the NP in the *ba*-phrase but not

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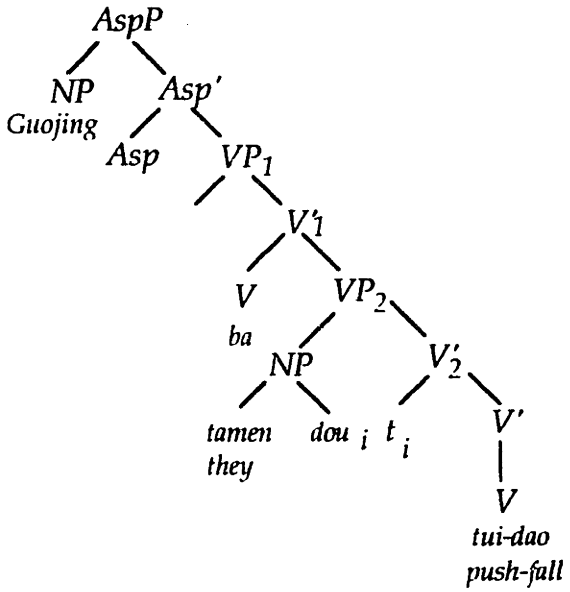
[25]See Lee (1986) for some examples illustrating *dou* as a distributor.

[26]The reason why QR is clause-bound is not clear. Note here "clause-bound" is restricted to CP-complement clauses, as we will see in Chapter 5 See May (1985) and Lasnik and Saito (1989). I will discuss QR further in Chapter 5.

the subject NP in the sentence. Consider the LF representation of (48) shown in (69); (48) is repeated below.

(48) guojing ba *tamen dou* tui-dao-le
Guojing BA they all push-fall-ASP
'Guojing pushed them all and all of them fell.'

(69)



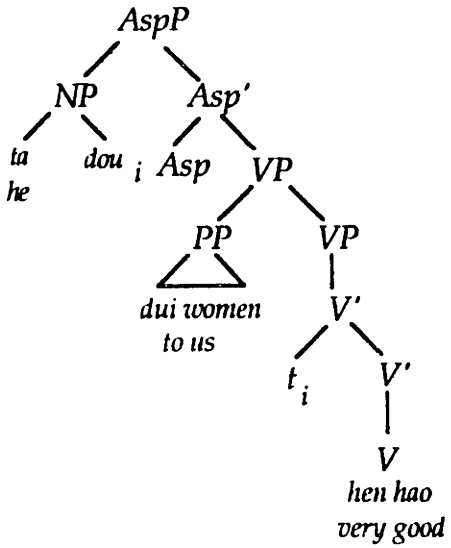
Movement of *dou* to the NP of *ba*, *tamen* 'they', is local (no intervening maximal projection) and thus sentences such as (48) are grammatical.

In contrast, given a structure such as (69), if *dou* moves to the Spec of AspP position, it crosses two VP's. Assuming that VP's are not inherent barriers, and they can be a barrier by inheritance (cf. Chomsky 1986). Thus, when *dou* adjoins to the NP in Spec of AspP, though VP2 is not a barrier for *dou*, VP1 is a barrier for *dou* because it inherits barrierhood from VP2. The trace of *dou* in such a derivation thus cannot be properly governed (assuming that *dou* does not have any lexical governor and a disjunctive ECP as in Chomsky 1986). Hence, the ungrammaticality in (49a), repeated below, is accounted for.

(49) a.**tamen* ba guojing *dou* tui-dao-le
they BA Guojing all push-fall-ASP
'They all pushed Guojing.'

The next case to consider is the structure with typical PP adjuncts. As we have seen, in these cases, *dou* can modify either the NP of the PP or the subject NP. Since typical PP's adjoin to VP's, we are dealing with segments of VP when *dou* raises at LF. Thus, *dou* can adjoin to the subject NP in Spec of AspP since a segment of VP does not add an additional barrier (see May 1985 and Chomsky 1986). Here it crosses one VP category; the trace of *dou* is antecedent governed by *dou*, as shown in (70).

(70)



Now, what about the NP inside a PP? Since *dou* can certainly quantify an NP inside a PP as shown in (61), repeated below, it appears that we need to allow the adjunction to *dou* to the NP inside PP. However, not all PP's pattern alike. In some cases, an NP inside a PP cannot be associated with *dou*, as shown in (71).

(61) ta dui *women dou* hen hao
he to us all very nice
'He is nice to all of us.'

(71)*ta gen women dou hui jia
he follow we all return home
'He follows all of us home.'

(72)*ta wei women dou chu-li
he for we all out-energy
'He spends a lot of energy for me.'

Let us first consider the cases where this is allowed. I follow Tsai (1990) in assuming that prepositions such as *dui* 'to' in (61) are not really prepositions. Instead, they are dummy Case-assigners which do not contribute any semantic content. Then in the case of (61), we are dealing with an NP, which is adjoined to VP. Hence, in (58) *dou* is adjoined to a nominal category and it is on a par with cases in which *dou* is adjoined to a subject NP.

In contrast, in sentences such as (71) and (72), the prepositions are not simply Case-assigners because they also contribute semantic content to their objects. In these cases, *dou* cannot quantify the NP inside the PP. This follows from the analysis proposed here: *dou* has to adjoin to the NP that it modifies and if adjoins to an NP inside a PP, it will not be able to antecedent govern its trace (*dou* does not m-command its trace because of PP).

4.6.3.3. Clause-boundedness of *dou*

Finally, let us consider whether the relationship between *dou* and the phrase it quantifies is clause-bound. We have seen earlier in (45) that *dou* in an embedded clause cannot be associated with something in the matrix. (45) is repeated below.

(45) *shei renwei wo dou hui lai
who think I all will come
'Everybody thinks that I will come.'

In (45), *shei* is in the subject position of the matrix clause while *dou* is in the embedded clause. In this case, *dou* cannot quantifier over the matrix subject. As I suggested earlier, in this respect, *dou* is like a typical quantifier (which undergoes QR), whose movement is always clause-bound.

However, *dou* in an embedded clause can quantify over a topic which is associated with the embedded clause, as in (73):

(73) nei-xie shu wo xiangxin wuji dou kan-guo
that-cl book I believe Wuji all read-ASP
'Those books, I believe Wuji has read them all.'

Hence, it appears that we have a contradiction. In (45), we see that *dou* is clause-bound and in (73), it is not. I suggest here that (73) is not due to a non-clause-bounded nature of *dou*; instead, it is a result of having a left-dislocated NP associated with an empty pro in an embedded clause.

As I pointed out earlier, topicalization in Mandarin Chinese does not involve movement. It is in fact left-dislocation. There is an empty pronoun associated in the embedded clause with the left dislocated NP in sentences such as (73). I follow Demirdash (1991) and assume that a resumptive pronoun (in Mandarin Chinese, it is an empty pronoun) moves at LF to a position adjacent to the left dislocated NP.[27] I propose that in sentences such as (73), the pronoun moves from the embedded clause to a position adjacent to the left dislocated NP. The pronoun moves through the embedded CP (or perhaps adjoined to AspP and then to embedded CP). Thus, *dou* will be able to move to the embedded CP

---

[27]Demirdash (1990) proposes that resumptive pronouns move to C^0. For the discussion here, it suffices to say that the resumptive pronoun moves from the embedded clause. It can end up being adjoined to the matrix IP, or being in the Spec of CP.

to adjoin to the pronoun and thus it binds the empty pro which is coindexed with the left-dislocated NP. Then the pronoun together with *dou* subsequently moves to the matrix. Hence, the apparent non-clause bound nature of *dou* is due to movement of the resumptive pronoun.

To summarize the analysis thus far, I propose that *dou* is an adverb base-generated as an adjunct to an X'.[28] *Dou* is semantically a distributor. It moves at LF and adjoins to the phrase that it quantifies over. Since it is a distributor, it can only quantify plural NPs, mass nouns and elements that can be distributed. The movement of *dou* is comparable to the movement of adjuncts in that it is clause-bound; the trace of *dou* is not lexically governed and it needs to be antecedent governed.

Let us turn to the data that Chiu points out as problematic examples for Lee (1986). Examples in (53) are repeated below. Again, # stands for a possible position for *dou* while * an impossible position for *dou*:

(53) a. neixie ren # meiyou # zixide * du-guo neiben shu
those people not-have carefully read-GUO that book
'All those people didn't read that book carefully.'

b.neixie shu_i Lisi # meiyou # zixide # du-guo t_i
those book Lisi not-have carefully read-ASP
'Lisi didn't read all those books carefully.'

---

[28]One question arises here: why is C' not a possible adjunction site? This question has been posed by Chiu as a problem for Lee's analysis of *dou* as an adverb. In this analysis, *dou* is licensed by an X^0 and it is not the case that all X^0's are alike. If we assume that there is a distinction between lexically-related (L-related) projections and non-lexically-related (non-L-related) projections, as Chomsky (1989) claims, then it is possible that *dou* is only licensed by L-related projections since C' is a non-L-related projection. See also Travis (1989) on the licensing of adverbs.

c. Lisi * meiyou ` ba neixie shu$_i$ # mai-le t$_i$
Lisi not-have Ba those book sell-LE
'Lisi didn't sell all those books.'

d. neixie ren$_i$ # meiyou # bei Lisi # henhende # ma-guo t$_i$
those people not-have bei Lisi cruelly scold-GUO
'Those people were not cruelly scolded by Lisi.'
(from Chiu's examples (31)-(34))

We can discard (53c) since we have seen how the analysis proposed here can account for sentences with a ba-phrase, keeping in mind that the positions before and after the negation are in fact possible positions for *dou* if the subject is plural or a mass noun. As for (53a), (53b) and (53d), as pointed out earlier, when *dou* occurs after an adverb, the sentence is always marginal, unless the adverb is something that *dou* can quantifier over (e.g. often). Native speakers that I consulted with do not find a difference between (53a) and (53b) with respect to whether or not *dou* can occur after the adverb.

One potential problem is (53d). In contrast to (53c), *dou* can be associated with an NP across a bei-phrase in (53d). However, there are several differences between a *ba*-phrase and a *bei*-phrase which have been noted in the literature (see Li and Thompson 1981, Huang 1982 and Cheng 1986 among others). One of the differences is that the object of *ba* has to be overt while the object of *bei* does not. In fact, in the latter case, *bei* and the verb seem to form a verbal complex, as shown in (74).

(74) a. hufei ba botong da-shang-le
Hufei ba Botong hit-wounded-ASP
'Hufei wounded Botong.'

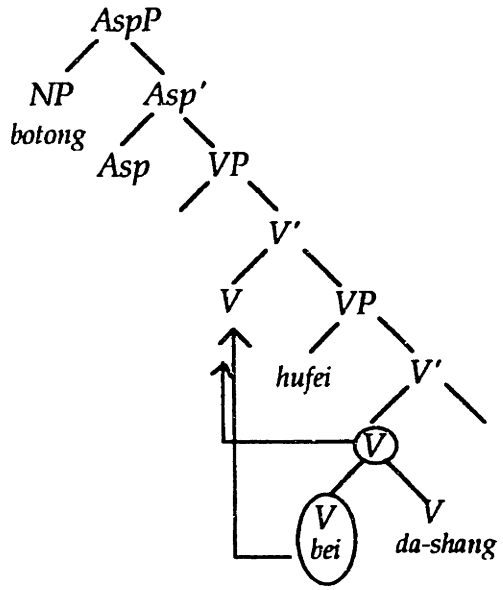
b. botong bei hufei da-shang-le
Botong bei Hufei hit-wounded-ASP
'Botong is wounded by Hufei.'

c. botong bei da-shang-le
Botong bei hit-wounded-ASP
'Botong is wounded.'

d. *botong bei da-shang-le hufei
Botong bei hit-wounded-ASP Hufei
'Botong is wounded by Hufei.'

To derive the difference noted here, I propose to treat *bei* and the verb it associates with as a complex verb, as in (75) (see also Cheng 1989 for examples of other complex verbs in the language):

(75)



As indicated in (75), either *bei* moves by itself to the higher verb slot or the whole verbal complex can move. In the former case, *bei* will be able to assign case to the NP in the lower Spec of VP position. Thus, we can have sentences such as (74b).[29] In the latter case, when the whole complex moves, I assume here that no

[29]One problem with this analysis is that the aspectual marker is attached to the second verb [*da-shang*] 'hit and wounded' as shown in (74b). If *bei* moves up to the higher verb and Aspect lowers, then the aspectual marker should be attached

Case can be assigned (see also Cheng 1987, Feng 1990, and Li 1991). In other words, when *bei* stays within the verbal complex, it is similar to a passive morpheme in English, which absorbs case (cf. Baker, Johnson and Roberts 1989) Thus, no NP in the Spec of VP position is allowed, as in (74d).

Given this analysis of bei-phrases, we can come back the cases in which dou quantifies over an NP crossing a *bei*-phrase. In a sentence with a *bei*-phrase such as (53d), *bei* raises to the higher verb slot. I assume that the lower VP is no longer a blocking category after *bei* moves to the higher verb (*bei* L-marks the lower VP). Thus *dou* can appear after *bei* at S-structure and still move at LF to quantify over a subject (i.e. it can still antecedent govern its own trace).

4.6.4. The Licensing by *dou*

It has been pointed out that in sentences such as (76), the presence of *dou* is obligatory. However, there has not been any explanation as to why this is the case. In particular, if *mei-ge-ren* 'every person' in (76) is a quantificational NP, why do we need *dou* 'all'? Further, NPs such as *mei-ge-ren* 'every person' cannot occur in object positions as in (77) unless we give it a contrastive focus.[30]

(76) mei-ge-ren *(dou) lai-le
every-CL-person all come-ASP
'Everybody came.'

(77) *qiaofong renshi mei-ge-xuesheng
Qiaofong know every-CL-student
'Qiaofong knows every student.'

---

to *bei*. I will stipulate here that aspectual lowering takes place before *bei* raises to the higher verb.

[30]For instance, in (77), if we read the sentence as follows, then it is much better: it is not the case that Qiaofong only knows some students; instead, he knows **every student**.

In addition, if there are two "every"-NP's occurring before *dou*, the sentence is ungrammatical, as shown in (78).

(78) *mei-ge-laoshi mei-ge-xuesheng dou renshi
every-CL-teacher every-CL-student all know
'Every students know every teacher.'

In other words, although *dou* can license universal quantification, it can only license one NP at a time. This also leads one to reconsider earlier claims stating that *dou* can quantify both the topic and the subject simultaneously, as illustrated in (60c) repeated below.

(60) nei-xie-shu women dou kan-guo
that-CL-book we all read-ASP
a. 'All of those books, we have read.'
b. 'We all have read these books.'
c. 'All of us have read all of these books.'

I suggest that the reading in (60c) does not really exist. It is simply the case that the meaning of 'we' and that of 'all of us' are hard to tease apart.

We have also seen that wh-words can be interpreted as universal quantifiers when they occur before *dou*. The restriction exhibited in (78) is also manifested in cases with wh-words, as shown in (79).

(79) shei sheme dou chi
who what all eat
'Who eats everything?'
*Everyone eats everything.'

In (79), only one wh-word can be interpreted as a universal quantifier. In other words, *dou* is not an unselective binder. It cannot quantify more than one element at a time.

Consider now examples of wh-words and *mei-ge* 'every' NP together with *dou*. As we have noted earlier, *dou* can license one NP at a time. Given a wh-word and an "every-NP", the question which arises is which one *dou* licenses?

(80) shei mei-ge-ren dou renshi[31]
who every-cl-person all know
a. 'Who knows everyone?'
b. 'Who does everyone know?'
c. '*Everyone knows everyone.'

(81) *mei-ge-ren sheme dou chi
every-cl-person what all eat
a.*'What did everyone eat?'
b.*'Everyone eats everything.'

In (80), the wh-word is interpreted as an interrogative word and the "every-NP" is licensed by *dou*. This is not surprising since *shei* 'who' can be licensed by the null Q_{wh}. However, (81) shows that the situation is a bit more complicated. If wh-words can always be licensed by the null Q_{wh}, why can't *sheme* 'what' be licensed as an interrogative word in (81)? The ungrammaticality of (81) shows that *mei-ge-ren* 'every person' in (81) is not licensed since *dou* is licensing *sheme* 'who'. The following examples illustrate this further.

(82) women sheme dou chi
we what all eat
'We eat everything.'
'*What do we all eat?'

(83) mei-gen gutou gou dou xihuan
every-cl-bone dog all like
'Dogs like every bone.'

---

[31]The reading in (80b) may not be available to speakers who do not allow topicalization of wh-words.

In (82), the interpretation in which the wh-word is interpreted as an interrogative word is not possible. Although *women* 'we' is compatible with *dou* semantically, *dou* does not adjoin to *women* at LF. Instead, it adjoins to the wh-word and thus the latter can only be interpreted as a universal quantifier. In contrast, in (83), *dou* is not associated with the unmarked NP *gou* 'dog'. Instead, it is incorporated with the "every-NP". The NP *gou* 'dog' is then interpreted as a generic NP by a generic operator (see Wilkinson 1986 for arguments for an abstract generic operator).

Turning back to (80) and (81), *dou* appears to move to the closest element which can use a trigger. The difference between a wh-word and an indefinite NP such as *gou* in (83) is that the former is a polarity item which needs a trigger while the latter is not. Thus, given NPs which need a trigger, *dou* adjoins to the closest one. (80) is grammatical because the null Q_{wh} can license the wh-word *shei* 'who'. The ambiguity between the two possible readings in (80) depends on whether or not we interpret the wh-word as a topicalized NP. Now the ungrammaticality of (81) is also accounted for. Since *sheme* 'what' is an NP which needs a trigger, *dou* naturally moves to it leaving the "every-NP" without a licenser. Moreover, since *dou* cannot license more than one NP at a time, the second reading in (81) is also unavailable.

Furthermore, given this analysis, the lack of ambiguity in the following sentences can be accounted for.

(84) sheme shei dou chi
what who all eat
'What is it that everyone eats?'
'*Who eats everything?'
'*Who eats what?'

(85) shei sheme dou mai
who what all buy
'Who is it that bought everything?'
'*What does everybody bought?'
'*Everyone bought everything.'

Since *dou* only licenses the closest NP which needs a trigger, *shei* 'who' in (84) and *sheme* 'what' in (85) are interpreted as universal quantifiers.

Finally, I would like to point out some apparent exceptions to the claim that *mei-ge* 'every' NP requires the presence of *dou*. Consider sentences in (86)-(90).

(86) wo xihuan [$_{NP}$ [$_{CP}$ ta piping mei-ge-zongtong] de wenzhang]
I like he criticize every-CL-president DE article
'I like the article in which he criticizes every president.'

(87) wo xihuan [[mei-ge-xuesheng xie t] de wenzhang]
I like every-CL-student write DE article
'I like articles that every student writes.'

(88) a. hufei mai-le mei-yi-ben jinyong de shu
Hufei buy-ASP every-one-CL Jinyong DE book
'Hufei bought every one of Jinyong's books.'
b. hufei mai-le jinyong de mei-yi-ben-shu
Hufei buy-ASP Jinyong DE every-one-CL- book
'Hufei bought every one of Jinyong's books.'

(89) linghuchong mai-le mei-ge-ren de hua
Linghuchong buy-ASP every-CL-person DE painting
'Linghuchong bought everyone's painting.'

(90) wuji gei-le mei-ge-ren yi-ben-shu
Wuji give-ASP every-CL-person one-CL-book
'Wuji gave everyone a book.'

Leaving (90) aside for the moment, it appears that the 'every'-NP can occur without *dou* in a modifier clause (i.e. a clause which modifies NPs) which appears in an object position. (90) on the other hand, shows that 'every' NPs can appear in the indirect object position. I do not have an explanation of these facts. Future works on the structure of the above clauses might shed light on this problem.

4.6.4..1. A Note on Topicalization

In the above discussion, we have seen that for an object to be modified by *dou*, it has to be in the topic position. Let us examine this further. In particular, we need to examine sentences such as (91).

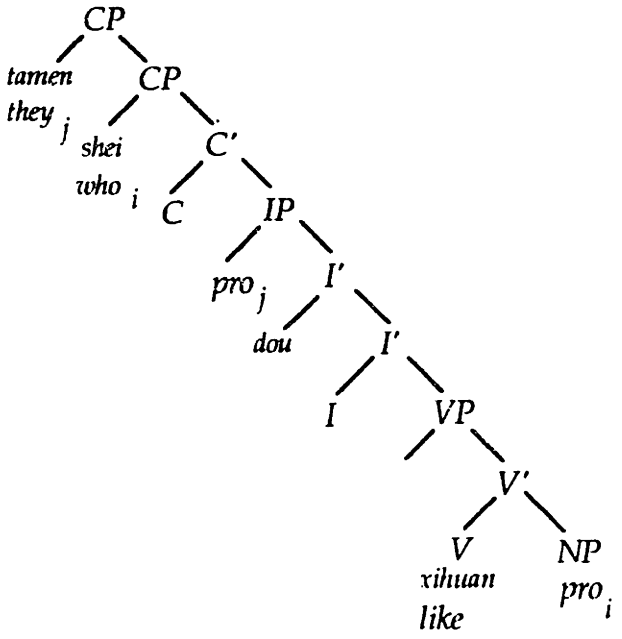
(91) qiaofong sheme dou chi
Qiaofong what all eat
'Qiaofong eats everything.'

If *sheme* is a topic, then *Qiaofong* has to be a topic as well. Consider (92) which given us a better idea of whether *Qiaofong* in (91) is a topic.

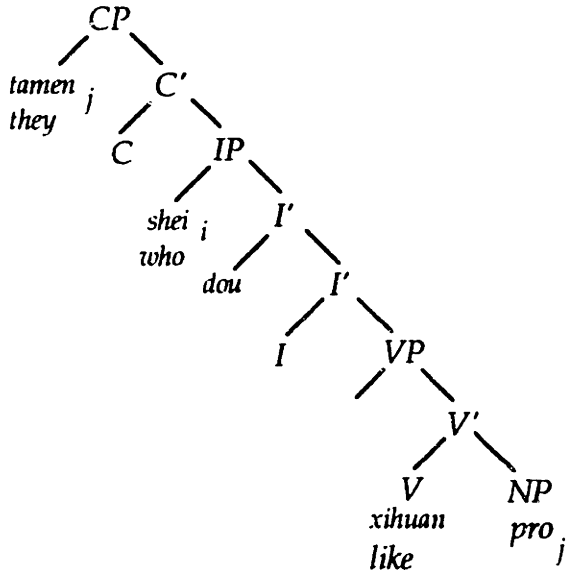
(92) tamen shei dou xihuan
they who all like
a. 'They like everyone.'
b. 'Everyone likes them.'

(92) is ambiguous between a reading in which the first NP is the logical subject and a reading in which the second NP is the logical subject. The ambiguity can be explained by the following structures for (92).

(93)



(94)



In (93), *shei* is a left-dislocated object NP *Tamen* is the subject NP which appears in the position for aboutness topics (see Chapter 1, and Cheng 1989 for a discussion on topics and subject in Mandarin Chinese). Hence, we have the reading in (92a). In contrast, in (94), *shei* is in the subject position while *tamen* is

the dislocated object. Hence, we have (92b). The ambiguity exhibited by (92) is due to two different structures of (92).

Chapter 5

Quantifier Raising and LF Wh-movement

5.0 Introduction

In Chapter 4, I have argued that wh-words and indefinite NPs in Mandarin Chinese do not have inherent quantificational force. Moreover, indefinite NPs in Mandarin Chinese differ from those NPs in English in that the former are always non-quantificational while the latter can be either quantificational or non-quantificational. I will show that the lack of scope ambiguities in sentences involving indefinite NPs in Mandarin Chinese can be accounted for given the analysis of indefinite NPs proposed in Chapter 4. In section 5.2, I discuss interactions between quantifiers and wh-words. I will show that the adverb *dou* 'all' used in universal quantification, which we discussed in Chapter 4, plays a major role in wh-quantifier interactions.

In addition, the analysis of wh-words proposed in Chapter 4 raises the question of whether wh-words in Mandarin Chinese undergo wh-movement at LF, since they do not have inherent quantificational force. I argue contrary to Aoun and Li (1990b) that wh-words have to undergo LF wh-movement.

5.1. Quantifier Raising

5.1.1. Quantifier-quantifier interactions

Scope interactions between quantifiers and quantifiers or quantifiers and wh-words have been discussed extensively in Kroch (1977), Huang (1982), May (1977, 1985), Duanmu (1988), Aoun and Li (1990a) and Kim (1990) among others. A well-known difference between English and Mandarin Chinese in terms of scopal interactions is that the former shows ambiguity if a sentence has more

than one quantifier while the latter does not.[1] There are different theories which attempt to explain the difference. Huang (1982) claims that English has ambiguity in the cases in question because the phrase structure in English allows restructuring while the phrase structure in Mandarin Chinese prevents restructuring. Aoun and Li (1990a) claim that the difference between the two languages can be derived from the lack of VP-internal subject in Mandarin Chinese.[2] We will see here that assuming the proposal of indefinite NPs in Mandarin Chinese given in Chapter 4, we can appeal to a lexical difference between English and Mandarin Chinese. In other words, the difference in terms of scope is not due to structural differences in these two languages.

5.1.1.1. Quantifier-quantifier interactions in Mandarin Chinese

It has been noted since S.F. Huang (1981) that sentences with multiple quantifiers in Chinese do not show ambiguities, in contrast with the English counterparts. Let us consider now typical data showing the differences between these two languages.

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[1]Chomsky (p.c.) points out to me that not everyone thinks that sentences such as (3) are ambiguous. However, it is clear that examples such as (i) are ambiguous to everybody.

(i) Everyone read a book that I suggested.

Note that in Mandarin Chinese, the counterpart of (i) is still unambiguous. Thus, it is not the case that if we have a complex NP, the sentence becomes ambiguous. I will thus assume for the discussion here that (3) and (i) are the same type of cases in English. See also Fodor and Sag (1982).

[2]Aoun and Li (1990a), following Koopman and Sportiche (1988), assumes that INFL in Mandarin Chinese is not a raising category. Thus, there is no raising from a VP-internal subject position or Spec of IP. Note however, they assume that either (i) or (ii) can be the S-structure for a sentence with a subject and an object.

(i) $[_{IP}$ NP $[_{I'}$ I VP]

(ii) $[_{IP}$ $[_{I'}$ I $[_{VP}$ NP VP]

Nonetheless, in their discussion, they assume (i) instead of (ii). Thus, they are assuming the lack of VP-internal subject in Mandarin Chinese.

(1) mei-ge-ren dou mai-le yi-ben-shu[3]
every-CL-person all buy-ASP one-CL-book
'Everyone bought a book.'

(2) you yi-ge-ren mai-le mei-ben-shu[4]
have one-CL-person buy-ASP every-CL-book
'There is a person who bought every book.'

(3) Everyone bought a book.
a. for every person (x), there is a book that (x) bought
b. there is a book that everyone bought

The Mandarin examples, (1) and (2), are not ambiguous, in contrast with the English example in (3). In (1), the universal quantifier *mei-ge-ren* 'everyone' has scope over the indefinite NP *yi-ben shu* 'one book'. The sentence means that everyone bought one book or another: if there are five people altogether, then there are up to five books. The sentence does not mean that there is a book (for instance, Carolyn Heilburn's *Writing a Woman's Life*) and everybody bought it. In (2), the indefinite NP has scope over the universal quantifier. The sentence means that there is a person and this person bought every book. The sentence does not mean that for every book, there is a person who bought it: for instance, the following scenario will not be compatible with the reading in (2): there are

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[3]There isn't an equivalent of *someone* in Mandarin Chinese. Yeh (1986) uses *mou-ren* 'certain person' in examples like (1). She claims that sentences such as (i) are ambiguous.

(i) mei-ge-ren dou you mo-zhong shihao (=Yeh's (43), p. 54)
every-CL-person all have some-CL hobby
'Everyone has some hobby'
'Some hobby is such that everybody has it.'

However, I do not share her judgements and native speakers that I consulted with do not think that sentences such as (i) are ambiguous either. Again, the only reading possible is the one in which the universal quantifier has wider scope than the existential.

[4]Note again that the object here has to be interpreted as focalized. Some native speakers might find the sentence in (2) to be marginal simply because of the position of the *mei-ge* 'every' NP. See section 4.2 for a discussion. Moreover, as mentioned in section 4.1, indefinite subjects in Mandarin are not allowed. Thus, the presence of the verb *you* 'have' before the indefinite subject in (2) is obligatory.

altogether three books (book-A, book-B and book-C), and book-A is bought by person-X, book-B is bought by person-Y and book-C is bought by person-Z. Thus, the scope relations between the two quantificational NPs in (1) and (2) reflect the surface order of the constituents at S-structure. In contrast, the English example in (3) is ambiguous. It can mean either (3a) or (3b).

Given the analysis of indefinite NPs proposed in Chapter 4, there is a natural explanation of the above difference between English and Mandarin Chinese. As we have shown in Chapter 4, indefinite NPs in Mandarin Chinese never have inherent quantificational force. Thus, unlike English indefinite NPs which can be either quantificational or non-quantificational, indefinite NPs in Mandarin Chinese are never quantificational and thus do not undergo quantifier raising (QR). They can be bound by the non-overt existential quantifier introduced by existential closure, which has VP as its domain of application (Diesing 1990). Moreover, we have seen that indefinite NPs cannot occur in subject positions. I proposed in Chapter 4 that this is a result of a combination of factors: the domain of existential closure is limited to VP and the impossibility of lowering of subjects in Mandarin Chinese.

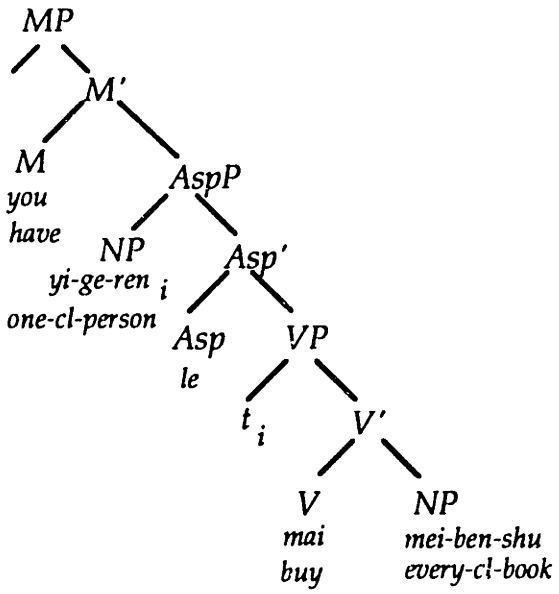
Consider sentence (1) again. The indefinite object NP *yi-ben-shu* 'one book' is bound by existential closure, yielding a narrow scope reading of the indefinite NP.[5] Since the indefinite NP cannot undergo QR (due to the lack of independent quantificational force), it cannot have a wide scope reading. Further, according to Diesing, the indefinite NP in (1) can only have a cardinal reading, since it is the reading associated with non-quantificational indefinite NPs bound by existential closure. Sentences such as (1) can only have an interpretation in which the subject quantifier phrase has scope over the indefinite NP. The necessary narrow

[5]Note that this is in contrast with Fodor and Sag (1982) who claim that the non-quantificational reading is the wide scope reading.

scope of the indefinite NP in (1) follows from the lack of inherent quantificational force of the NP.

Consider now the sentence in (2). The structure of sentences such as (2) has been discussed in Chapter 4. To recapitulate, the modal *you* 'have' selects an AspP which in this case takes an indefinite subject. The modal is equivalent to the rule of existential closure which binds the indefinite NP. The structure of (2) thus is (4):

(4)



(2), as indicated, is also unambiguous. The indefinite NP has scope over the universal. The question here is : why can't the universal quantifier in the object position take scope over the indefinite NP? Recall that the universal quantifier *mei* 'every' does not normally appear without the adverb *dou* 'all' and I proposed in Chapter 4 that NPs with *mei* 'every' needs to be licensed by *dou*. I suggest that in cases where NPs with *mei* 'every' occurs without *dou* 'all', it is interpreted as a group. (2) for instance, is equivalent in interpretation to "there is a person who bought all the books". In fact, for speakers who do not like NPs with *mei* 'every' to appear in object positions, they use *suoyou de shu* 'all books' instead. In other

words, in sentences like (2), due to the non-quantificational reading of NPs with *mei* 'every', there is no scope ambiguity.

5.1.1.2. Quantifier-quantifier interactions in English

Now let's turn to quantifier interactions in English. Following Williams (1977) and May (1985), I assume that adjunction of quantifiers to VP at LF is allowed. Assuming the Principle of Economy of Derivation (Chomsky 1989), the question which arises here given the possibility of adjoining an object quantifier to VP at LF, is whether adjunction to IP of an object quantifier is ruled out by the Economy of Derivation.[6] The Principle of Economy of Derivation can be roughly stated as follows (cf. Chomsky 1990 fall lectures):

(5) a. Shorter derivations bar longer ones.
b. The shortest legitimate move is always chosen.

(5a) is concerned with the steps of a derivation. The one which has more steps is ruled out on the basis that there is another derivation which has fewer steps. (5b) is concerned with the length of derivation involving Move α. Given (5b), since adjunction of an object to IP is a longer derivation than adjunction of an object to VP, adjunction to IP is barred.

Here I will explore the possibility that QR of an object to IP is not a longer derivation than QR of an object to VP under some circumstances. In particular, I would like to suggest here that the Principle of Economy of Derivation does not rule out a longer derivation if it derives a different legitimate structure from the shorter one. Consider first what the driving force of QR is. If QR is to ensure

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[6]Williams (1977) argues that the ambiguity in sentences such as (i) can be attributed to whether the quantifier phrase is adjoined to IP or to VP. The former gives a distributed reading while the latter gives a collective reading.
(i) Max saw everyone before Bill did.

that all quantifiers are in A-bar positions at LF (creating a quantifier-variable structure), then adjunction to IP is a longer derivation than adjunction to VP since either of the adjunction sites will create a quantifier-variable structure. Since the output of QR always gives a quantifier-variable structure, adjunction to IP will be barred by adjunction to VP, given (5b).

However, consider another possible driving force of QR. If QR is not only to ensure that all quantifiers are at an A-bar position, but also to indicate the scope of a quantifier, then does adjunction to VP bar adjunction to IP? The answer to this question will then depend on whether adjunction to VP of a quantifier yields the same scope as adjunction to IP of the same quantifier. If it does, then again, the Principle of Economy of Derivation will rule out adjunction to IP, since it is the longer derivation for the same scope. However, if adjunction to IP of a quantifier yields a different scope than adjunction to VP of the same quantifier, then the Principle of Economy of Derivation will not rule out adjunction to IP because it is not a longer derivation than adjunction to VP since it yields a different scope.

Below I will explore the second possibility for QR. That is, QR is to mark the scope of a quantifier, together with generating a quantifier-variable structure. Let us first consider the sentence which is used to argue for adjunction to VP. Consider (6a). May (1985) argues that adjunction to VP is obligatory in sentences such as (6a) because adjunction to IP in these cases will lead to a Path Containment Condition violation (Pesetsky 1982), as stated in (7).

(6) a. Who bought everything for Max?
b. $[_{CP}$ who$_i$ $[_{IP'}$ everything$_j$ $[_{IP}$ t_i $[_{VP}$ bought t_j for Max]]]]
c. $[_{CP}$ who$_i$ $[_{IP}$ t_i $[_{VP'}$ everything$_j$ $[_{VP}$ bought t_j for Max]]]]

(7) Path Containment Condition (from May 1985)
Intersecting A-bar categorial paths must embed, not overlap.

(6b) and (6c) are representations of the quantifier *everything* adjoining to IP and adjoining to VP respectively. The paths of the quantifiers for (6b) and (6c) are indicated in (8a) and (8b) respectively.

(8) a. path (j) = {VP, IP, IP'}
path (i) = {IP, IP', CP}
b. path (j) = {VP, VP'}
path (i) = {IP, CP}

From (8a), we can see that the paths given by the derivation in (6b) do not embed. Thus (6b) ruled out by the Path Containment Condition in (7). On the other hand, the path condition is not even relevant for the derivation given in (6c), since there is no intersection of the categorial paths, as indicated in (8c). In other words, in a sentence such as (6a), only adjunction to VP of the quantifier object is a legitimate derivation.

Here, I offer another way of looking at the illegitimate derivation. Assuming the Principle of Economy of Derivation, and QR as an operation to yield a scope for a quantifier, we can rule out the derivation given in (6b). Consider again the two representations in (6b) and (6c), repeated below.

(6) b. $[_{CP}$ who$_i$ $[_{IP}$ everything$_j$ $[_{IP}$ t_i $[_{VP}$ bought t_j for Max]]]]
c. $[_{CP}$ who$_i$ $[_{IP}$ t_i $[_{VP}$ everything$_j$ $[_{VP}$ bought t_j for Max]]]]

I will not assume the Scope Principle in May (1985) for reasons that I will discuss in section 5.1.2.1. I assume, following Reinhart (1976) and May (1977), that scope is defined in terms of c-command and scope ambiguities arise when there are different legitimate LF representations for the same sentence. In (6b), the wh-word c-commands the quantifier after the quantifier raises. Thus the former has scope over the latter. Similarly, in (6c), the wh-word also c-commands the quantifier and thus the scope relation given in (6c) is exactly identical to the one given in (6b). Hence we have two derivations which give us identical scopal

relations. The Principle of Economy of Derivation will then come into play. In (6c), the quantifier is adjoined to VP. In comparison with adjunction to IP as in (6b), adjunction to VP is a shorter derivation. Thus, (6b) is ruled out by the Economy of Derivation. Note that if we assume that there is no Scope Principle, there is no empirical basis for ruling out (6b). Nonetheless, assuming the Economy of Derivation, (6b) will be ruled out in principle.

Let us now turn to sentences with multiple quantifiers in English. I will argue that scopal ambiguities in the cases with multiple quantifiers can be derived by different logical representations, as originally proposed in May (1977). Consider first a simple example:

(9) Everyone loves someone.
a. $[_{IP}$ Everyone$_i$ $[_{IP}$ t_i $[_{VP}$ someone$_j$ $[_{VP}$ loves $t_j]]]$
b. $[_{IP}$ someone$_j$ $[_{IP}$ everyone$_i$ $[_{IP}$ t_i $[_{VP}$ loves $t_j]]]]$
c. $[_{IP}$ everyone$_i$ $[_{IP}$ someone$_j$ $[_{IP}$ t_i $[_{VP}$ loves $t_j]]]$

(9a)-(9c) are three possible derivations at LF after QR. In all three cases, the subject quantifier undergoes QR and adjoins to IP. (9a) is derived by adjunction of the object quantifier *someone* to VP, (9b) by adjunction of the object quantifier to IP after the subject quantifier adjoins to IP and (10c) is derived by adjoining the object quantifier to IP first and then adjoining the subject quantifier. Does the Principle of Economy of Derivation rule out (9b) just as it rules out the derivation in (6b)? If we assume that QR indicates the scope for a quantifier, then (9b) is in fact not ruled out by the Principle of Economy of Derivation. Thus sentences such as (9) are ambiguous. In contrast, (9c) is ruled out because it yields the same scope as the one in (9a).

Consider first (9a). In this derivation, VP is a possible adjunction site. The object quantifier *someone* adjoins to VP and the subject quantifier adjoins to IP. Thus, the subject quantifier *everyone* c-commands the object quantifier *someone*

and thus the former has scope over the latter. In (9b), both the subject quantifier and the object quantifier adjoin to IP. Given (9b), the object quantifier c-commands the subject one and the former thus has scope over the latter. In other words, given (9b), *someone* has scope over *everyone*. The scope relation given by (9b) thus differs from the one given by (9a). Hence, though (9b) is generated by adjunction to the object quantifier to IP, it is not ruled out by the Principle of the Economy of Derivation because it generates a different scope relation from the one given in (9a), which is generated by adjunction of the object quantifier to VP, a shorter derivation on the surface.

Now consider examples that are more complicated.

(10) Everyone expects someone to be a spy.
(11) Everyone believes that someone will go to the rally.

(10) is ambiguous while (11) is not.[7] Given (10), it appears that QR is not clausebound (see 5.1.2.1. for May's (1985) theory in which QR is not clause-bound and problems with the proposal). However, if this is the case, then (11) should be ambiguous also. If we look at (10) and (11) more closely, there is a major difference between these two sentences. (10) is an exceptional Case-marking (ECM) construction and it is generally assumed in the literature that in sentences like this, the complement clause is only an IP (as a result of CP-deletion, or the traditional S-bar deletion). In contrast, in (11), the matrix verb takes a tensed complement and in this case it has to be a CP. Thus, in (10), IP is the argument of the verb and in (11), CP is the argument of the verb. Hence, it appears that QR can cross an IP boundary but not a CP boundary.

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[7]Pesetsky (p.c.) thinks that (11) is quite ambiguous. However, Williams (1986), Lasnik and Saito (1989) state that sentences like (11) are not. The example given in Williams is (i):

(i) someone thinks that everyone saw you at the rally.

I follow Chomsky (1986) in assuming that adjunction to an argument position is not allowed. Given sentences such as (10), there are two legitimate LF derivations with QR (since adjunction to the embedded IP is not possible due to its argument status): adjunction of the embedded subject quantifier to matrix VP or adjunction to matrix IP, as shown in (12a) and (12b).

(12) a. $[_{IP}$ everyone$_i$ $[_{IP}$ t_i $[_{VP}$ someone$_j$ $[_{VP}$ expects $[_{IP}$ t_j to be a spy]]]]
b. $[_{IP}$ someone$_j$ $[_{IP}$ everyone$_i$ $[_{IP}$ t_i $[_{VP}$ expects $[_{IP}$ t_j to be a spy]]]]

In (12a), the ECM subject quantifier adjoins to the matrix VP and the matrix subject adjoins to the matrix IP. The matrix quantifier *everyone* c-commands the ECM subject in (12a), thus the former has scope over the latter. (12b) represents a second possibility of adjunction of *someone*. The adjunction of *someone* to the matrix IP yields a scope relation between *everyone* and *someone* in which the latter has scope over the former. Thus, though the ECM subject does not take the literally shortest move, it still does not violate the Principle of Economy of Derivation because it is the shortest move to derive the wide scope of *someone* without violating any other principle. Therefore, (10) is ambiguous.

Now how about the lack of ambiguity of (11)? Why is it the case that the embedded subject takes a wider scope than the matrix subject? Here, if we assume that QR is indeed clausebound (for some reason that is still unknown) with respect to embedded CPs, then the embedded subject cannot move to the higher clause at all. In other words, QR cannot cross a CP boundary but it can cross an IP boundary.

We have seen that ambiguities in sentences with multiple quantifiers can be accounted for by different logical representations. The Principle of the Economy of Derivation will not rule out longer derivations which generate different scope from the shorter ones.

5.1.2. Wh-quantifier interactions

Let us now turn to wh-QP interactions. The lack of ambiguity in sentences with wh-words and quantifiers in Mandarin Chinese, Japanese and Korean has been noted in Huang (1982), Hoji (1985) and Kim (1990). On the other hand, sentences with wh-words and quantifiers in English are said to be ambiguous (May 1985 among others). I will first examine wh-quantifier interactions in English. In particular, I discuss the proposals in May (1985), Longobardi (1987) and Frampton (1990). I will show how Frampton's proposal can be extended to account for wh-quantifier interactions in Mandarin Chinese.

5.1.2.1. Wh-quantifier interactions in English

May (1985) presents the contrast with respect to scopal ambiguity in sentences such as (13) and (14):

(13) Who bought everything for Max?
(14) What did everyone buy for Max?

(13) is not ambiguous while (14) is. May (1985) states that a question like (14) "may be understood, loosely, either as a single question, asking for the identity of the object such that everyone bought it for Max, or as a "distributed" question, asking of each individual what it is that that person bought for Max." (p. 38) (15) is a possible answer for (13) and both (15) and (16) are possible answers for (14). (16) represents the distributive reading while (15) represents the collective reading. (See Williams (1988) for a different view.)

(15) Everyone bought a VCR for Max.
(16) Ken bought a book for Max, Ada bought a CD for Max and Henry bought a phone for Max.

May (1985) proposes the Scope Principle, stated in (17), to account for scopal ambiguities.

(17) a. Members of Σ-sequences are free to take on any type of relative scope relation.
b. A class of occurrences of operators ψ is a Σ-sequence if and only if for any O_i, $O_j \in \psi$, O_i governs O_j, where "operator" means "phrases in A-bar positions at LF".

The Scope Principle as stated in (17) together with a segment theory of adjunction (i.e. adjunction creates a segment of a category) account for scope ambiguities in sentences like (14), repeated below.

(14) What did everyone buy for Max?
(18) $[_{CP}\text{what}_i$ [did] $[_{IP}\text{everyone}_j$ $[_{iP}$ i_j buy t_i for Max]]]

In (18), *everyone* is adjoined to IP. After adjunction to IP, *everyone* is no longer dominated by IP since it is only dominated by a segment of IP. Thus both the wh-word *what* and the quantifier phrase *everyone* have the same m-command domain, namely CP. Thus, given the Scope Principle stated in (17), the wh-word can have scope over the quantifier and vice versa. In other words, the Scope principle predicts that in a configuration such as (18), there is scopal ambiguity.

To account for the non-ambiguity of sentences like (13), repeated below, May appeals to the Path Containment Condition, which we discussed earlier.

(13) Who bought everything
(19) a. $[_{CP}\text{who}_i$ $[_{IP}\text{everything}_j$ $[_{IP}$ t_i $[_{VP}$ bought t_j]

b. $[_{CP}\text{who}_i$ $[_{IP}t_i$ $[_{VP}\text{everything}_j$ $[_{VP}$ bought t_j]

(19a) is the one which yields ambiguity according to the Scope Principle. However, the paths of the wh-phrase and the quantifier phrase in (19a) violate the Path Containment Condition, as indicated. On the other hand, the paths of

the wh-phrase and the quantifier phrase in (19b) do not. Thus, (19b) is the only legitimate derivation. Given (19b), the wh-phrase has scope over the quantifier.

Consider now data involving extraction of a wh-phrase from an embedded sentence:[8]

(20) Where does Bobby think every detective will go for vacation?

(21) Who said every detective goes to Cape Cod for vacation?

Sentences such as (20) are said to be ambiguous in May (1985) and Lasnik and Saito (1989), in contrast with (21). That is, (20) can have either a distributive or a collective reading (e.g. the quantifier takes narrow scope) while (21) can only have a collective reading. It should be noted that there are variations with respect to the judgment of sentences like (20). Some speakers do not have the distributive reading. Nonetheless, I will assume that there is a contrast between (20) and (21), as stated in May (1985).

Now compare (20), (21) with (22):

(22) What did every detective think Bobby will buy?

Again, the judgments here are subtle. However, most speakers think that (22) is on a par with (20): they are both ambiguous between a distributive and a collective reading.[9]

May (1985) proposes to handle the contrast in (20) and (21) based on the Scope Principle and the Path Containment Condition as well. To maintain the Scope Principle, May proposes that the embedded universal quantifier adjoins to

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[8]May (1985) notes that whether the embedded clause has the complementizer or not does not change the contrast. In other words, if we add the complementizer *that* in the embedded clause, (20) is still ambiguous while (21) is not. Michael Hegarty (p.c.), however, thinks that the ambiguity in (20) disappears with the presence of the complementizer that.

[9]See Sloan (1991) for a theory of scopal relations, in which she assumes that sentences such as (26) are unambiguous.

matrix IP at LF. Thus, (20) and (21) are assigned the structures (23) and (24) at LF:

(23) [where$_i$ does [$_{IP}$ every detective$_j$ [$_{IP}$ Bobby think t_j will go for vacation t_i]]

(24) [who$_i$ [$_{IP}$ t_i said [$_{CP}$ [$_{IP}$ every detective$_j$ [$_{IP}$ [t_j goes to Cape Cod for vacation

In (23), the quantifier phrase *every detective* is adjoined to the matrix IP. According to the Scope Principle, the quantifier phrase can take either wider scope or narrower scope with respect to the wh-word *where*. However, in (24), the quantifier phrase cannot interact with the wh-word *who* and thus, *who* will have scope over the quantifier phrase since the former c-commands the latter. Note that sentences such as (21), the quantifier phrase cannot adjoin to the matrix IP because such a structure will violate the Path Containment Condition, as shown in (25).

(25) [who$_i$ [$_{IP}$ every detective$_j$ [$_{IP}$ t_i said [$_{CP}$ [$_{IP}$ [t_j goes to Cape Cod for vacation
|_____|----------|----------|

Given (23), it appears that QR is not clause-bound since it can cross an embedded CP boundary. However, as Williams (1988), Lasnik and Saito (1989) and Kim (1990) point out, if QR is not clause-bound, then the lack of ambiguity of sentences like (26), which we discussed earlier, cannot be explained.

(26) Some students think that every linguist goes to Cape Cod on Fridays.

The Path Containment Condition will not prevent the embedded quantifier phrase from adjoining to the matrix IP. Thus, according to May's theory, (26) is wrongly predicted to be ambiguous.

5.1.2.2. Scope Reconstruction

A number of theories have been proposed to account for the data above, as well as for other data, for instance, Lasnik and Saito (1989), Aoun and Li (1990a), Kim (1990) and Frampton (1990). I now discuss further data discussed in both Aoun and Li (1990a) and Frampton (1990). I will then review Frampton's (1990) proposal, which is based on Longobardi's (1987) theory of Scope Reconstruction.

Consider the following sentences involving weak islands. They are not ambiguous and there is no variation among speakers:[10]

(27) a. Which books do you wonder whether every student read?
b. Which books don't you know that every student read?
c. Which book didn't every student think that his teacher wrote?

Sentences in (27) involve weak islands (i.e. wh-island and negative island). In particular, the wh-word in the sentences has crossed either a wh-island boundary or a negative island boundary.

Compare now the sentences in (27) with the ones in (28).

(28) a. Which book did every student wonder whether his teacher wrote?
b. Which book did every student think that his teacher didn't write?

Both (28a) and (28b) have the same status as (20). That is, they are ambiguous. In both (28a) and (28b), though the wh-word has crossed either a wh-island boundary or a negative island boundary, at S-structure, the wh-word and the quantifier phrase are not separated by an island boundary.

Frampton (1990), following Longobardi (1987), proposes to account for the contrast between sentences in (27) and (28) is a result of reconstruction. In particular, he argues that the lack of ambiguity in sentences in (27) is because

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[10]I thank John Frampton for bringing these data to my attention.

scope reconstruction is not possible into islands. I now briefly discuss his proposal.

Frampton (1990) assumes that reconstruction does not involve LF lowering. Instead, it involves a rule of semantic interpretation. Consider an example which has been argued to have reconstruction (Chomsky 1977 and Heim 1987 among others) (examples in (29) are from Frampton 1990).

(29) a. How many books do you want to read?
b. (?x) (x many books:y) you want to read y?
c. (?x) you want to read [x many books]
'What is the number such that you want to read that many books?'

Frampton states that in the reading indicated in (29c), the phrase *x many books* have been reconstructed. The phrase, being an indefinite, is existentially quantified "by some process by which x many books acquires existential force within the embedded sentence" (p. 9). In (29c), the process can be existential closure which, as we have discussed in Chapter 4, introduces a non-overt existential quantifier.

Further, Frampton argues that intermediate traces can be interpreted via reconstruction while variables cannot.[11],[12] Hence, reconstruction can take place at the site of an intermediate trace. Now let's consider the sentences in (27) again, repeated below:

(27) a. Which books do you wonder whether every student read?
b. Which books don't you know that every student read?
c. Which book didn't every student think that his teacher wrote?

As noted above, all the sentences in (27) involve weak islands. At LF, no intermediate trace remains within an island (Lasnik and Saito 1984). Thus, for

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[11]Frampton assumes that reconstruction into a trace is incompatible with interpreting the trace as a variable.

[12]See Aoun and Li (1990) whose scope principle is also related to intermediate traces rather than variable.

the sentences in (27), no reconstruction can take place in the embedded clause because the intermediate trace in the embedded clause will be deleted. Thus, in the sentences in (27), the wh-word takes wider scope than the quantifier phrase. Now consider the sentences in (28).

(28) a. Which book did every student wonder whether their teacher wrote?
b. Which book did every student think that his teacher didn't write?

In the sentences in (28), though intermediate traces must delete in the embedded clauses, they are not deleted in the matrix. Thus reconstruction to the matrix intermediate trace (adjoined to VP) can take place. After reconstruction, (28b) has roughly the following reading, with the phrase x a book being bound by a non-overt existential closure.

(30) (which x) (every y, y a student) (x a book) and y wonders whether ....

(30) yields the reading in which the quantifier phrase has scope over the wh-phrase (in fact the restrictive clause of the wh-phrase, in Heim's 1982 terminology). On the other hand, if reconstruction does not take place, the wh-phrase has wider scope than the quantifier phrase. Hence, the ambiguity of sentences such as (28) and the lack of ambiguity in (27) are accounted for.

Given this theory, the prediction is that as long as an intermediate trace is allowed (appearing in a position c-commanded by a quantifier phrase), there is ambiguity.

5.1.2.3. Wh-quantifier interactions in Mandarin Chinese

Sentences with wh-phrases and quantifiers in Mandarin Chinese such as the ones in (31) have been said to be unambiguous by Huang (1982). Aoun and Li (1990), on the other hand, claim that they are ambiguous. Sentences such as (32) are consistently judged unambiguous, just as their the English counterpart.

(31) mei-ge-ren dou mai-le sheme
every-cl-person all buy-asp what
'What did everyone buy?'

a. what is the thing such that everyone bought?
b. for every x, what is the thing that x bought?

(32) shei mai-le mei-yi-ben-shu
who buy-asp every-one-cl-book
'Who bought every book?'

a. who is x such that x bought every book?
b.*for every y, y is a book, who is the one that bought y?

Huang (1982) maintains that (31) only has the reading in (31a) while Aoun and Li claim that both (31a) and (31b) are available. That is, for Huang, the wh-word always has wide scope. I will suggest that the reason for the discrepancy in (31) has to do with the fact that the reading in (31b) is available, but only under a certain interpretation of *mei* "every". (33a) illustrates a given context in which the reading in (31b) becomes salient and (33b) is an example of modification of NPs with *mei* 'every' in such a way that the wide scope reading of "every" is available.[13]

(33) a. Sara, Amanda and Marcia went to Europe for a month. After they came back to the States, you ask:
(tamen) mei-ge-ren dou mai-le sheme?
they every-CL-person all buy-ASP what
what did everyone of them buy?

b. nimen jia de mei-ge-ren dou mai-le sheme
you-(pl) home DE every-CL-person all buy-ASP what
'What did everyone from your family buy?'

In both (33a) and (33b), the distributive reading is more salient. The question which arises here is whether or not the wide scope interpretation of the universal quantifier is a result of QR.

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[13]I thank Dylan Tsai for pointing this out to me.

Before we answer this question, I will first point out two distinct properties associated with "every-NP" in Mandarin: (a) as we discussed in Chapter 4, "every-NP" in Mandarin Chinese has to be associated with the adverb *dou*, except in certain environments; (b) whenever "every-NP" is associated with *dou*, it is necessarily distributive. In other words, it does not have a reading in which "every-NP" is interpreted as a group. That is, (31) can have an answer like (34) and everyone can buy a copy of the same book. However, (31) is incompatible with a reading in which everyone acts as a group and every member in the group contributed money to buy one single thing (see Lasnik and Saito 1989 for a discussion of group reading in English).[14]

(34) mei-ge-ren dou mai-le yi-ben-shu
every-cl-person all buy-asp one-cl-book
'Everyone bought a book.'

I have proposed in Chapter 4 that *dou* is a distributor. Thus, the fact that "every-NP" which is associated with *dou* has to be interpreted as distributive is expected.

Let us now turn to the question of whether the ambiguity that Aoun and Li (1990) claim is actually a result of different scopes of the wh-phrase. Consider the sentences in (35) and (36):

(35) mei-ge-xuesheng dou da-dui-le nei-xie-wenti
every-CL-student all answer-right-ASP which-CL-questions
'Which questions did every student answer correctly?'

(36) mei-ge-yisheng dou dao nali du jia
every-CL-doctor all go where spend holiday
'Where does every doctor go for vacation?'

We can again change the "every-NP" a bit by making it more specific:

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[14]Lasnik and Saito (1989) point out that quantifier phrases such as *everyone*, can also be interpreted as a group, in which case, a bound pronoun is not licensed. Hence, they claim that in cases when *everyone* is interpreted as a group, it is non-quantificational.

(37) nimen ban de mei-ge-xuesheng dou da-dui-le
you(pl) class de every-CL-student all answer-correct-ASP
nei-xie-wenti
which-CL(pl)-question
'Which questions did every student in your class answer correctly?'

(38) tamen yiyuan-li de mei-ge-yisheng dou dao nali du jia
they hospital-in DE every-CL-doctor all go where spend holiday
'Where does every doctor from their hospital go for vacation?'

In (37) and (38), the distributive reading comes more easily. Given the consistent way of soliciting the distributive reading, namely, by making the "every-NP" more specific. I suggest that the distributive reading is not a result of the NPs with *mei* 'every' taking wide scope with respect to the wh-phrase. By making "every-NP" more specific, it is similar to making it more like a name. Thus, it is similar to giving a list of people and asking, for instance, where they are going for vacation. If the list of people are not interpreted as a group which goes to vacation together, then a distributive answer is required.[15]

The next question is why it is the case that Mandarin Chinese does not have scope ambiguity in sentences with wh-phrases and quantifiers. Assuming Scope Reconstruction discussed above, I will argue here that the presence of the adverb quantifier *dou* creates a barrier, and thus intermediate traces are not allowed after *dou*. Consider first sentences in (39) and (40):

(39) a. *mei-ge-xuesheng dou weisheme hui-jia
every-CL-student all why return-home
'Why did every student go home?'
b. weisheme mei-ge-xuesheng dou hui-jia
why every-CL-student all return home
'Why did every student go home?'

(40) a. hufei weisheme sheng-qi
Hufei why get-angry
'Why did Hufei get angry?'

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[15]Huang (1990) offers a similar explanation for Aoun and Li's (1990) claim that passive sentences in Mandarin Chinese are ambiguous.

b. weisheme hufei sheng-qi
why Hufei get-angry
'Why did Hufei get angry?'

In (39), with the adverb quantifier *dou*, the wh-adjunct *weisheme* 'why' cannot appear after the subject , but it can occur before the subject. In contrast, as shown in (40), without the adverb quantifier *dou* the wh-adjunct can appear before or after the subject.[16]

I propose that *dou* blocks the extraction of the wh-adjunct *why* in (39a).[17] In other words, *dou* is a barrier to extraction. In (39a), the wh-adjunct moves at LF to Spec of C^0. However, its trace cannot be antecedent governed due to the adverb *dou*. In contrast, in (39b), the adjunct appears before *dou* at S-structure and thus at LF, it can move to Spec of C^0 without crossing the adverb *dou*. Its trace, can then be antecedent governed. Now let's turn to the lack of scope ambiguities.

In the cases we have seen, in particular, the cases comparable to English, there is no scope ambiguity. In all these cases, the presence of *dou* is required because "every-NP" in Mandarin Chinese needs to be licensed by *dou*, as we have shown in Chapter 4. Take (35) as an example, repeated below:

(35) mei-ge-xuesheng dou da-dui-le na-xie-wenti
every-CL-student all answer-right-ASP which-CL-questions
'Which questions did every student answer correctly?'

In (35), the wh-phrase *na-xie-wenti* 'which question' moves at LF to Spec of C^0. Since it crosses the barrier introduced by *dou*, no intermediate trace is allowed

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[16]Note that sentences like (i) is marginal to some speakers, though for some it is perfect:
(i) mei-ge-ren weisheme dou hui-jia
every-cl-person why all return home
'Why did everyone return home?'

[17]Something along these line was suggested to me by Pesetsky (p.c.).

after *dou* and thus the intermediate trace associated with the VP deletes. Hence, reconstruction cannot take place in sentences like (35).

One potential problem for this analysis comes from sentences which allow "every-NP" to occur without *dou* (see section 4.6), as in (41).

(41) linghucong gei-le mei-ge-xuesheng yi-ben-shu
Linghucong give-ASP every-CL-student one-CL-book
'Linghucong gave every student a book.'

Nonetheless, in sentences such as (42), there is still no scope ambiguity:

(42) botong gei-le mei-ge-xuesheng na-yi-ben-shu
Botong give-ASP every-CL-student which-one-CL-book
'What did Botong give every student?'

(42) is not ambiguous, the wh-word takes wider scope than the universal quantifier. Since *dou* is not present, this case cannot be explained by the lack of scope reconstruction. I suggest that in this case, it is a result of "every-NP" being interpreted as a group, and thus non-quantificational, instead of being interpreted as a quantifier which binds variables (see Lasnik and Saito 1989). Consider first what type of NP can occur with *dou*. As we noted in Chapter 4, only NPs that are plural or mass noun can occur with *dou*. In other words, elements that are interpreted as a group can occur with *dou*. The "every-NP's" are not an exception. Hence, without *dou*, they are only interpreted as a group. This then explains why even in such a case, there is no ambiguity.

I have argued that given the theory of Scope Reconstruction, the lack of scope ambiguity in sentences in Mandarin Chinese can be accounted for.

5.2 In-situ Wh-words and LF

The analysis proposed in Chapter 4 for wh-words in Mandarin Chinese raises the question of whether the wh-words undergo wh-movement at LF or

not. In particular, since wh-words do not have inherent quantificational force, do they still need to move to take proper scope? I will first review Huang's (1982) arguments for wh-movement at LF as well as Pesetsky's (1987) arguments. I will then discuss Aoun and Li's (1990) proposal that there is no LF-movement of in-situ wh-words given the presence of a question morpheme. I will argue that the data that they used to argue against LF wh-movement fall within the rubric of D-linking (Pesetsky 1987). Furthermore, arguments for as well as against LF wh-movement presented by Reinhart (1990) will be discussed. I propose to resolve the conflict presented in Reinhart (1990) in section 5.2.5. Lastly, I address the question of where wh-words are moved to at LF.

5.2.1. Huang's Arguments for LF wh-movement

I will first briefly review Huang's arguments for LF wh-movement. There are three main arguments: 1) selectional requirements of the verbs, 2) locality effects, 3) scope of wh-words.

5.2.1.1. Selection requirements

Huang shows that verbs in Mandarin Chinese manifest selectional requirements similar to those in English manifest. For instance, in English, verbs such as *think* and *believe* do not select embedded questions whereas verbs such as *wonder* and *ask* obligatorily select embedded questions. And verbs like *know* can optionally take embedded questions. Verbs in Mandarin Chinese are shown to have the same selectional requirements, as in (43)-(45).

(43) huangrong xiangxin guojing mai-le sheme
Huangrong believe Guojing buy-ASP what
a. 'What does Huangrong believe that Guojing bought?'
b.*'Huangrong believes what Guojing bought.'

(44) a. qiaofong wen wo guojing mai-le sheme
Qiaofong ask me Guojing buy-ASP what
'Qiaofong asked me what Guojing bought.'

b.*qiaofong wen wo guojing mai-le shu
Qiaofong ask me Guojing bought-ASP book
'*Qiaofong asked me Guojing bought a book.'

(45) botong zhidao huangrong xihuan shei
Botong know Huangrong like who
a. 'Botong knows who Huangrong likes.'
b. 'Who does Botong know Huangrong likes?'

(43) shows that the verb *xiangxin* 'believe' in Mandarin Chinese is just like its English counterpart in that it cannot take an embedded question, as indicated in (43b). The sentence in (43) can only have a matrix question interpretation. On the other hand, the verb *wen* 'ask' must take an embedded question. As (44b) shows, if the embedded sentence is not a question, the sentence is ungrammatical. The verb *zhidao* 'know' in Mandarin Chinese is also like its English counterpart in that it can either take an embedded question or a proposition, as shown in (45a) and (45b).

Assuming that selectional requirements are satisfied the same way in both English and Mandarin Chinese, the null hypothesis is to say that Mandarin Chinese in-situ wh-words move to the same position that English wh-words are moved to at S-structure. Huang states the requirement in terms of the verb and the question word in the Comp. Note that this null hypothesis does not change under the extended X-bar theory as well as head-to-head selection (see Chomsky 1986). Given the extended X-bar theory, the wh-words move to Spec of C^0 either at S-structure or at LF. Assuming Spec-head agreement, the verb can select a particular C^0 with specific features. In this case, the verb selects for [+wh] feature in C^0. Thus, wh-words in Mandarin Chinese are fronted at LF to the same position that English wh-words are fronted at S-structure. The selectional

requirements of the verbs can then be accounted for in the same way. (46)-(48) are the LF-representations of the sentences in (43)-(45):

(46) [$_{CP}$ sheme$_i$ [$_{IP}$ huangrong xiangxin [$_{CP}$ guojing mai-le t_i]]]
what Huangrong believe Guojing buy-ASP

(47) [$_{CP}$ [$_{IP}$ qiaofong wen wo [$_{CP}$ sheme$_i$ [$_{IP}$ guojing mai-le t_i]]]
Qiaofong ask me what Guojing buy-ASP

(48) a. [$_{CP}$ botong zhidao [$_{CP}$ shei$_i$ [$_{IP}$ huangrong xihuan t_i]]]
Botong know who Huangrong like

b. [$_{CP}$ shei$_i$ [$_{IP}$ botong zhidao [$_{CP}$ huangrong xihuan t_i]]]
who Botong know Huangrong like

5.2.1.2. Locality effects at LF

Huang shows that certain in-situ wh-words also show locality effects. Furthermore

there is an argument-adjunct asymmetry in terms of island effects. Arguments can violate islands while adjuncts cannot. I will only discuss in-situ wh-words in wh-islands and complex NPs here since this asymmetry has been discussed extensively in the recent literature.

Wh-islands

(49) judou xiang-zhidao shei mai-le sheme
Judou want-know who buy-ASP what
a. 'Judou wonders who bought what.'
b. 'for which y, y a thing such that Judou wonders who bought y'
c. 'for which x, x a person such that Judou wonders what x bought'

(50) hufei xiang-zhidao shei weisheme shengqi
Hufei want-know who why get-angry
a. 'Hufei wonders who gets angry why.'
b. 'for which x, x a person such that Hufei wonder why x gets angry'
c. '*what is the reason x such that Hufei wonders who gets angry for x'

Complex NPs

(51) botong xihuan shei xie de shu
Botong like who write DE book
'for which x, x a person such that Botong likes the book that x wrote'

(52) *qiaofong xihuan botong weisheme xie de shu
Qiaofong like Botong why write DE book
'for what reason x such that Qiaofong like the book that Botong wrote for x'

In (49) and (50), we see the difference between an argument and an adjunct in wh-islands. (49) is three ways ambiguous: a sentence with an indirect question, a direct question on *shei* 'who' or a direct question on *sheme* 'what'. In contrast, (50) does not have the reading in which it is a direct question on the adjunct *weisheme* 'why'.[18] In (51) and (52), we see that argument wh-words like *shei* 'who' can be interpreted outside of a complex NP while the adjunct wh-words like *weisheme* 'why' cannot.

Huang shows that given an LF-movement account of in-situ wh-words, the contrasts shown above can be accounted for by the ECP, assuming that subjects in Mandarin Chinese are always lexically governed.[19] Since adjuncts are not lexically governed, movement across a wh-island and complex NPs will yield an illegitimate LF-representation since the adjunct trace will not be properly governed.

5.2.1.3. Scope of wh-words

Huang shows that wh-words always have wide scope with respect to other quantifiers in the sentence no matter where the wh-words are generated (i.e. as a subject, object, etc). We have seen some examples in 4.3. (53) and (54) are two more examples: (from Huang 1982)

(53) mei-ge-ren dou mai-le sheme

[18]Huang (1982) claims that sentences like (50) are not ambiguous: the reading in (50a) is not available. However, the reading (50a) is fine with me. It is noted in Lasnik and Uriagereka (1988) that the counterpart of (50) in Japanese also has both readings indicated here.

[19]Huang (1982) stipulated that subjects in Mandarin Chinese are always lexically governed by infl. See Huang (1990) for an attempt to derive this based on the VP-internal subject hypothesis.

every-CL-person all buy-ASP what
'What did everybody buy?'

(54) mei-ge-ren dou shuo shei zui congming
every-CL-person all say who most clever
'Who does everyone say is the most clever?'

To account for the wide scope property of wh-words, Huang again appeals to LF-movement of in-situ wh-words. Since wh-words are fronted to Comp (=Spec of C^0), they have scope over everything else in the sentence.

5.2.2. Pesetsky's Argument for LF-wh-movement

Pesetsky (1987) argues that certain wh-words move at LF while certain others do not. He shows that there are two types of wh-phrases: D(iscourse)-linked and the -D-linked. Non-D-linked wh-phrases are quantifiers and thus move at LF. By contrast, D-linked wh-phrases are not quantifiers and they do not move at LF.

Pesetsky notes that there is a difference between wh-words such as *who* and *what* and *which*-phrases. The former type shows superiority effects and the latter type does not, as (55) and (56) show.

(55) a.??What$_i$ did you persuade who(m) to read e_i?
b. *Mary asked [what$_i$ [who read e_i]]?

(56) a. Which book$_i$ did you persuade which man to read e_i?
b. Mary asked which book$_i$ which man read e_i?

Various theories have been proposed to account for the superiority violations manifested in (55a) and (55b) (see Chomsky 1973, Lasnik and Saito 1989, Cheng and Demirdash 1990 among others). Pesetsky (1987) accounts for this with the Nested Dependency Condition:

(57) Nested Dependency Condition
If two wh-trace dependencies overlap, one must contain the other.

The sentences in (55) violate the Condition stated in (57), assuming with Pesetsky, that the in-situ wh-word adjoins to S' (=CP). Consider the LF representations of (55a) and (55b):

(58) a. [$_{S'}$ who$_i$ [$_{S'}$ what$_j$ did [you persuade e_i to read e_j]]]

b. Mary asked [$_{S'}$who$_i$ [$_{S'}$ what$_j$ [e_i read e_j]]?

Given the Nested Dependency Condition, the grammaticality of (56) has to be accounted for. In particular, the in-situ wh-phrases in (56) take the same scope as the ones in (55).

Pesetsky proposes that there are two ways that in-situ wh-words can take scope: 1) movement at LF and 2) Baker's (1970) binding of wh-words by Q-morpheme. The second is only possible with wh-phrases like the *which*-phrases. He calls this type discourse-linked (D-linked) phrases. Given questions with *which*-phrases such as "Which book did you read?, the range of felicitous answers is limited by a set of books both speaker and hearer have in mind." (p. 108)

In other words, non-D-linked wh-phrases have to move at LF to take scope. This in turn argues for LF wh-movement.

5.2.3. Selection

In Chapter 2, I have shown that Mandarin Chinese has a question particle *ne*, which optionally appears in wh-questions. It is similar to *-ka* and *-ci* in Japanese and Korean. However, as Hong (1987) and Kim (1990) point out, the particles in Japanese and Korean must be present at S-structure in wh-questions. We can explain this if it is the question particle which satisfies selectional requirements of verbs like *wonder* and *ask*. Examples in Japanese and Korean are repeated below (from Kim 1990):

Korean

(59) a. John-un [Mary-ka mues-ul sat nya ko] mulet ta
John-TOP Mary-NOM what-ACC bought QM COMP asked IND
'John asked what Mary bought.'

b. *John-un [Mary-ka mues-ul sat ta/ø ko] mulet ta
John-TOP Mary-NOM what-ACC bought IND COMP asked IND
'John asked what Mary bought.'

Japanese

(60) a. John-wa [Mary-ga nani-o katta ka] tazuneta
John-TOP Mary-NOM what-ACC bought QM asked
'John asked what Mary bought.'

b. *John-wa [Mary-ga nani-o katta ø] tazuneta
John-TOP Mary-NOM what-ACC bought asked
'John asked what Mary bought.'

As (59) and (60) show, the presence of the question particle is obligatory in wh-questions. If LF-wh-movement of wh-words satisfies selection, it should be possible for the wh-words to move at LF and then selection requirements of the verbs should be satisfied without the particles.

I have argued in Chapter 2 that question particles serve to type sentences as interrogative. The question that arises here is whether the particles also satisfy selection or whether LF-movement of in-situ wh-words is still necessary to satisfy selection. The null hypothesis is that the particles not only satisfy Clausal Typing (in syntax) but also semantic selection since they are comparable to actual movement of wh-words (e.g. in English). If this is correct, then LF movement of wh-words is not to satisfy selectional restrictions. However, I will show below that based on Reinhart's (1990) arguments, in-situ wh-words have to move to be interpreted properly. I now turn to Aoun and Li's arguments against LF wh-movement.

5.2.4. Aoun and Li (1990b)

Aoun and Li (1990b) argue that there is no LF wh-movement of in-situ wh-words. Instead, there is movement of the question morpheme *ne* or a null

counterpart. Their argument crucially relies on the interaction of the adverb *only* and wh-in-situ. In particular, *only* can be associated with an overt element but not a trace. In languages with wh-in-situ, *only* can modify wh-words in-situ. They thus argue that there is no LF movement of in-situ wh-words.

First consider some data from English:

(61) Steve only saw Joanna.
a. ...(but didn't talk to her)
b. ...(but not Sharon)

(62) Joanna, he only saw.
a. ...(but didn't talk to her)
b.*...(but not Sharon)

(63) Who do you only like?

(64) John only seems t to be happy.

Only can be associated with the verb (or verb phrase) or with the object NP. The former reading is indicated in (61a) and the latter in (61b) (see Anderson 1972, Kuroda 1969, Jackendoff 1972, Rooth 1985, Kratzer 1989 and Tancredi 1990). However, if the object is topicalized as in (62), then the reading associated with the object is not present. Thus, the reading indicated in (62b) is not available. (63) and (64) show similar effects. Both (63) and (64) are unambiguous; *only* modifies the verb in these two sentences but not the NPs.

Tancredi (1990) proposes the Principle of Lexical Association stated in (65) to account for the lack of ambiguity in the above sentences.

(65) Principle of Lexical Association
An operator like *only* must be associated with a lexical constituent in its c-command domain. (p.30)

He argues that this principle not only holds at S-structure but at LF as well. An example of this principle being active at LF is given in Aoun and Li (1990b):

(66) Someone only loves every boy in the room.

Aoun and Li claim that (66) is not ambiguous. The NP *every body in the room* can only be narrow scope with respect to *someone*. This is due to the Principle of Lexical Association stated in (65). If *every body in the room* takes wider scope than *someone*, it raises pass *only*. Then *only* will be associated with a trace.

Now let's turn to *only* and wh-in-situ. Aoun and Li note that *only* can in fact modify in-situ wh-words, as shown in (67) and (68).[20]

(67) Who only likes what?

(68) ta zhi xihuan shei
he only like who
'Who does he only like?'

In both (67) and (68), the element *only* can be associated with the in-situ wh-words. If in-situ wh-words undergo LF wh-movement, then the reading in which the element *only* is associated with the in-situ wh-words are predicted to be unavailable given the Principle of Lexical Association stated in (19). Since the reading is indeed available, Aoun and Li argue that the in-situ wh-words do not move at LF.[21]

5.2.4.1. Deriving island effects without LF wh-movement

Since Aoun and Li claim that LF wh-movement does not exist, they have to account for island effects at LF in some other way. They also assume that

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[20]Several native speakers that I consulted with do not like sentences like (67), though I did find some who think that they are fine. I will come back to the differences in terms of judgments on these sentences shortly below.

[21]One logically conceivable derivation which can in fact derive a representation which satisfies the Principle of Lexical Association is as follows: Assuming that *only* is a propositional modifier (Tancredi 1990), let's say that it not only adjoin to VP, IP as Tancredi states, but also to CP. If in-situ wh-words move to Spec of C^0, *only*, which is allowed to adjoin to CP can then associate with the lexical wh-word at Spec of C^0. The Principle of Lexical Association is thus satisfied.

there is a question particle in wh-questions in Mandarin Chinese. It is the movement of the question particle that induces island effects.

Assuming Generalized binding (Aoun 1985), they treat the relation between the question particle and the in-situ wh-words as a binder-bindee relation. They note that the generalization that they need to capture is the argument-adjunct asymmetry, stated in (69) (=Aoun and Li's (49)):

(69) a. A wh-in-situ such as *why* in adjunct position must have an antecedent (i.e. must be antecedent governed) in the minimal clause in which it occurs.
b. A wh-in-situ such as *who* or *what* in argument position need not have a local antecedent in the minimal clause in which it occurs.

Based on this generalization, they propose that whenever there is an adjunct wh-word, the question particle is generated in the same clause as the adjunct. If the clause the adjunct is in is not interrogative, the particle then moves to an upper clause. Consider (70), in which the adjunct is in an embedded non-interrogative clause. (70b) is an S-structure representation of (70a).

(70) a. ta renwei [zhangsan weisheme lai le]
he think Zhangsan why come ASP
'Why does he think that Zhangsan came?'

b. $[_{CP}$ Qu_i $[_{IP}$ ta renwei $[_{CP}$ t'_i $[_{IP}$ zhangsan $[_{I0}$ t_i] $weisheme_i$ lai le]]]

The question particle, indicated by Qu, is base-generated in the embedded I^0 position. It moves to the matrix C^0 position at S-structure.[22]

The asymmetry between arguments and adjuncts are then derived by the difference with respect to a local antecedent. Since arguments do not have to have a local antecedent, then even if argument wh-words occur within wh-islands, complex NPs, and sentential subjects, the question particle can always be

[22]The reason for generating the question particle in INFL in Aoun and Li's proposal is to derive ambiguities in wh-quantifier interactions.

generated outside of these islands and no violation will occur. In contrast, with adjunct wh-words, since they require a local antecedent, if there is no antecedent in the minimal clause, it is ruled out. Mcreover, it is also possible in some cases to generate the question particle within the same clause that the in-situ wh-words are in. But then the question particle needs to move to get proper scope. Consider now a case exemplifying the movement of a question particle.

(71) a. *ni xihuan ta weishenme xie de shu
you like he why write DE book
'for what reason (x), you like the book that he wrote for (x)'

b. $[_{CP}$ Qu_i $[_{IP}$ ni xihuan $[_{NP}$ $[_{CP}$ t_i $[_{IP}$ ta weishenme xie de shu]]]
you like he why write DE book

In (71b), the question particle moves from the relative clause to the matrix C^0. The trace left by the question particle will not be properly governed since the head noun of a relative clause is not a lexical governor. The ungrammaticality of (71) is a result of the illegitimate trace left by the question particle.

I will not get into the details of how they handle scope interactions between wh-words and quantifiers. Their main point is that the wh-words themselves do not move and that there is a locality condition that holds on the adjunct and question particle, which does not hold for arguments. I will come back to the problems with this analysis shortly below.

5.2.4.2. Questions with *only* and D-linking

The sole piece of evidence that Aoun and Li have against LF wh-movement is from interrogative sentences with in-situ wh-words which are modified by the element *only*. I have indicated earlier that there is variation in judgments on sentences such as (67). There are, roughly speaking, two classes of speakers: (a) those for whom sentences like (67) are interpretable; and (b) those

for whom sentences like (67) are interpretable only when there is a special context. If we assume the judgments from class (a) speakers, then sentences like (67) in English cannot be used as evidence against movem of wh-words. On the other hand, if we assume the judgments from class ( ) speakers, then we need to consider carefully what kind of environments are possible. Here I will concentrate on the class (b) speakers. In particular, since the counterparts of sentences like (67) are fine in Mandarin Chinese. The question is thus whether the data in Mandarin Chinese and data in English can be accounted for in the same way.

Note that although class (b) speakers accept sentences like (67), they need to set up special situations to allow these sentences. It is thus probably that these data cannot be used as evidence against LF wh-movement because the crucial examples are possible only when the relevant wh-word independently need not move at LF. Interpreted this way, the data in Aoun and Li are simply further examples support the claim that D-linked wh-phrases do not undergo movement at LF. As for speakers who do not allow sentences like (67), I suggest that it is because they do not allow wh-words such as *who* and *what* to be D-linked at all.

Consider first wh-in-situ in English. Since wh-in-situ only occurs in multiple questions, we have to examine situations in which sentences like (72) can be understood.[23]

(72) Who only ate what?

According to the speakers that I consulted with, this question can be asked only when both the set of people and the set of things eaten are known to both the speaker and the hearer For instance, if there was a dinner party and five guests

[23]Some speakers do not like sentences like (72) at all. These speakers prefer to have the verb in the present tense. For instance, "who only eats what?" is a grammatical sentence for them.

attended, namely Amanda, Liz, Marcia, Sara and Sue. There were five dishes: stir-fry watercress, steamed fish, mixed seafood, beef on broccoli and stuffed tofu. And something strange happened at the dinner party. Each of the guests ate only one single dish. After this story is told, then someone can ask the question in (72). However, if either the list of people or the list of dishes is not given, the question in (72) cannot be asked.

This is reminiscent of Pesetsky's (1987) D(iscourse)-linking reading. We have briefly discussed his proposal in 4.4.2. It appears that we have the same situation in (72), though the wh-words used there are the ones that are normally non-D-linked. However, with the presence of *only*, a D-linked reading of the wh-words is in fact forced.

Data from Mandarin Chinese and Japanese show the same effect. Given sentences such as (68), repeated below and (73), there has to be a pre-established list of people:[24]

Mandarin Chinese
(68) ta zhi xihuan shei
he only like who
'Who does he only like?'

Japanese
(73) John-ga nani-dake-(o) yonda-no
John-nom what-only-acc read-Q
'What did John only read?'

Furthermore, it should be noted that adjuncts cannot be associated with *only*, as the examples in Japanese and Mandarin Chinese show:

Mandarin Chinese[25]

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[24]I thank Hiroaki Tada for providing the Japanese data.

[25]The sentence in (i) is certainly grammatical. But in this case, only is not modifying weisheme 'why'. It is modifying xiang 'want'.
(i) guojing weisheme zhi xiang nian yuyianxue
Guojing why only want study Linguistics

(74) *guojing zhi weisheme ping-ming
Guojing only why fight-life
'What is the reason (x) such that Guojing went all the way only for (x)?'

Japanese
(75) *John-ga nazè-dake sono-hon-o yonda no
John-NOM why-only that-book-ACC read Q
'*Why* did John *only* read that book?'

Both (74) and (75) are ungrammatical. (76) and (77) show that the ungrammaticality is not due to semantic reasons.

(76) guojing zhi wei-le sheme ping-ming
Guojing only for-ASP what fight-life
'What is the reason (x) such that Guojing went all the way only for (x)?'

(77) John-ga kooiu riyuu-de-dake sono-hon-o yonda no
John-NOM what reason-for-only that-book-ACC read Q
'What is the reason (x) such that John read that book only for (x)?'

Thus, there appears to be an argument-adjunct asymmetry. I think that this asymmetry is due to the fact that adjuncts like *weisheme* 'why' in Mandarin Chinese and *naze* 'why' in Japanese cannot be D-linked for some reason (see also Pesetsky 1987). The non-D-linked characteristic of adjuncts is actually not surprising. Consider Pesetsky's (1987) analysis of D-linked wh-phrases again. He proposes that D-linked wh-phrases are not quantifiers and they do not have to move at LF. He shows a contrast between a non-D-linked wh-phrase and a typical wh-phrase in Japanese. The former cannot violate subjacency while the latter can, as shown in (78) and (79) (the word *ittai* 'the-hell' is used to force a non-D-linked reading on *nani* 'what'):

Japanese (from Pesetsky 1987)
(78) *Mary-wa [[John-ni ittai nani-o ageta] hito-ni atta-no?
Mary-TOP John-DAT the-hell what-ACC gave man-DAT met-Q
'What did Mary meet the man who gave to John?

(79) Mary-wa John-ni nani-o ageta hito-ni atta-no?

'Why did Guojing *only want* to study Linguistics?'

'What did Mary meet the man who gave to John?'

(78) contrasts with (79). The former contains a non-D-linked wh-phrase *ittai nani* 'what the hell' inside a relative clause while the latter has a wh-phrase that is not non-D-linked. The contrast can be accounted for by Pesetsky's analysis: the non-D-linked wh-phrase has to move at LF and therefore it violates subjacency. The typical wh-phrase, though, not a which-phrase, can be D-linked and therefore it is allowed not to move at LF. The scope assignment of this wh-phrase is by binding with the Q-operator. Subjacency is thus not violated.

Now, consider adjunct wh-phrases inside a relative clause (Japanese data from Fukui 1988):

Japanese
(80) *[$_{NP}$ [$_{S'}$ Taroo-ga sore-o naze watasita] otoko]-o sitte-iru no?
Taroo-NOM it-ACC why handed man-ACC know Q
'Why$_i$ do you know the man to whom Taro handed it t_i?'

Mandarin Chinese
(81) *hufei kan-guo [qiaofong weisheme song gei botong de shu]
Hufei read-ASP Qiaofong why give-give Botong DE book
'Why$_i$ did Hufei read the book that Qiaofong gave to Botong t_i?'

As shown in (80) and (81), *naze* 'why' in Japanese and *weisheme* 'why' in Mandarin Chinese cannot appear in a relative clause. If adjuncts can in fact be D-linked, just like arguments, then (80) and (81) should have the same status as (79), which is grammatical. Thus, it appears that adjunct wh-phrases cannot be D-linked.[26]

Now turning back to the cases with the word *only*. The ungrammatical (74) and (75) is due to a conflict between *only* and the adjunct wh-phrase. The former requires D-linking of wh-words while the latter can never be D-linked. Following Pesetsky (1987) who proposes that D-linked wh-phrases do not move,

[26]Pesetsky (1987) has noted in a footnote that a D-linked reading for why in Japanese is extremely hard.

the grammaticality of sentences such as (67) and (68) are accounted for: the wh-phrases in these sentences do not violate the Principle of Lexical Association because they are D-linked and therefore do not move at LF. Thus, data with *only* cannot argue against LF wh-movement in general. It simply falls within the domain of D-linked wh-phrases.

Note that given this analysis of wh-phrases with only, the question that arises is whether or not superiority violations are better with *only*. Consider the following sentences:[27]

(82) a.??What did you persuade who to buy?
b.? Which book did you only persuade who to buy?

For the speakers who can think that sentences like (67) and (72) are well-formed, they also find a contrast between (82a) and (82b). Hence, it appears that *only* forces a D-linking reading.

5.2.4.3. Movement of the Q-morpheme and Head Movement Constraint

To account for the contrast between in-situ argument wh-phrases and in-situ adjunct wh-phrases, Aoun and Li propose that the Q-morpheme is also generated in the same minimal clause that contains an adjunct wh-phrase. The Q-morpheme needs to move to take scope if it is embedded in a non-question clause.

The Q-morpheme under their analysis is base-generated in INFL. In a sentence such as (70), repeated below, it first moves to the embedded C^0 and then to the matrix C^0.

(70) a. ta renwei [zhangsan weisheme lai le]
he think Zhangsan why come ASP

[27]Note however, (i) is still bad even though *only* is present.
(i) which book did only who buy

'Why does he think that Zhangsan came?'

b. $[_{CP}$ Qu$_i$ $[_{IP}$ ta renwei $[_{CP}$ t'$_i$ $[_{IP}$ zhangsan $[_{I0}$ t$_i$] weisheme$_i$ lai le]]]

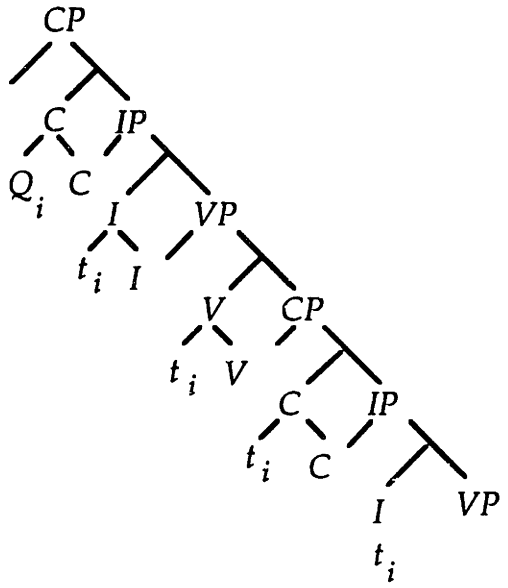
The movement from INFL to the embedded C^0 is a legitimate one since it does not violate the Head Movement Constraint (Travis (1984, 131), stated in (83).

(83) An X^0 may only move into the Y^0 which properly governs it.

However, the movement from the embedded C^0 to the matrix C^0 in (70) violates the Head Movement Constraint, regardless of whether one assumes rigid minimality (Chomsky 1986) or relativized minimality (Rizzi 1990).

One possible response that Aoun and Li can have is that movement of the Q-morpheme (C^0) is not one step (i.e. from C^0 to C^0 skipping the matrix verb and the matrix INFL). Instead, it adjoins to all the intermediate heads along the way without taking them with it, as shown in (84).

(84)



This is similar to clitic climbing as well as predicate-clefting discussed in Li (1990). However, movement of an INFL from an embedded sentence to a matrix C^0 via an embedded C^0 is not attested anywhere else.

If we assume that data with *only* show D-linking effects, then we can account for the modification relationship between *only* and in-situ wh-words without saying that there is no LF-movement of in-situ wh-words. Thus, we will not run into problems of proposing X^0-movement of a question particle, which is problematic.

5.2.5. Interpreting D-linked wh-phrases: Reinhart's (1990) argument

We have seen that if D-linked wh-phrases do not move, as Pesetsky proposes, some differences between the D-linked wh-phrases and the non-D-linked ones can be accounted for. However, Reinhart (1990) argues that if in-situ wh-words do not move at LF, the wh-words cannot be interpreted properly. Consider the following sentences from Reinhart's paper:

(85) a. Who will be offended if we invite which philosopher?
b. Q<x,y> ((if we invite y and y is a philosopher) ---> (then x will be offended))
c. Q<x,y> (y is a philosopher) and (if we invite y, then x will be offended))
d. Luci will be offended if we invite Donald Duck.

Pesetsky (1987) proposes that the D-linked wh-words are assigned scope by being bound by an unselective binder, namely a Q-operator. Thus, in a sentence such as (85a), the wh-phrase *which philosopher* can be bound by the Q in the matrix sentence. However, Reinhart points out that if the wh-phrase is bound by the Q-operator and the restriction of the wh-phrase is left in-situ, the final logical representation will be like (85b). Then the value of y in (85b) can be anything in the world, since the restriction of the wh-phrase occurs in the antecedent clause of an implication. That is, we can choose Donald Duck as a value for y, "since he is not a philosopher, the antecedent clause is false, and the implication is true for this value." (Reinhart 1990, p.1) In other words, given (85b) as the representation for (85a), (85d) can be an appropriate answer.

Hence, it appears that in-situ wh-words have to move to be interpreted properly. However, Reinhart points out that movement of in-situ wh-words raises problems as well. Consider (86).

(86) a. Who remembers which patient$_i$ had what (type of) fantasies about himself$_i$?
b. Answer: Dr. Razi remembers which patient had war-hero fantasies about himself, Dr. Zira remembers which patient had Don Juan fantasies about himself ...
c. [what fantasies about himself$_i$, who [e remembers [which patient$_i$ e had e]
d. For which <x,y> ((y is fantasy about z) and (x remembers for z (z is a patient) and (z had y))

One way of answering the question in (86a) is (86b). This answer requires that the in-situ wh-phrase takes wide scope in the matrix. Since leaving the wh-in-situ at LF creates the problem just noted, the wh-phrase *which fantasies about himself* has to move to the matrix to take scope to get the reading in (86b). The representation at LF will thus be (86c): the wh-phrase containing the anaphor *himself* is outside of the scope of its antecedent *which patient*. In other words, the anaphor *himself* is not bound.

Thus, we run into a conflict: a wh-in-situ has to move in order to be interpreted properly; the movement, however, can lead to a problem of leaving an anaphor not bound. Reinhart proposes to account for this conflict by introducing existential quantification over choice functions. I will not go into her proposal in detail here. Instead, I will point out that since reconstruction effects can be accounted for without actual LF lowering, we do not actually have a conflict.

The conflict that Reinhart points out is in fact not a problem only for in-situ wh-words. Consider a typical reconstruction example:

(87) Which picture of himself$_i$ does Hank$_i$ like?

In this example, the anaphor *himself* is not c-commanded by its antecedent at S-structure. However, it is interpreted to be bound by its antecedent. If reconstruction takes place literally, then we have the NP *[picture of himself]* in the object position. This creates the same problem that Reinhart notes in the wh-in-situ cases. After reconstruction, the restriction of the wh-phrase is in "in-situ". The wh-quantifier then should be allowed to quantify over anything in the world since the quantifier is quantifying over a non-restricted set of things.

Barss (1986) argues against a lowering account of reconstruction effects.[28] He proposes that reconstruction effects can be accounted for along the lines of anaphoric paths. He proposes a Chain Accessibility condition together with a revision of the binding theory to account for the reconstruction effects. His theory is based on connectedness (Kayne 1983, Pesetsky 1982). It essentially makes an antecedent accessible to members of a chain containing the anaphor. Consider (86a) and (86c) for example, repeated below.

(86) a. Who remembers which patient$_i$ had what (type of) fantasies about himself$_i$?
c. [what fantasies about himself$_i$, who [e remembers [which patient$_i$ e had e]

The wh-phrase containing the anaphor is in a chain accessibility sequence and the antecedent of the anaphor *which patient* is chain accessible to the anaphor through the chain accessibility sequence. Roughly speaking, although the antecedent does not c-command the anaphor in this representation, it c-commands a member of the chain which contains the anaphor. This allows the anaphor to be interpreted properly.

I will leave out the details of Barss' proposal here. The main point that I want to make is that Reinhart's conflict can be solved assuming a theory along

[28]See Engdahl (1980) for a different account of the problems discussed here.

the lines of Barss (1986). Now let's turn to another conflict which is generated by Reinhart's paper: we have seen that all in-situ wh-phrases have to be moved to be interpreted properly; however, we have also seen that if D-linked wh-phrases do not move at LF, differences between the D-linked and non-D-linked wh-phrases with respect to Superiority as well as *Only*-modification can be accounted for. In the next section, I discuss a possible way to resolve this conflict.

5.2.5.1. A post-LF level

Consider again the distinction between D-linked and non-D-linked wh-phrases. The former can violate the Nested Dependency Condition, the Principle of Lexical Association, and if Pesetsky's analysis of subjacency violations in Japanese in-situ wh-words is correct, the Subjacency condition. The latter cannot violate any of these. Thus, if D-linked wh-phrases actually move to be interpreted properly, the conditions somehow become "transparent" to the movement of D-linked wh-phrases. I suggest that these conditions are invisible to the movement of D-linked wh-phrases because the latter takes place at a different level, a post-LF level.

We have seen that D-linked wh-phrases have to move so that the wh-phrases can be interpreted properly. However, there is no specific requirement that they have to move at LF. We have also seen that the difference between D-linked and non-D-linked wh-phrases can be accounted for by the lack of movement of the D-linked ones at LF. Thus, one possible way to resolve this conflict is to say that the movement of the D-linked phrases takes place not at LF but at a level in which these conditions will not apply.

The proposal of a post-LF level is not new. Chomsky (1982) proposes a level of LF' in which re-indexing takes place (though for Chomsky, this is not necessarily a level distinct from LF). Safir (1986) extends Chomsky's proposal

and propose that "attach α" applies at LF'. In both Chomsky (1982) and Safir (1986), LF' is proposed as a level in which certain principles and conditions are inactive. If we think of LF as a non-overt syntactic level, then it is not surprising that principles and conditions that apply at S-structure also apply at LF. At LF', however, principles and conditions that apply at S-structure does not apply at LF'.

Now turning back to the conflict that we faced. D-linked phrases have to move to be interpreted. Let's say that they do not have to move at LF. Instead they move at LF'. In other words, they can be licensed somehow at LF (perhaps via Q-indexing as Pesetsky proposes). At LF', they move to so that the restriction on the wh-operator can be local so that the wh-phrases as a whole can be interpreted properly. At LF', the Nested Dependency Condition, the Principle of Lexical Association as well as the Subjacency condition does not hold. Therefore, movement of D-linked phrases to get proper interpretation will not induce superiority effect and subjacency effects. And it will not violate the Principle of Lexical Association so that D-linked wh-phrases can still be associated with the element *only*.

Given the level of LF', the conflict is resolved. We can maintain the difference between D-linked and non-D-linked wh-phrases without compromising the proper interpretation of D-linked wh-phrases.

5.2.6. LF-movement of wh-words: to Spec of CP or adjunction to IP?

Now that we have argued that in-situ wh-words all move at either LF or LF'. The next question is where they move to. The standard assumption is that they move to the same place that wh-words are moved to at S-structure, namely to Comp or to Spec of C^0. (Aoun, Hornstein and Sportiche 1981, Huang 1982 and Lasnik and Saito 1984 among others). On the other hand, Kim (1990) and

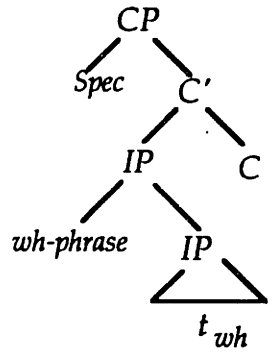
Mahajan (1990) propose that movement of in-situ wh-words does not involve wh-movement. That is, movement of in-situ wh-words is not movement to Spec of CP. Instead, in-situ wh-words are adjoined to IP at LF. In other words, in-situ wh-words undergo QR but no LF wh-movement.

Kim (1990) proposes that this is the case for languages like Japanese and Korean because the wh-words are not wh-words but quantifiers. We have already seen in Chapter two that this does not hold for all in-situ languages. Mahajan (1990) proposes to distinguish S-structure movement of wh-words from LF movement of wh-words: S-structure movement of wh-words is to Spec of C^0 and LF movement of wh-words is adjunction to IP (=QR). In other words, there is no movement to Spec of C^0 at LF at all.

I will examine here Mahajan's analysis since he indicates that the facts in Hindi are problematic for a standard wh-movement analysis. I will argue here that the view that in-situ wh-words only QR cannot be maintained. In particular, to maintain that in-situ wh-words QR at LF even in long distance cases, Mahajan (1990) relies on a pied-piping mechanism which essentially amounts to non-clause-boundedness of QR, which we have seen in section 5.2 to be inaccurate.

Mahajan (1990) proposes that in-situ wh-words are moved for selectional reasons. He assumes that every interrogative clause has a [+wh] C^0 in it which needs to govern a wh-phrase (see also Nishigauchi 1986, 1990). The wh-phrase QRs to IP and the C^0 which contains the [+wh] can then govern it, assuming a segment theory of adjunction (May 1985 and Chomsky 1986), as shown in (88).

(88)



Consider now in-situ wh-words in embedded sentences. In Mandarin Chinese, Japanese, Korean as well as Hindi to a certain extent, wh-in-situ in non-question embedded clauses can take matrix scope. (89) and (90) are examples from Mandarin Chinese.

(89) hufei xiangxin qiaofong qu-le nar
Hufei believe Qiaofong go-ASP where
'Where does Hufei believe that Qiaofong went?'

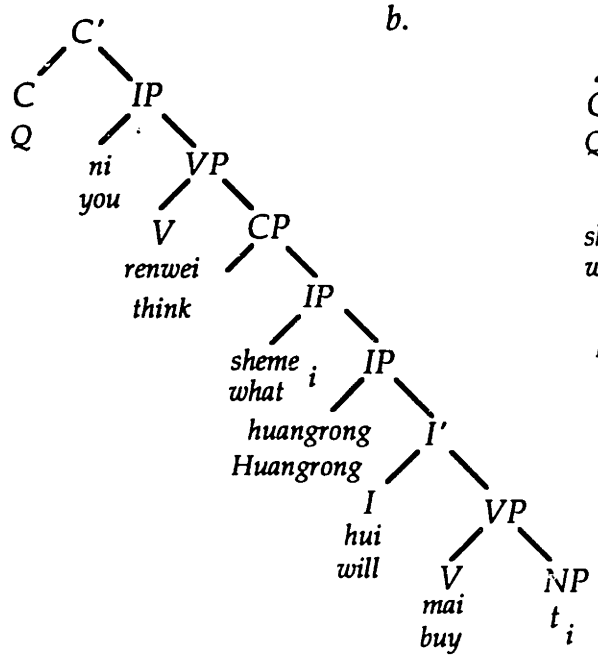
(90) ni renwei huangrong hui mai sheme
you think Huangrong will buy what
'What do you think that Huangrong will buy?'

In both (89) and (90), the wh-words are in an embedded clause at S-structure. Both sentences are matrix questions. Mahajan (1990) analyzes these cases as follows: the wh-word first adjoins to the embedded IP and the whole IP then acquires the quantificational status from the wh-word (following the analysis in Fiengo et al 1988); the whole IP subsequently QRs to the matrix IP. (91a) and (91b) show the derivation for (90).[29]

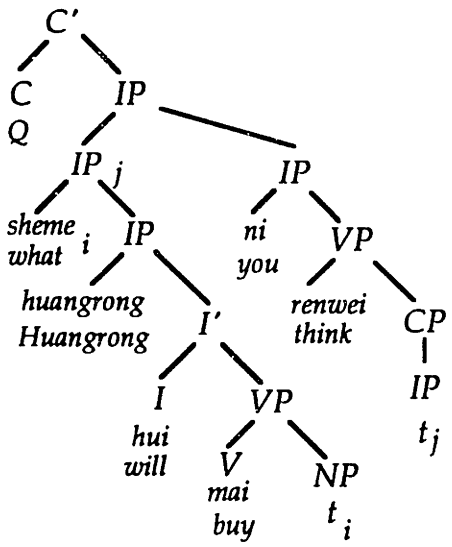
[29]Chomsky (p.c.) points out that IP should not be allowed to move because there is no IP adjunction at S-structure in contrast to VP adjunction, which can take place at S-structure.

(91)

a.



b.



(91a) shows that the wh-word adjoins to the embedded IP. (91b) shows that the whole embedded IP adjoins to the matrix IP.

Although Mahajan maintains that QR is clause-bound, the movement illustrated in (91b) is indeed not clausebound (because it crosses a CP, see section 5.2 for a discussion). Movement of the whole IP to the matrix IP is QR for Mahajan. It nonetheless crosses the embedded CP. If movement of the kind is in fact possible, normal quantifier phrases should also be allowed to undergo such movement. However, it is clear from the reading of sentences such as (92) that such movement is not possible.

(92) Every student thinks that John bought something.

First of all, (92) is not ambiguous, just as other comparable examples that we have seen in section 4.3. Thus, *something* cannot have scope over *every student*. If *something* is allowed to first adjoin to the embedded IP and then the whole embedded IP adjoins to the matrix IP, the lack of wide scope for *something* is not explained.

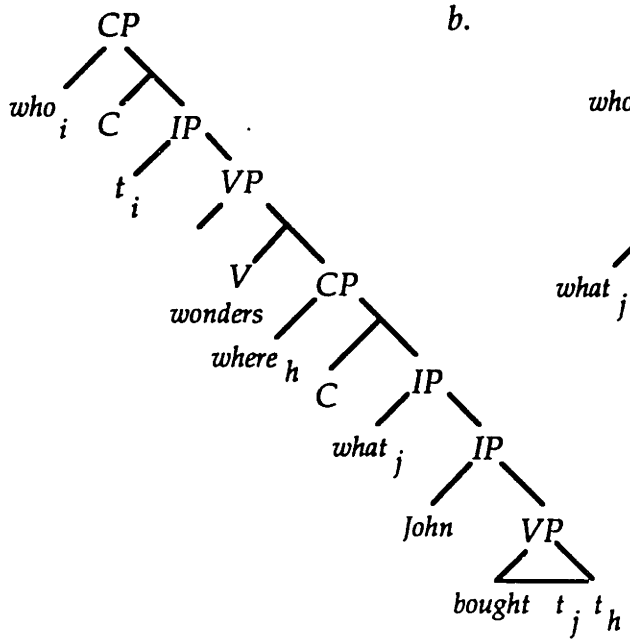
Consider now a further problem in this analysis. Since Mahajan claims that all in-situ wh-words QR, the in-situ wh-word in (93) in English also QRs.

(93) Who wonders where John bought what?

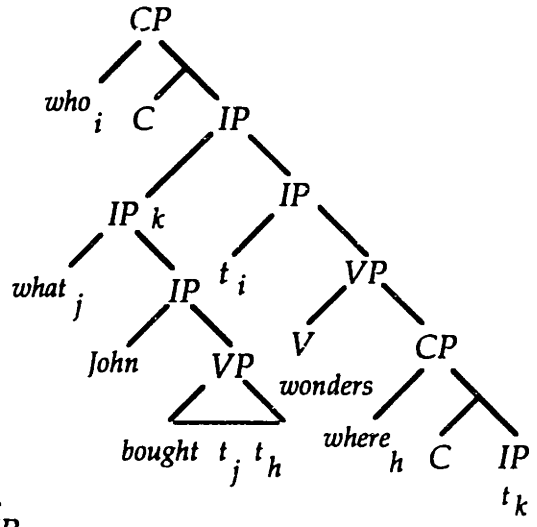
(93) is a typical example illustrating that the embedded object can take either embedded scope (thus pairing up with *where*) or matrix scope (thus forming double matrix question). The embedded scope is straightforward in Mahajan's theory. The wh-word adjoins to the embedded IP. He assumes that the configuration after adjunction allows absorption to take place. Now what about the matrix scope of *what*. He proposes to account for it in the same way that matrix scope of wh-words is accounted for. That is, the wh-word first adjoins to embedded IP. Then the whole embedded IP adjoins to the matrix IP, as shown in (94a) and (94b).

(94)

a.



b.



Again, (94a) is not problematic. However, (94b) is. In (94b), the whole embedded IP which contains the trace of the wh-phrase *where* has moved to the upper matrix IP. Thus, the variable t_h is unbound and the wh-operator *where* does not bind any variable. It should be noted that though it is possible to γ-mark the trace of *where* before the whole IP adjoins to the matrix IP, the output of this LF representation still gives up a free variable and an operator which has nothing to bind.

Now let's turn to some data in Hindi that Mahajan claims to be problematic for an analysis of in-situ wh-words to Spec of CP. In Hindi, wh-in-situ is not allowed in a finite embedded clause, as in (95).

(95) a.*raam-ne kahaa ki kOn aayaa hE
Ram-erg said that who has come
'Who did Ram say has come?'
b.*raam-ne socaa ki siitaa-ne kis-ko dekhaa
Ram-erg though that Sita-erg who saw
'Who did Ram think Sita saw?'

Mahajan points out that finite clauses are obligatorily extraposed to the right (adjunction to IP to the right, Mahajan 1987). Thus, in (95a), the clause [*ki Kon aayaa hE*] 'that who has come' is an extraposed clause.

Mahajan (1990) analyzes the impossibility of the wh-words in (95) to take wide scope as a result of clause-boundedness of QR. That is, since QR is clausebound, the wh-words in (95) can only move to the embedded IP. The embedded IP cannot take questions. Thus, the sentences in (95) are ill-formed. However, it is not clear why in these cases the movement of the whole IP is ruled out. One can of course say that nothing can move out of the extraposed clause because the whole clause is not governed (i.e. a CED effect). If this is the reason, then sentences like (95a) and (95b) do not support a QR account. I appeal here to the Freezing Principle (Culicover and Wexler 1980) which states that "if a transformation changes the structure of a node so that it is no longer a base-structure, nothing under that node may be analyzed (and thus changed) by a further transformation," (Culicover and Wexler 1980, p. 119). An extraposed clause is certainly not in its base position and thus, an in-situ wh-word cannot be moved outside of the extraposed clause to be interpreted in the matrix.

One last problem that Mahajan points out as problematic for theories which assume movement of in-situ wh-words to Spec of C^0. Compare the sentence in (96) with (93), repeated below.

(96) Who thinks that Bill wonders where John bought what?

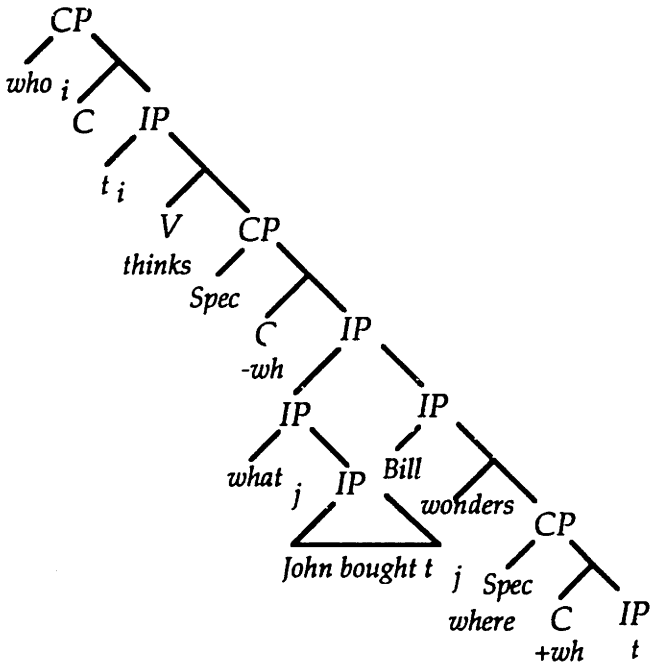
(93) Who wonders where John bought what?

In (96), the in-situ wh-word cannot take matrix scope, in contrast with the one in (93).[30] Under an analysis of in-situ wh-words moving to Spec of C^0, this is

[30]However, some speakers do get the in-situ wh-words interpreted with matrix scope.

unaccounted for. Though Mahajan (1990) claims that the lack of wide scope reading of what in (96) is due to the clause-boundedness of QR, it is not clear how he can prevent adjunction of the embedded IP further to the matrix IP since the initial adjunction of the whole IP already violates clause-bounded of QR. Consider the LF-structure of (96) in (97) given in Mahajan (1990).

(97)



As we can see in (97), if the IP [what [John bought t]] is allowed to move crossing the most embedded CP, then what prevents the whole IP [[what [John bought t] [Bill wonders where t]] from crossing the second embedded CP to the matrix IP?

I do not have an account for the contrast shown in (96) and (93) at the moment. However, it appears that the QR analysis of wh-words also cannot account for the contrast. Further, the QR analysis is undesirable for a number of reasons that we have pointed out.

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