

THE TYPOLOGY OF *WH*-MOVEMENT. *WH*-QUESTIONS IN MALAY

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Abstract. This article investigates the complex facts of Malay *wh*-questions, and suggests a theory of how Malay *wh*-questions fit into the typology of *wh*-questions permitted by a Minimalist conception of Universal Grammar. The paper examines the principles that account for overt *wh*-movement, *wh*-in-situ and partial *wh*-movement in Malay. We argue that the apparent optionality seen in Malay reduces to whether, in the lexicon, a question word consists of an operator and variable combined in a single word, or of a variable bound by a separate, phonologically null operator. We then apply the analysis based on Malay to other languages (primarily, to Chinese and English), and show that the principles employed for Malay are sufficient to explain the variation in *wh*-question formation among these languages.

1. Introduction

The purpose of this paper is to describe the complex facts of *wh*-movement in Malay,¹ and to suggest a theory of how Malay *wh*-questions fit into the typology of *wh*-questions permitted by Universal Grammar. We shall argue that these facts can best be understood by examining them within the context of a deterministic approach to syntax like that of the Minimalist Program (Chomsky 1993 and 1995, *inter alia*). Our focus is on the principles that

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¹ The variety of Malay on which this paper is based is the Malay spoken by educated speakers in Singapore. Some variety of Malay is spoken by about 200,000,000 inhabitants of Brunei, Indonesia, Malaysia, and Singapore. There is reason to believe that there is considerable variation in the syntax of the various social and geographical dialects, but this is a relatively unstudied topic, especially with respect to the syntax of the colloquial language. The reader should, therefore, bear in mind that the examples cited here are not intended to be exemplary of formal, prescriptively correct Malay or Indonesian, nor are the judgments claimed to hold for all colloquial dialects.

account for overt *wh*-movement, covert movement, and unselective binding of a *wh*-variable in Malay. We then consider how well the analysis based on Malay elucidates our understanding of the properties of *wh*-questions across languages.

1.1 *Some theoretical assumptions*

The work that follows is based on certain theoretical assumptions that we take to be central to Minimalism as a research program:

- A. All languages display the same underlying architecture. The only difference among languages is in the inventory of words/morphemes. Universal Grammar (UG) is not subject to parameterization.
- B. There is no optionality in syntactic principles. Optionality in language is due to differences in lexical items/morphemes.
- C. All the grammatical properties of UG itself are derived from the interface of syntax and extra grammatical systems such as logical interpretation and phonetic production. An important instantiation of the requirement that grammatical principles derive from properties of the interface is the principle of Full Interpretation (FI). FI requires that all elements necessary for semantic interpretation must be present at LF and that all elements present at LF must participate in assigning an interpretation.

FI has a specific corollary with regard to questions. Given the usual assumptions about the semantics of questions, FI requires that a *wh*-question must have an operator/variable structure along the following lines, where OP is a question operator binding a variable, *x*:

$$\text{OP}_x [\dots x \dots]$$

We shall refer to this corollary of FI as the Variable Binding Condition. We take the Variable Binding Condition to be a bare output condition, and, therefore, sufficient to motivate movement.²

- D. No movement rule applies unless its application is required by the needs/properties of some lexical item. When the requirements of a lexical item can be satisfied without movement, no rule will apply. Functional heads that have uninterpretable features (such as a STRONG D feature on C) will force movement of a category with matching features to check their STRONG feature before spell-out. This is the only source of movement before spell-out. Thus, constraints such as Rizzi's *Wh*-Criterion (Rizzi 1991), which requires *wh*-movement in the syntax, must be viewed as morphosyntactic

² See the analysis of Partial *Wh*-Movement in Malay in section 5.5, in which the need to satisfy the Variable Binding Condition motivates LF *wh*-expletive replacement. An alternative explanation for LF *wh*-expletive replacement would be the need to eliminate expletives from the representation of the sentence prior to LF. Like the Variable Binding Condition, LF expletive replacement is an instance of movement that is motivated by the requirements of FI rather than the need to satisfy the morphosyntactic requirements of features.

requirements, forcing movement prior to spell-out, due to the fact that the matrix C has a STRONG Q feature (*wh*-feature) that needs to be checked by a *wh*-feature that moves into the checking domain of C.

To be more precise, movement for checking a strong feature is feature movement with pied-piping of the lexical material (pied-piping of the *wh*-word), since the movement necessarily occurs pre-spell-out. If there is any movement at LF, it is by definition only feature movement, since no pied-piping need take place.

E. Principles of economy of derivations as detailed in Chomsky (1995) also apply. In particular, movement is more costly than merger (base generation). Thus, when there is competition between two derivations based on the same numeration, one of which involves movement and the other does not, the derivation without movement will win out.

2. Some Facts About Malay *Wh*-Questions

In this section we review the options for *wh*-question formation in Malay. In sections 3–4, we show that *wh*-in-situ, fully moved *wh* and partially moved *wh* have different distributional properties. In section 5, we will provide a deterministic analysis for these options and show how, in the theoretical context described in section 1, different options fall out from the interaction of universal principles with different lexical items/morphemes in Malay. We explicitly reject an analysis in which the choice between the “move” and “don’t move” options for *wh*-phrases in Malay is due to whether what is spelled out is the head or tail of a chain. We also provide arguments against an analysis in which the properties of in-situ *wh* are due to clausal pied-piping at LF. Finally, in section 6, we apply the analysis developed for Malay to Chinese and to English (each taken as representative of the class of languages with similar properties), and show that it predicts correctly the properties of these languages as well.³

2.1 *Movement possibilities*

The possibilities for *wh*-questions in Malay are similar to those described by Saddy (1991, 1992) for Indonesian.⁴ There are three types of *wh*-questions

³ We shall not discuss the restrictions on *wh*-in-situ in Iraqi Arabic as described by Ouhalla (1996). Ouhalla points out that the distributional restrictions on Iraqi Arabic do not appear to be governed by Subjacency but rather by Binding Theoretic considerations. Thus, Ouhalla proposes that the *wh*-in-situ in these languages is a pronominal anaphor rather than an operator or a variable. If Ouhalla is correct regarding Iraqi Arabic, it would mean that not only Subjacency but also the Binding Theory is relevant to the determination of *wh*-in-situ in certain languages.

⁴ Our findings regarding *wh*-questions in Malay duplicate the general picture found previously by Saddy for Indonesian. There are, however, numerous differences as well. Where these differences are relevant to the issues under discussion, they are mentioned below. In addition, see Kader (1976) for a general study of questions in formal Malay. While this work is primarily on yes/no questions, it also provides insightful analyses of a number of aspects of *wh*-questions. See also Rogayah (1995).

found in Malay, *wh* that is moved to its position of understood scope, *wh*-in-situ and partially moved *wh*. We argue in section 5 that the various types of questions are derived very differently. *Wh*-in-situ, we claim, does not exhibit movement at any level and we argue that a principle of Unselective Binding (in the spirit of Heim 1982 and Reinhart 1993) is involved in the derivation of this construction. Full movement is shown to follow from the feature checking requirements of the matrix Q, while Partial Movement is derived from overt movement followed by LF movement of the *wh*-Operator (OP henceforth).

The possibilities for *wh*-questions are illustrated in (1)–(3):

- (1) *Wh* Moved to Its Scopal Position⁵
- a. Siapa_i (yang) [Bill harap [yang t_i akan membeli baju untuknya]]
Who (that) Bill hope that will buy clothes for him
'Who does Bill hope will buy clothes for him?'
 - b. Kenapa_i [awak fikir [dia pergi t_i]]
why you think he leave
'Why do you think he left?'
- (2) *Wh*-In Situ
- a. Ali memberitahu kamu tadi [Fatimah baca apa]
Ali informed you just now Fatimah read what
'What did Ali tell you Fatimah was reading?'
 - b. Bill harap [guru itu akan mendenda siapa]
Bill hope teacher that will punish who
'Who does Bill hope that teacher will punish?'

⁵ Cheng (1991) and Martohardjono (1993) have each argued that similar structures in Indonesian do not involve *wh*-movement. Cheng presents an analysis of sentences like (1) in terms of a focus construction, with *yang* interpreted as a focus marker. Martohardjono also analyzes these as focus constructions, with the *wh*-word as the subject of a clause in which a headless relative clause is the nominal predicate. Unlike Cheng, who presumably would allow for focus movement in these sentences, Martohardjono argues that no movement whatsoever is involved in deriving such sentences. Her main argument against movement is based on her claim that in focus constructions in Indonesian (as in relative clauses generally), a subject-object asymmetry is observed: only subjects can be affected (i.e., only subjects can be relativized or focused). This constraint is taken to be applicable to base generated structures and not to be a constraint on movement.

The main argument against a no-movement approach for Malay is the fact that sentences like those in (1) obey constraints on movement, as is shown below. Martohardjono's no-movement account does not provide a satisfactory explanation for the sensitivity of examples like those of (1) to syntactic islands. See Cole & Hermon (1997) for discussion.

In addition, at least in the Malay of our informants, there is no subject-object asymmetry in Malay for relativization. Moreover, for *wh*-questions, *yang* is optional in the colloquial speech of our informants. However, we claim that, in addition to the options with *yang*, (which we believe Cheng was correct in analyzing as a cleft-like construction, with covert movement of a focus operator), Malay also has *wh*-movement to Spec of CP. Note that Kader (1976) and Saddy (1991, 1992) also argue for a movement analysis for Indonesian for examples like (1).

- (3) Partially Moved *Wh*⁶
- a. Ali memberitahu kamu tadi [_{CP} *apa* (yang) [_{IP} Fatimah baca *t_i*]]
 Ali told you just now what (that) Fatimah read
 ‘Ali told you just now, what was Fatimah reading?’
- b. Kamu percaya [_{CP} *ke mana*_i (yang) [_{IP} Mary pergi *t_i*]]
 you believe to where (that) Mary go
 ‘Where do you believe (that) Mary went?’
- c. John fikir [*kenapa*_i(yang) Mary rasa [Ali dipecat *t_i*]]
 John think why (that) Mary feel Ali was fired
 ‘Why does John think (that) Mary felt Ali was fired?’

In (1) the *wh*-words *siapa* ‘who’ and *kenapa* ‘why’ have moved from a position within the complement clause to the beginning of the matrix clause, a position which, as in English, we take to be the specifier of the matrix CP.

In contrast, in (2), as in Chinese and Japanese, the *wh*-words *apa* ‘what’ and *siapa* ‘who’ remain in-situ in the complement clause. As in similar examples in Chinese and Japanese, the *wh*-words are understood to have scope over the sentence as a whole, just as in (1).⁷ Finally, in (3), the *wh*-words *apa* ‘what’, *ke mana* ‘to where’, and *kenapa* ‘why’ have moved to the beginning of the clause in which they originate or to the beginning of the intermediate clause, to the pre-complementizer position. We take this position to be the specifier of the subordinate CP.⁸

2.2 Nominal versus adverbial *wh*-phrases

While nominal *wh*-phrases like *apa* ‘what’, *siapa* ‘who’, *perempuan mana* ‘which woman’, and *di mana* ‘where, in which (place)’ can occur in any of the three positions just mentioned (scopal Spec, CP, in-situ, intermediate Spec, CP), adverbial *wh*-words (i.e., adverbial adjuncts) must undergo movement and cannot remain in-situ:

⁶ There are a number of arguments that these examples involve partial *wh*-movement rather than scrambling. Note that in (3c) *kenapa* ‘why’ has moved entirely out of its own clause to the beginning of the intermediate clause. This example is incompatible with a clause internal scrambling analysis of the data. For additional arguments that the movement in (3) is indeed to Spec CP, see Hermon & Cole (in preparation).

⁷ In Saddy (1991) it is claimed for Indonesian that the *wh*-in-situ has a slightly different interpretation from the fully moved *wh*, akin to a quiz master question in English. Saddy’s evidence comes (partially) from his claim that a list interpretation is impossible with in-situ questions. Our Malay informants, however, had no problems in giving a list answer to questions like:

(i) Siapa kamu fikir beli apa?
 who you think buy what
 ‘Who did you think bought what?’

⁸ See section 5.5.

- (4) a. Kenapa Fatimah menangis?
 why Fatimah cry
 'Why did Fatimah cry?'
 b. *Fatimah menangis kenapa?
 Fatimah cry why
 'Why did Fatimah cry?'
- (5) a. Bagaimana Ali memandu kereta?
 how Ali drive car
 'How does Ali drive the car?'
 b. *Ali memandu kereta bagaimana?
 Ali drive car how
 'How does Ali drive the car?'

These are to be contrasted with nominal adjuncts, which are well-formed in-situ.⁹

- (6) a. Di mana Ali membeli pangsapuri?
 at where Ali buy condominium
 'Where did Ali buy a condominium?'
 b. Ali membeli pangsapuri di mana?
 Ali buy condominium at where
 'Where did Ali buy the condominium?'

3. Distributional Properties of Fully Moved and In-Situ *Wh*-Questions

We shall now examine the distributional properties of fully moved and in-situ *wh*-questions. Our principal goal at this point in the paper is to determine whether the question type under consideration employs movement in its derivation. In order to do this, we examine two sets of properties that might reveal whether movement has occurred: 1) the sensitivity of the various question types to syntactic islands, and 2) the possible occurrence of the morpheme *meng-* in conjunction with these question types. As seen below, sensitivity to syntactic islands is indicative that movement is involved in the derivation of the question type under study. Similarly, the obligatory omission of *meng-* with verbs that normally take this prefix is indicative of movement.¹⁰

⁹ By "nominal adjunct" we mean an adjunct containing an NP rather than an adverb. In English *for what reason* is a nominal adjunct while *why* is an adverbial adjunct.

¹⁰ One could raise the question of whether the existence of island effects is universally an indication of movement having taken place. As pointed out by an anonymous reviewer, there exist languages (such as Romanian and Bulgarian) in which an overtly moved *wh* does not seem to obey Subjacency. We do not think this is a serious problem for our assumption that movement in general is island sensitive. Given the description in Rudin (1988), these languages have multiple Spec,CP positions and hence allow multiple overt *wh*-movement. As argued in Comorovski (1986) and Rudin (1988), this voids the *wh*-island (which is a Subjacency effect) but other islands (such as the CNPC) still limit movement. Thus, Subjacency holds for movement in general even in multiple-*wh* languages.

Another potential problem is languages that seem to obey islands and in which no overt movement has occurred. Georgopoulos (1985) argues that in Palauan *wh*-questions and focal

3.1 Syntactic islandhood

In this section we compare the properties of overt *wh*-movement and *wh*-in-situ with respect to islandhood. We show that overt movement not only obeys island restrictions (both strong and weak islands, in the sense of Cinque 1990) but it also has the effect of creating *wh*-islands with respect to the movement of other *wh*-phrases. In contrast, *wh*-in-situ neither obeys island restrictions nor does the presence of *wh*-in-situ create a *wh*-island.¹¹ We now present the evidence that overt *wh*-movement in Malay obeys island constraints such as Subjacency: Overt *wh*-movement in Malay is not possible from either strong or weak islands.

- (7) Ungrammatical Overt Movement from Relative Clauses (CNPC)
- a. *Di mana_i [kamu fikir [Ali suka [perempuan yang tinggal t_i]]]
 At where you think Ali like woman who live
 'You think Ali likes woman who lives where?'
- b. *Dengan siapa_i [kamu sayang [perempuan [yang telah berjumpa t_i]]]
 With who you love woman who already meet
 'You love the woman who met who?'
- (8) Ungrammatical Overt Movement from Sentential Subject
- *[CP Siapa_i [t'_i yang [Ali mengahwini t_i]] mengecewakan ibunya]
 who that Ali married upset his mother
 'Who did that Ali married upset his mother?'
- (9) Ungrammatical Overt Movement from Adjunct Island
- *Apa_i (yang) Ali dipecat [kerana dia beli t_i]
 what (that) Ali was fired because he bought t_i
 'Ali was fired because he bought what?'
- (10) Ungrammatical Overt Movement from *Wh*-Islands
- a. *Apa_i (yang) [awak agak [di mana_j [Mary beli t_i t_j]]]
 what that you wonder where Mary bought
 'What do you wonder where Mary bought?'
- b. *Apa_i (yang) awak agak [sama ada Ali ternampak t_i]
 what that you wonder whether Ali saw
 'What did you wonder whether Ali saw?' (From Rogayah 1995)

elements are base generated in a pre-CP focus position and that a null resumptive pronoun (rather than a trace) shows up in the gap position. This chain is, however, subject to islands constraints and also triggers agreement on any intervening verbs (a phenomenon we take to be similar to the verbal prefix deletion in Malay). Thus, there may be languages in which a non-movement chain is island sensitive. As discussed below, it is not possible, however, to analyze *wh*-questions as chains involving a true resumptive pronoun in Malay.

¹¹ Similar results were found independently by Saddy (1991) and Rogayah (1995).

- (11) Ungrammatical Overt Movement from Negative Island
- a. Siapa_i (yang) Ali tidak fikir [Fatimah suka t_i]¹²
 who that Ali not think Fatimah like
 ‘Who does Ali not think that Fatimah likes?’
- b. *Kenapa_i Ali tidak fikir [Fatimah dipecat t_i]
 why Ali not think Fatimah was fired
 ‘Why did Ali not think Fatimah was fired?’
- (12) Ungrammatical Overt Movement from Factive Island
- a. *Bagaimana_i [kamu gembira [yang Bill belajar t_i]]
 how you happy that Bill studies
 ‘You are happy that Bill studies how?’
- b. ??Apa_i yang [kamu gembira [yang Bill belajar t_i]]
 what that you are happy that Bill studies
 ‘What are you happy that Bill studies?’

While overt *wh*-movement obeys island constraints, *wh*-in-situ does not:

- (13) Grammatical *Wh*-In-Situ in Relative Clauses (CNPC)
- a. Kamu fikir [Ali suka [perempuan [yang tinggal di mana]]]
 you think Ali like woman that live at where
 ‘You think Ali likes the woman who lives where?’
- b. Kamu sayang [perempuan [yang telah berjumpa siapa]]
 You love woman that already meet who
 ‘You love the woman who met who?’
- (14) Grammatical *Wh*-In-Situ in Sentential Subject
 [Yang Ali mengahwini siapa] mengecewakan ibunya
 that Ali married who upset his mother
 ‘Who that Ali married upset his mother?’
- (15) Grammatical *Wh*-In-Situ in Adjunct Island
 Ali dipecat [kerana Fatimah fikir [dia membeli apa]]
 Ali was fired because Fatimah thinks he bought what
 ‘Ali was fired because Fatimah thinks he bought what?’
- (16) Grammatical *Wh*-In-Situ in *Wh*-Islands¹³
- a. Awak agak [di mana [Mary membeli apa]]
 Who wonder where Mary bought what
 ‘What do you wonder where Mary bought?’
- b. Siapa agak [sama ada Ali ternampak apa]
 who wonder whether Ali saw what
 ‘What does who wonder whether Ali saw?’
- (Adapted from Rogayah 1995)

¹² It is expected that an argument can be extracted from a weak island such as a negative island but an adjunct cannot. Some informants, on occasion, found (11a) less than perfect, but, as expected, all agreed that it is much better than (11b).

¹³ *Wh*-in-situ in embedded yes/no questions appears to be less well-formed than in embedded *wh*-questions. What is relevant here is that (16b) is considerably better than (10b), in which overt *wh*-movement has occurred.

- (17) Grammatical *Wh*-In-Situ in a Negative Island
 ?Ali tidak fikir [Fatimah suka siapa]
 Ali not think Fatimah like who
 ‘Who does Ali not think that Fatimah likes?’
- (18) Grammatical *Wh*-In-Situ in a Factive Island
 Kamu gembira [yang Bill belajar apa]
 you happy that Bill study what
 ‘What are you happy that Bill studies?’

Note that while the Complex NP violations of (13) are compatible with the proposal by Nishigauchi (1990) and others that apparent Subjacency violations are due to massive LF pied-piping, following Nishigauchi’s assumptions, the appearance of *wh*-in-situ inside other islands (such as the *wh*-island) cannot be easily explained by LF pied-piping. We give further arguments against the clausal pied-piping analysis in section 5.4 below. See additional arguments against LF pied-piping in Rogayah (1995).

To summarize, we have shown so far that *wh*-in-situ in Malay, unlike overtly moved *wh*, can occur freely in islands. We shall now show that *wh*-in-situ, in contrast to overtly moved *wh*, does not create *wh*-islands. If it were assumed that the *wh*-in-situ has undergone covert null operator movement before spell-out (as claimed by Watanabe 1993 for Japanese), it would be predicted that *wh*-in-situ creates *wh*-islands for overt movement. Consider first the interaction of relativization and overt *wh*-movement. We assume that relativization in Malay involves movement in the syntax of a null operator to the Spec,CP immediately below the head of the relative clause, as in (19):

- (19) Relative Clause Structure
 [NP [NP]_i [CP OP_i [IP . . . t_i . . .]]]

The sentences of (20) show that overt *wh*-question movement creates a *wh*-island that blocks relativization:

- (20) Relativization out of *Wh*-Island Created by Overt *Wh*-Movement¹⁴

¹⁴ In (20), one could add a resumptive pronoun, which would “save” the RC from an island violation:

- (20’) Lelaki_i [OP_i yang [kamu tanya [apa_j [dia beli t_j]]]] ialah abang saya.
 Man that you ask what he buy is brother my
 ‘The man who you asked (whether) he bought what is my brother.’

Note, crucially, that using resumptive pronouns with RCs can (as is the case in English) improve island violations. We cannot, however, use the resumptive pronoun strategy with *wh*-questions in Malay:

- (i) *Siapai [kamu fikir [Ali nampak [perempuan yang suka t_i]]]
 Who you think Ali saw woman who likes
 ‘You think Ali saw woman who likes whom?’
- (ii) *Siapai [kamu fikir [Ali nampak [perempuan yang suka {*dia* }
 {*-nya* }]]]
 Who you think Ali saw woman who likes him/her
 ‘You think Ali saw woman who likes whom?’

In general, pronouns are not possible with *wh*-questions and are also limited with RCs to “saving” relativization into islands. We therefore conclude that Malay (like English) may allow intrusive pronouns (in the sense of Sells 1984) but not true resumptive pronouns.

- a. *Orang itu_i [_{CP} OP_i yang saya tanya [_{CP} di mana_j [t_i bekerja t_j]]] ialah abang saya
 person that that I ask at where work is brother my
 ‘The person who I asked where he worked is my brother.’
- b. *Lelaki_i [OP_i yang [kamu tanya [apa_j [t_i beli t_j]]]] ialah abang saya
 Man that you ask what buy is brother my
 ‘The man who you asked bought what is my brother.’

In contrast, *wh*-in-situ does not create a *wh*-island:

- (21) Relativization into Putative *Wh*-Island Allegedly Created by *Wh*-In-Situ (**no** islandhood)
- a. Orang itu_i [OP_i yang saya tanya [t_i bekerja di mana]] ialah abang saya
 Person that that I ask work at where is brother my
 ‘The person who I asked where he worked is my brother.’
- b. Lelaki_i [OP_i yang [kamu tanya [t_i beli apa]]] ialah abang saya
 man that you ask buy what is brother my
 ‘The man who you asked bought what is my brother.’

Further evidence that covert movement has not applied with *wh*-in-situ comes from the fact that overt *wh*-movement is grammatical out of a clause with in-situ *wh*:

- (22) Apa_i (yang) kamu fikir [Ali beli t_i di mana]
 what (that) you think Ali bought where
 ‘What do you think Ali bought where?’

To review, examples (7)–(22) indicate that while overt *wh*-movement displays the usual island properties associated with movement, *wh*-in-situ does not: *wh*-in-situ is neither restricted from occurring in islands nor does it create islands for the movement of other constituents. On the assumption that constraints such as Subjacency (however, they are instantiated from a Minimalist perspective¹⁵) cannot be restricted to a single component (e.g., syntax but not LF), these examples indicate that *wh*-in-situ in Malay does not undergo movement in either the syntax or at LF.

3.2 *The distribution of the meng- prefix*

Examining the distribution of the *meng-* prefix is a second way to determine whether movement has occurred. The distribution of *meng-* in Indonesian is described in Saddy (1991, 1992), and seems to be identical to what we have found in Singaporean Malay.

¹⁵ Possibly in terms of minimal links. See Manzini (1996) for an attempt to develop a Minimalist account of Subjacency.

Most transitive verbs in Malay optionally take the prefix *meng-*.¹⁶ This prefix varies in form depending on the phonological properties of the stem to which it is affixed:

(23) *Meng-* in Simple Transitive Clauses

- a. Guru itu akan (**men**)-denda Fatimah
teacher that will (**meng**)-punish Fatimah
'The teacher will punish Fatimah.'
- b. Ali (**mem**)-beri Fatimah hadiah untuk hari lahirnya
Ali (**meng**)-give Fatimah present for day birth
'Ali gave Fatimah a present for her birthday.'

On the basis of examples like those of (23), *meng-* is often taken to be simply a marker of transitivity. However, the possibility of the occurrence of *meng-* is not determined solely by transitivity, but it is also affected by whether *wh*-movement has applied over *meng-* plus verb. When the object of a verb that would otherwise permit the *meng-* prefix undergoes *wh*-movement, except in special circumstances that we will not discuss here, the *meng-* prefix cannot occur. But when the subject of a simple sentence is questioned, the appearance of *meng-* is acceptable:

(24) Subject Question

Siapa_i t_i (**mem**)-beli buku itu
who (**meng**)-bought book that
'Who bought that book?'

- (25) a. Apa_i Ali (***mem**)-beri t_i pada Fatimah
What Ali (***meng**)-gave to Fatimah
'What did Ali give to Fatimah?'
- b. Buku_i mana Fatimah (***mem**)-beli t_i
book which Fatimah (***meng**)-buy
'Which book did Fatimah buy?'

In contrast to the examples of (24–25), when the *wh*-moved element is not an NP, the loss of *meng-* does not occur:

(26) *Meng-* Not Lost When Non-NP *Wh*-Moved

- a. Kenapa_i Mary (**mem**)-beli buku itu t_i
Why Mary (**meng**)-bought book that
'Why did Mary (**meng**)-buy that book?'

¹⁶ The appearance of *meng-* is optional in the speech of our informants and in colloquial Malay in general. In highly colloquial speech verbal prefixes are usually omitted. Thus, the grammar of colloquial Malay must characterize when *meng-* is possible and when it is not, whereas in formal Malay and Indonesian, the grammar must characterize when a representation is ill-formed if *meng-* does not appear.

- b. Di mana_i John (**mem**)-beri Mary buku itu t_i
 at where John (**meng**)-give Mary book that
 ‘Where did John give Mary that book?’
- c. Kepada siapa_i Mary (**mem**)-beri buku t_i
 to who Mary (**meng**)-give book
 ‘To whom did Mary give a book?’

In (26a) the *wh*-word is an adverb and *meng*- can appear. Similarly, in (26b) and (26c), the *wh*-form is a prepositional phrase. Again, *meng*- is permitted. Note that the *wh*-prepositional phrase in (26c) *kepada siapa* is an argument of the verb while in (26a) and (26b) the *wh*-form is an adjunct. Thus, the loss of *meng*- is determined by whether the *wh*-form is an NP, and not by whether it is an argument or an adjunct.

The disappearance of *meng*- occurs not only when an object NP is extracted, but also when a complement subject is extracted over a verb normally permitting *meng*-:

(27) *Meng*- Lost When Complement Subject Extracted

- a. Siapa_i Bill (***mem**)-beritahu ibunya [yang t_i (**men**)-yintai Fatimah]
 who Bill (**meng**)-tell mother his that (**meng**)-love Fatimah
 ‘Who does Bill tell his mother that loves Fatimah?’
- b. Siapa_i (***mem**)-buktikan [yang t_i (**men**)-curi kereta]
 who Ali (**meng**)-prove that (**meng**)-steal car
 ‘Who did Ali prove stole the car?’

Note that although *meng*- cannot occur between the extraction site for *wh* and its landing site, *meng*- can occur below the extraction site. Thus, the appearance of *meng*- on the complement verbs in (27) is well-formed.¹⁷

Finally, the loss of *meng*- is not restricted to *wh*-questions. Rather, it also occurs in object preposing constructions and in relative clause formation and focus movement. The loss of *meng*- in object preposing is illustrated in (28).

(28) Loss of *Meng*- in Object Preposing

- a. Buku itui adik saya (***mem**)-beli ti
 Book that brother my (**meng**)-buy
 ‘My brother bought that book./That book was bought by my
 brother.’
- b. Ali_i saya (***men**)-cubit t_i
 Ali I (**meng**)-pinch
 ‘I pinched Ali./Ali was pinched by me.’

Although object preposing would appear at first glance to be movement to an A-position, there are convincing arguments that the preposed NP is in an

¹⁷ Examples like (27) show that the loss of *meng*- in (25) cannot be due to main clause object preposing, or “affixless” passivization. Note that *siapa* in (27) originates after the complementizer *yang* in the complement clause. This is not a position from which object preposing is possible.

A-position, and that object preposing, like passivization, involves the movement of an object to the specifier of IP. For example, the preposed NP can be PRO in control constructions and can undergo raising. See Chung (1994), Alsagoff (1992), and Guilfoyle et al (1992).

Meng- is also lost when an object or complement subject is relativized or undergoes focus movement, both of which appear to involve the movement of a null operator. These facts are illustrated in (29) and (30):

(29) Loss of *Meng-* in Relativization

- a. [Buku_i [OP_i yang [John (*mem)-beli t_i]] itu] menarik
 Book that John (meng)-buy that interesting
 'That book that John bought is interesting.'
- b. [Lelaki_i [OP_i yang [t_i (mem)-beli buku itu]]] adik saya
 Man that (meng)-buy book that brother my
 'The man who bought that book is my brother.'

(30) Focus Movement¹⁸

- a. Buku ini_i [OP_i yang [Fatimah (*mem)-beli t_i]]
 Book this that Fatimah (meng)-buy
 'This is the book that Fatimah bought.'
- b. Fatimah [OP_i yang [Ali (*men)-cintai t_i]]
 Fatimah that Ali (meng)-love
 'It's Fatimah who Ali loves.'

The environments in which *meng-* is lost in relative clauses and focus movement are the same as those in which it is lost in *wh*-questions. For reasons of space, however, we shall not provide the full range of environments in which the prefix is lost for these constructions. These examples are given to illustrate the fact that the loss of *meng-* occurs in instances of null operator movement before spell-out just as it does when a *wh*-question-word undergoes overt movement before spell-out.

To summarize, the obligatory omission of *meng-* with verbs that would otherwise permit *meng-* indicates the movement of an NP argument over the *meng-* + verb. Next consider (31); in such cases of *wh*-in-situ, in contrast to questions involving overt movement and to null operator movement, *meng-* appears freely:

- (31) a. *Wh*-In-Situ Questioning Object
 Ali (mem)-beri Fatimah apa?
 Ali (meng)-give Fatimah what
 'What did Ali give Fatimah?'

¹⁸ A possible structure for so-called focus movement sentences might be:

(i) [_{CP} [_{IP} [buku ini] BE [_{DP} [_{CP} OP_i yang [_{IP} Fatimah beli t_i]]]]]
 book this that Fatimah buy

See Kader (1976) and Alsagoff (1992) for related analyses and discussion of this construction.

- b. *Wh*-In-Situ Questioning Object
 Bill fikir Ali menyintai / *cintai* siapa?
 Bill think Ali (meng)-love who
 ‘Who does Bill think Ali loves?’
- c. *Wh*-In-Situ Questioning Object
 Mary (mem)-beli buah apa di kedai?
 Mary (meng)-buy fruit what at shop
 ‘What fruit did Mary buy at the shop?’
- d. *Wh*-In-Situ Questioning Complement Subject
 Mary (mem)-beritahu awak yang siapa (me)-lihat Fatimah?
 Mary (meng)-inform you that who (meng)-see Fatimah
 ‘Mary informed you that who saw Fatimah?’

Thus, the distribution of *meng*- provides confirmation that movement is only involved in the derivation of overtly moved *wh*, and not in the case of *wh*-in-situ.¹⁹ We will argue below that *wh*-in-situ always involves unselective binding in Malay, and, hence does not involve movement.²⁰

¹⁹ Chung (1994) provides an analysis of *wh*-agreement in Chamorro (a Western Austronesian language) as agreement between the Case of the *wh*-trace and V, affecting the morphology of V (rather than as a manifestation of Spec-head agreement with C⁰). This is very similar to what happens in Malay when *meng*- is omitted, since *wh*-movement and also covert OP movement affect the morphology of the verb rather than the form of Comp. In work in progress, we hope to argue that the correct treatment for *meng*- is along the lines proposed by Chung for *wh*-agreement in Chamorro.

²⁰ Data involving weak crossover may at first glance seem to pose a problem for an account of *wh*-in-situ without movement at LF. Even though it is claimed in Saddy (1991) that there is no Weak Crossover effect with *wh*-in-situ in Malay, our Malay informants consistently reject equivalent sentences:

(i) *Prof dia_i fikir saya menyintai siapa_i?
 Prof his think I love who

His prof thinks I love who? (his=siapa)

Rogayah (1995) also claims that Weak Crossover holds for *wh*-in-situ. We therefore assume that Weak Crossover applies to *wh*-in-situ in Malay.

It should be noted, however, that Weak Crossover is generally analyzed as a constraint against certain representations rather than a constraint on movement itself. The ungrammaticality of (i) can be ascribed to a Bijection violation: two variables are bound by a single quantifier (Koopman & Sportiche 1982). This analysis, like other treatments of Weak Crossover, is not phrased derivationally as a constraint on movement, but rather representationally as a constraint against the existence, presumably at LF, of an operator that binds more than one variable:

(ii) Weak Crossover Structure

[Operator_x [. . . (x) . . . (x) . . .]]

This structure might arise by movement, as in overt *wh*-movement structures (resulting in:

[*wh*_i [. . . Pronoun_i . . . t_i]]), but it might also be the direct result of merger, as is the case for Unselective Binding, which yields the following structure for (i), where OP is a base-generated operator and NP is a base generated NP variable:

(iii) Unselective Binding configuration for (i):

[Operator_i [. . . Pronoun_i . . . *wh*_i]]

Since Unselective Binding, just like movement, can yield a structure that is subject to the Bijection Condition, there is no reason to view the Weak Crossover facts as an argument in favor of movement in the *wh*-in-situ examples. Rather, we conclude that Weak Crossover must be configurational in nature. What remains a mystery under this account, however, is why cases of “donkey” anaphora are not ill formed, since in these sentences the existential operator unselectively binds both a quantifier and a pronoun, as discussed in (Heim 1982):

(iii) Every [man who owns a donkey] beats it.

4. Distributional Properties of Partially Moved Wh

We shall now turn to partially moved *wh*-questions, and examine their properties with respect to islandhood and the possibility of the *meng*- prefix.

4.1 Islandhood and partially moved wh

As would be expected, partially moved *wh* cannot move overtly out of an island. Compare (32), in which the *wh*-word remains in-situ within a relative clause, and (33), in which the *wh*-word is moved out of the relative clause, but not to full scopal position.

- (32) *Wh*-Word In-Situ in Relative Clause
 Ali memberitahu kamu [yang dia (mem) baca [buku [yang tentang apa]]]
 Ali told you that he read book that about what
 'Ali told you that he read a book that was about what?'
- (33) *Wh*-Word Moved From Relative Clause By Partial Movement
 *Ali memberitahu kamu [apa_i yang [Mari fikir [dia suka perempuan
 [yang [beli t_i]]]]]
 Ali told you what that Mari think he likes woman
 that buy
 'What did Ali tell you that Mary thinks that he likes a woman who
 bought?'

Surprisingly, however, as was first noted by Saddy (1991) for Indonesian, not only is partial movement subject to Subjacency when the *wh*-form moves overtly out of an island, but Subjacency also applies when an island boundary intervenes between the surface position of the partially moved *wh*-word and the specifier of CP representing the scope of the *wh*-word:

- (34) *Wh*-In-Situ in Relative Clause
 a. Kamu sayang [perempuan yang Ali fikir [yang telah berjumpa
 siapa]]
 You love woman that Ali thinks that already meet who
 'You love the woman who Ali thinks met who?'
- b. Kamu sayang [perempuan yang Ali fikir [yang telah makan apa]]
 You love woman that Ali thinks that already eat what
 'You love the woman who Ali thinks ate what?'
- (35) *Wh* Partially Moved Within Relative Clause
 a. *Kamu sayang [perempuan yang Ali fikir [(dengan) siapa_i yang
 telah jumpa t_i]]
 You love woman that Ali thinks (with) who that
 already meet
 'You love the woman who Ali thinks met who?'
- b. *Kamu sayang [perempuan yang Ali fikir [apa_i yang telah makan t_i]]
 You love woman that Ali thinks what that already eat
 'You love the woman who Ali thinks ate what?'

In (34) and (35), the *wh*-word remains within the relative clause and no overt movement out of the relative clause has occurred, yet an island violation is found. These sentences are in sharp contrast with *wh*-in-situ ((34) and (35)), in which an unmoved *wh*-word appears with impunity inside a relative clause.²¹ On the assumption that sensitivity to islands is indicative of movement, examples like (34) and (35) lead to the conclusion, reached previously by Saddy (1991), that partially moved *wh* involves not only overt syntactic movement of the *wh*-word, but also covert movement to scopal position. Thus, partially moved *wh* contrasts with *wh*-in-situ: in the case of *wh*-in-situ, evidence from islands shows that these forms undergo no covert movement, but island evidence suggests that partially moved *wh* undergoes covert movement from the surface position of *wh* to scopal position. We will further illustrate this with both strong and weak islands.

- (36) *Wh* Partially Moved from Subject Island
 *Sungguh menghairankan [apakah_i yang Mary beli t_i di JB]
 very surprising what that Mary bought in JB
 'What is it that is very surprising that Mary bought in JB?'
- (37) *Wh* Partially Moved from Adjunct Island²²
 a. *Ali dipecat [apa_i (yang) kerana dia beli t_i]
 Ali was fired what (that) because he bought
 'Ali was fired because he bought what?'
- (38) *Wh* Partially Moved from *Wh*-Island²³
 *Di mana_j kamu fikir [apa_i (yang) Ali beli t_i t_j]
 at where you think what (that) Ali buy
 'Where do you think what did Ali buy?'
- (39) *Wh* Partially Moved from Factive Island
 *Kamu gembira [bagaimana_i yang Bill belajar t_i]
 you happy how that Bill study
 'You are happy that Bill studies how?'

²¹ Our informants noted that having two *yang* complementizers slightly degrades the sentences in (34), but the sentences are grammatically correct. In contrast, the examples in (35) are strongly ungrammatical.

²² Note that the sentence is just as bad if the adjunct clause marker *kerana* 'because' precedes the partially moved *wh*:

- (i) *Ali dipecat [kerana apa_i (yang) dia beli t_i]?
 Ali was fired because what (that) he bought
 'Ali was fired because he bought what?'

(This sentence does have an irrelevant grammatical reading in which *apa yang dia beli* is a headless relative clause: 'He was fired because of what he bought.')

²³ This sentence contrasts with the following sentence, in which no islands are created by the moved *wh* for the *wh*-in-situ.

- (i) Kamu fikir [apa_i yang Ali beli t_i di mana]
 you think what that Ali buy where
 'What do you think Ali bought where?'

- (40) *Wh* Partially Moved from Negative Island²⁴
- a. *Ali tidak fikir [siapa_i (yang) Fatimah suka t_i]
 Ali not think who (that) Fatimah like
 ‘Who doesn’t Ali think that Fatimah likes?’
 - b. *Ali tidak bilang [apa_i (yang) Fatimah beli t_i]
 Ali not reveal what (that) Fatimah bought
 ‘What did Ali not reveal that Fatimah bought?’

To summarize, no islands can appear between the partially moved *wh* and the scopal position in which the *wh*-OP is interpreted in the main clause. These facts will be accounted for in section 5. We claim there that these facts are evidence for post-spell-out movement of the *wh*-OP to scopal position.

4.2 *Meng-* omission and partially moved *wh*

We shall now examine whether the distribution of *meng-* corroborates the conclusion based on islandhood that partially moved *wh* undergoes further, covert movement. Recall that overt movement of a *wh* argument NP or NP operator requires the omission of *meng-*, but *meng-* omission is not required for *wh*-in-situ. When partial movement occurs, *meng-* cannot appear in the domain over which the *wh*-phrase has moved overtly, but the prefix can appear above the overt landing site of the *wh*-form:

- (41) Non-Omission of *Meng-* with Partially Moved *Wh*
- Ali (mem)-beritahu kamu tadi [apa_i yang Fatimah (*mem)-baca t_i]
 Ali (meng)-told you just now what that Fatimah (meng)-read
 ‘What did Ali tell you just now that Fatimah was reading?’

In (41) *meng-* must be omitted below the surface position of *apa*, but not between *apa* and its scopal position. Thus, the distribution of *meng-* contradicts the islandhood facts. The islandhood facts treat *apa* as though it were moved to scopal position, but the distribution of *meng-* treats *apa* as though further movement from the intermediate specifier of CP to scopal position did not occur. In section 5, we will provide an explanation for the apparent contradiction between the island facts and the *meng-* deletion facts.

5. A Minimalist Analysis of Malay *Wh*

The data presented in sections 2–4 raise the following four questions in the context of the Minimalist Program:

- a. How can seemingly “optional” *wh*-movement be accounted for in a deterministic account of grammar like the Minimalist Program? Specifically, in this theoretical context, what permits the existence of

²⁴ The sentences of (40) are ungrammatical because LF movement from the PM site to scopal Spec,CP is subject to antecedent government. See Rizzi (1992).

- full movement, in-situ, and partial movement in the same language (or across languages)?
- b. What can account for the lack of islandhood facts with *wh*-in-situ in Malay?
 - c. How can the ungrammaticality of *wh*-in-situ with adverbial adjuncts in Malay be accounted for?
 - d. Regarding Partial Movement in Malay, what accounts for the asymmetry between the islandhood facts and the distribution of *meng-?*²⁵
- We shall try to provide answers to these questions in the analysis that follows.

5.1 *Critical components of our analysis*

Our analysis is based on the following critical assumptions:

1. Following Cheng (1991), Aoun & Li (1993), Watanabe (1993), and Tsai (1994), we assume that the question operator is universally generated as a null operator and that the *wh*-form is universally a variable. Languages, however, differ with respect to whether or not the operator and the variable are joined in the lexicon into a single word. While in English the OP and the variable are lexicalized as a single word, in Chinese, for instance, the question word is a variable that can be bound by a phonologically null question operator.

There are two kinds of evidence that have been used to argue that question words in Chinese are variables rather than operators. First, as was shown by Cheng & Huang (1996), in Chinese bare conditionals, question words appear to be *prima facie* variables:

- (42) Chinese Bare Conditional
Shei xian lai, shei jiu xian chi.
 who first comes who then first eats
 'If *x* comes first, *x* eats first.'

Cheng & Huang argue that in the logical form of (42), the position occupied by *shei* is clearly that of a bound variable (bound by a phonologically null universal quantifier):

- (43) for all (*x*) (*x* comes first \rightarrow *x* eats first)

Second, it is predicted that in languages like Chinese, *wh*-words are used in a variety of non-question functions appropriate to a bound variable (Aoun & Li 1993 *inter alia*):

²⁵ We leave unanswered in this paper the more general question of why partial *wh*-movement should occur at all, given a Minimalist conception of grammar, in which *wh*-movement in the syntax is motivated by the need to satisfy the checking requirements of STRONG Q-features. See Horvath (1997), Turano (1995), and Hermon & Cole (in preparation) where we discuss this issue both for Malay and for other languages.

- (44) Wo shenme dou bu zhidao.
 I what all not know
 'I don't know anything.'

In (44) the question word *shenme* 'what' does not have an interrogative meaning, but rather receives its interpretation from *dou* 'all'. It is predicted that question words as variables bound by non-interrogative operators will not be found in languages like English, in which the operator and the variable are combined in the lexicon.

Returning to Malay, we will claim that Malay differs from both Chinese and English in allowing two options with regard to the combination of the *wh*-variable and the operator as a lexical item:

- (45) a. Option One: An OP appears in the lexicon as a single entry with the *wh*-word (the variable), thereby forcing movement of the *wh*-word with the OP;
 b. Option Two: An OP is generated separately from the *wh*-word, with the *wh*-word acting as a variable bound by OP.

The fact that *wh*-words in Malay can undergo overt movement constitutes ipso facto evidence that OP and the *wh*-word can be combined into a single word in Malay. Empirical support for the claim that in Malay *wh*-words can also be variables separate from the question operator is provided by the fact that *wh*-words can be used as variables bound by non-*wh*-operators:

- (46) Use of *Apa* 'What' as a Variable
 a. Dia tidak membeli apa-apa untuk saya.
 he not MENG-buy what-what for me
 'He did not buy anything for me.'
 b. Dia tidak membeli apa-pun untuk saya.
 he not MENG-buy what-also for me
 'He did not buy anything for me.'
- (47) Use of *Siapa* 'Who' as a Variable
 a. Saya tidak kenal siapa-siapa di universiti itu.
 I not recognize who-who at university that
 'I didn't recognize anyone at that university.'
 b. Saya tidak kenal siapa-pun di universiti itu.
 I not recognize who-also at university that
 'I didn't recognize anyone at that university.'
- (48) Use of *Mana* 'Where' as a Variable
 a. Awak tidak pergi ke mana-mana.
 you not go to where-where
 'You didn't go anywhere.'
 b. Awak tidak pergi ke mana-pun.
 you not go to where-also
 'You didn't go anywhere.'

In the (a) examples of (46)–(48), the variable is bound by the existential quantifier represented overtly by the reduplication of the question word. Similarly, in the (b) sentences, the variable is bound by the existential quantifier represented by *-pun* ‘also’. These examples show that in Malay, like Chinese, question words can be variables bound by an operator other than *wh*.²⁶

2. On the basis of the facts presented earlier, and following ideas in Tsai (1994), Reinhart (1993, 1995), and Cole & Hermon (1995), we assume that in *wh*-in-situ in Malay the (*wh*-OP) question operator is merged at the root Spec CP, and, therefore, unselectively binds a *wh*-variable in its scope. As was noted, unselective binding does not involve movement (not even at LF). Furthermore, as argued by Reinhart (1993), Tsai (1994), and others, *wh*-adverbials cannot be bound by unselective binding, and hence are forced to move.²⁷ The differing

²⁶ As noted by an anonymous reviewer, the evidence that question words are variables in Malay is not as strong as the evidence in Chinese. In Malay, the bare *wh*-word does not act as an indefinite without adding the morpheme *-pun* or reduplication. Note that this is similar to the situation in Japanese, a language in which *wh*-words have been analyzed as variables. In Japanese, an indefinite NP can be derived from a *wh*-word by adding a suffix: *dare* ‘who’ is given the interpretation of an indefinite by adding the suffix *-ka* and forming *dareka* ‘someone’. Also, the suffix *-mo* can be used to form *daremo* ‘anyone’ or ‘everyone’, as described in Nishigauchi (1990) and Tsai (1994) *inter alia*.

Moreover, we do not claim that the *wh* is a pure variable in every language in which a word can be related to an indefinite. Thus, in German adding the prefix *irgend* derives indefinites from *wh*-words: *irgendwer* ‘someone’, *irgendwo* ‘somewhere’. The same is true in Hungarian: we can add *vala* ‘some’ to *ki* ‘who’ or *mit* ‘what’ to form indefinites. However, in these languages movement of *wh* is obligatory. We claim that in these languages (just as in English ‘somewhere’ and ‘somewhat’) the *wh*-variable is combined with a null (*wh*) or overt (existential) operator in the lexicon, forcing overt *wh*-movement due to pied-piping of the overt lexical material.

A more serious problem for our analysis is found in languages in which *wh*-words are clearly variables but in which *wh*-movement is obligatory. According to Aissen (1996), in Tzotzil (a VOS language) *wh*-words are variables, since they can be used as both interrogatives and indefinites. However, as distinct from Malay and Chinese, all *wh*-words and focused constituents have to move to the left, to a preverbal position. If they remain in-situ, the *wh* can only be interpreted as a free-choice *wh* (meaning roughly ‘anyone’, ‘anything’, ‘anywhere’...). We would have to claim that what forces *wh*-movement in a language like Tzotzil is not the need to check strong *wh*-features in Spec of C (since the strong feature could be checked by a Q operator merged to Spec,CP, given the fact that Tzotzil, like Malay, has a variable type *wh*), but an independent constraint that forces movement of focused constituents to a preverbal position. No focused constituents (whether operators or variables) can stay in a postverbal position.

Another type of potential problem for our account comes from languages like Turkish, which allow *wh*-in-situ but do not seem to allow *wh*-words to be used as indefinites (Jaklin Kornfilt, p.c.). In Turkish there is no overt evidence for a variable analysis for *wh*. This may indicate that languages can have additional constraints which prevent overt *wh*-movement and “force” *wh*-in-situ even for operator type *wh*. For example, it is argued in Kayne (1994) that pure OV languages prohibit *wh*-movement to Spec of CP, due to the fact that this position is already filled by the leftward movement of the IP in OV languages.

²⁷ Reinhart (1993, 1995) argues on semantic grounds that apparent unselective binding involves the binding of the variable of a choice function. The choice function picks out an individual member of a set defined by the nominal restrictor. This can only occur in the case of nominal *wh*. Thus, adverbial *wh* cannot be interpreted in-situ. Since it does not affect the issues under consideration in this paper, we will maintain the pretense that the question operator binds the *wh*-variable directly rather than through the mediation of a choice function, and shall continue to employ the term “unselective binding.”

properties of *wh*-nominals and adverbials will be seen to follow from the inability of adverbials to be bound by unselective binding. Note that whether an adverb is forced to move overtly (as in Malay) or at LF (as in Chinese) must be determined by whether the adverb is a merged OP+variable form (as claimed for Malay below) or a nonmerged OP...VAR (as we claim is the case in Chinese in section 6.1).

3. When two competing derivations both converge, following Chomsky (1995), we assume that the more economical derivation will block the less economical. We make use of the following economy principle:

(49) Economy: A converging derivation that does not employ Move is more economical than a derivation (based on the same numeration) that does employ Move.

4. Overt *wh*-movement is motivated by the need to discharge the STRONG *wh*-features of an interrogative complementizer (Q). We shall assume that Q is STRONG universally and argue that the range of variation in *wh*-movement across languages can be accounted for without the need to posit variation in the strength of Q.

5. At LF, *wh*-questions have an operator-variable structure that, we have argued, is due to the variable Binding Condition:

(50) OP x [. . . x . . .]

This is an output condition on the grammar and is a corollary of FI. If the structure in (50) does not obtain by LF, *wh* will move to scopal Spec,CP in order to create this structure.²⁸

5.2 Predictions of the analysis

The analytic options possible for Malay in our system are summarized for *wh*-NPs in Table (51). We shall discuss *wh*-adverbs in section 5.3. The first column shows the construction type under consideration (full movement or *wh*-in-situ). The second column shows the feature content of the matrix Q (invariably STRONG). When OP occurs in the second column, it indicates that the operator has been merged at scopal Q (i.e., base-generated at Q rather than moved to that position). The third column indicates whether the *wh*-word is combined OP+VAR or whether OP is inserted separately (OP...VAR). The fourth column shows the consequences of the option chosen with regard to whether movement occurs, whether islandhood is respected and whether *meng-* is obligatorily omitted. The options in boldface are the actual options found in Malay. We shall see that the five critical

²⁸ As mentioned in fn. 2, an alternative to the Variable Binding Condition is the requirement that expletives be eliminated from the representation by LF. Our data does not distinguish between these two possibilities. It should be noted, however, that both LF Expletive Replacement and the Variable Binding Condition claim that movement can be motivated by the need to satisfy the requirements of FI.

components of our analysis outlined in section 5.1 allow the analysis to predict correctly which options are in fact instantiated in the language.

(51) Summary of Malay Options for *Wh*-NPs

Construction Type	Features on Matrix Q	Type of <i>wh</i> -word	Consequences
a. full movement	STRONG Q	[OP+VAR]	Overt movement; all islands; <i>meng</i> -deletion
b. in-situ	STRONG Q [OP VAR]	Unselective Binding; no islands; no <i>meng</i> -deletion
c. in-situ	STRONG Q	[OP . . VAR]	OP movement; all islands; <i>meng</i> -deletion

Consider now the predictions made with regard to each option. Derivations are in competition when they are based on the same numeration (roughly, the same words). Derivations (b) and (c) are based on the same numeration and therefore compete if both converge. Derivation (a) contains a different question word (OP+VAR) from that found in (b) and (c) (VAR). Thus, (a) is not in competition with either (b) or (c).²⁹

All three derivations converge. Since (a) is not in competition with any other derivation, economy factors do not enter into the evaluation of the derivation and the sentence is well-formed. Both derivations (b) and (c) converge, and, as was seen, are in competition with each other. Since (b) does not involve movement and (c) does, (b) is more economical than (c), and (c) is blocked. Thus, (51) predicts that full movement and unselective binding will be possible for *wh*-NPs in Malay, but covert *wh*-movement will not. This analysis thereby makes the correct prediction that *wh*-in-situ in Malay will not respect islands and will not result in *meng*-deletion.³⁰

²⁹ It is crucial for our analysis that all and only converging derivations formed from the same numeration are in competition (per Chomsky 1995). In particular, we cannot allow competition between questions based on numerations that differ only in that in one derivation the question word is OP+VAR and in the other it is VAR alone. These cannot be viewed as competing despite the fact that these sentences may receive identical semantic interpretations. If all derivations receiving the same interpretation were to compete, (51a) would compete with (51b), and movement would be ruled out as uneconomical. Thus, such an approach would incorrectly predict that overt *wh*-movement is not possible in Malay. For discussion of what should count as competing derivations, see Reinhart (1995).

³⁰ As noted by an anonymous reviewer, in the dialect we are reporting on it is hard to rule out (51c) empirically, since *meng*-, in general, is optional. It could therefore be the case, that option (c) exists in addition to option (b), even though it leads to ungrammaticality when an in-situ *wh*

5.3 The ungrammaticality of in-situ adverbial *wh*

Turning now to *wh*-adverbs, following Reinhart (1993) and Tsai (1994), we assume that unselective binding is not possible for adverbial *wh*-words. Given this assumption, we consider the possible derivations for adverbial *wh*, and will provide an answer to why Malay does not have adverbial *wh*-in-situ:

(52) Malay Options for *Wh-Adverbs*

Construction Type	Features on Matrix Q	Original <i>wh</i> -site	Consequences
a. full movement	STRONG Q	[OP+VAR]	overt movement; all islands
b. in-situ	WEAK Q	[OP+VAR]	LF OP movement; all islands; adverb in-situ
c. in-situ	STRONG Q [OP VAR]	Unselective Binding; no islands
d. in-situ	STRONG Q	[OP...VAR]	OP movement; all islands

By hypothesis, the *wh*-feature of Q is strong, so derivation (b) is ruled out. Furthermore, since unselective binding is not possible for *wh*-adverbials, derivation (c) is impossible as well. This leaves derivation (a) and (d) as well-formed with respect to the principles of UG.

In fact, (a) occurs in Malay while (d) does not. Since (d) is not ruled out by principles of UG, the ungrammaticality of the derivation must be due to a property specific to Malay. This must be a lexical fact about the language rather than a grammatical “parameter” since we assume that grammatical principles are invariant. We, therefore, propose as a fact about the Malay lexicon that *wh*-adverbials, unlike *wh*-NPs, are invariably OP+VAR, and never VAR alone.

There is, in fact, independent evidence in favor of this claim. If *wh*-adverbials are never VAR alone, it is predicted that *wh*-adverbials in Malay can never receive a non-interrogative interpretation; i.e., they can never be bound by an operator other than the interrogative operator. This prediction is correct. Compare *wh*-adverbials in (53)–(54) with *wh*-NPs in (46)–(48):

happens to be inside an island. In formal Malay, however, a dialect in which *meng-* is obligatory whenever it is possible, option (c) can easily be ruled out, since in this dialect speakers require a *meng-* prefix on the verb in an in-situ *wh*-question. (51c) falsely predicts that the absence of *meng-* would be possible in formal Malay in *wh*-in-situ.

- (53) a. *Siti tak pukul anaknya kenapa-kenapa.
 Siti not hit child-3psg why-why
 ‘Siti did not hit her child for any reason.’
 b. *Siti tak pukul anaknya kenapa-pun.
 Siti not hit child-3psg why-also
 ‘Siti did not hit her child for any reason.’
- (54) a. *Saya tak boleh belajar bagaimana-bagaimana.
 I not can study how-how
 ‘I cannot study for any reason.’
 b. *Saya tak boleh belajar bagaimana-pun.
 I not can study how-also
 ‘I cannot study for any reason.’

These examples show that *wh*-adverbials in Malay cannot be bound by non-interrogative operators. Thus, we conclude that derivation (d) is ruled out by the fact that the Malay lexicon lacks an entry in which *kenapa* ‘why’ or *bagaimana* ‘how’ appears as a variable.

It should be noted that unlike Tsai (1994), we do not claim that the requirement that *wh*-adverbials are OP+VAR is due to principles of UG. Rather, we shall argue in section 6.1 (pace Tsai) that adverbial *wh*-variables that are not lexically combined with an OP do occur in Chinese, with the result that in-situ *wh* for adverbials is possible in Chinese. However, even in Chinese *wh*-adverbs (unlike *wh*-nouns) cannot appear inside islands. This restriction is due to a difference in semantic type between *wh*-nouns and adverbs; as discussed in 6.1, a question operator can unselectively bind only variables that range over individuals, but not those that range over propositions. Since unselective binding is not available for the adverb *wh*-variables in Chinese, the OP associated with the variable has to move to scopal Spec,CP at spell-out, causing island violations.

5.4 *Alternative analyses: Chains with multiple spell-out and clausal pied-piping*

In Chomsky (1995) it is proposed that overt (pre-spell-out) *wh*-movement is driven only by the need to check formal features. Since we have been assuming that Q-features are universally strong, it might be taken to follow that in all languages *wh*-features are moved to Spec,CP creating a chain before spell-out. The issue then would be whether the head of the chain is spelled out, presumably due to the pied-piping of lexical material together with the *wh*-feature, or whether the *wh*-word is spelled out at the original site. Following this line of thought, it might be proposed that languages like Malay differ from English only in specifying that it is the tail of the chain that is spelled out rather than the head, thus giving the impression of *wh*-in-situ while in fact movement has occurred.

Clearly, any such theory will have to account for why some languages force spell-out at the head of the chain, while others allow the tail to be

spelled out. But setting this issue aside, let us consider the empirical predictions of such an analysis.

Given that even in chains in which the tail is spelled out, there is movement involved (of the *wh*-feature) it would be predicted that all island effects should be found between the head and the tail of the chain. In addition, since we have assumed that *meng*-deletion is due to chain creation, this effect should be observed as well. As we have shown, however, Malay does allow *wh*-in-situ inside islands and does not exhibit *meng*-deletion in in-situ sentences. Thus the simple version of the chain account with multiple spell-out options cannot account for the data.

There is however a more complex account of *wh*-movement as copying that, combined with a pied-piping account, gives the appearance of being able to handle the data (see Groat & O'Neil 1996). We will refer to this analysis as the "Multiple Spell-out" account. We shall argue, however, that the Multiple Spell-out account is also less adequate than the analysis presented in sections 5.1–5.3. In the Multiple Spell-out account, overt movement is movement that carries phonological features to the head of the chain, while covert movement is feature movement which leaves phonological material behind (in effect, forcing spell-out of the tail of the chain). In such a system, languages with overt *wh*-movement and languages with *wh*-in-situ both have *wh*-chains and there is no difference in the timing of movement with respect to spell-out. The only difference is where the category is pronounced. Groat & O'Neil also assume that strong features can only be checked in a checking relation with a node specified for phonological features: i.e., strong features will force category movement, while weak features will not force category movement, resulting in feature movement with the tail of the chain being spelled out (i.e., in-situ *wh*).

For example, Groat & O'Neil (1996) suggest that since *wh*-features are weak in Japanese, *wh*-movement does not result in copying phonological features to Spec,CP. In addition, to explain the lack of Subjacency effects in complex DPs in Japanese, their account needs to assume that the entire phrase is pied-piped to Spec,CP (obeying Subjacency), but the pied-piping is not visible because no phonological features are moved.³¹ The Multiple Spell-out analysis unlike the analysis presented in this paper, relies on two crucial parametric differences in UG:

- a. Languages randomly have strong or weak Q-features. Languages with strong features force spell-out at the head of the chain, while languages with weak features have spell-out at the tail (due to economy of movement). To account for the Malay data, one would therefore need to

³¹ As used in Groat & O'Neil, pied-piping involves the percolation of the *wh*-feature to SPEC,CP, followed by the movement of the *wh*-feature to scopal position. The CP to which the *wh*-feature percolates does not undergo movement as a result of the "pied-piping." We call this type of pied-piping "covert," since it has no effect on overt word order.

assume that in a language like Malay there are optionally strong features (i.e., both strong and weak features are possible).

- b. To explain the lack of Subjacency effects in some in-situ languages (like Malay and Chinese) these languages would have to allow massive clausal pied-piping. Since in-situ languages (by assumption) must have a weak Q feature, pied-piping is covert. Languages may also exhibit overt pied-piping if the language has a strong Q feature causing spell-out at the head of the chain.

The main empirical problem with the Multiple Spell-out account is that this analysis has to rely on pied-piping to explain the lack of Subjacency effects when the tail of a chain is spelled out. This analysis is therefore open to the same criticism as Nishigauchi's original pied-piping approach (Nishigauchi 1990). The following arguments can be made against clausal pied-piping of *wh*-features:

1. It is unclear what determines whether a language allows "invisible" pied-piping. Since there is as yet no theory of what allows pied-piping in general, it is difficult to apply pied-piping to derive the properties of *wh*-in-situ languages. However, a theory of what allows overt clausal pied-piping in languages like Quechua and Basque should also be able to predict what allows this type of covert pied-piping. Crucially, overt and covert pied-piping should obey identical restrictions.³²

2. Setting aside the issue of what allows pied-piping in a particular language, the theory that combines multiple chain spell-out with pied-piping predicts that, all other things being equal, if a language allows both overt *wh*-movement and *wh*-in-situ (like Malay) pied-piping should be available both for overt movement (spell-out of the head) and for in-situ (spell-out of the tail). This is true in languages like Ancash Quechua, in which both overt and covert pied-piping must be assumed to exist in the Multiple Spell-out account, since both types of pied-piping have the effect of allowing a *wh*-question inside an island. Overt pied-piping is indicated by attaching the Q-morpheme *-taq* to the pied-piped constituent in (55). Crucially, in examples that would be analyzed as covert pied-piping in the Multiple Spell-out account, covert pied-piping has no morphological effect, and *-taq* cannot be added to the whole Relative Clause (RC), as seen in (56):

(55) *Wh*-In-Situ Inside an Island in Ancash Quechua (due to overt pied-piping)

ima-ta	suwaq	nuna-ta- taq	(qam)	kuya-nki ?
what-acc	steal	man-acc-Q	(you)	love-2pl
'You love the man who stole what?'				

³² Overt pied-piping in Quechua is described in Cole (1982) and Hermon (1985), and has also been reported for Basque in Ortiz De Urbina (1986). It involves percolation from the *wh*-word (moved overtly to Spec, CP of its own clause) to the whole CP and has the effect of inducing overt pied-piping of the CP, which is overtly marked as +*wh*, due to feature percolation.

- (56) *Wh-In-Situ* Inside an Island in Ancash Quechua (no overt pied-piping)
 (qam) kuya-nki ima-ta suwaq nuna-ta **-(*taq)** ?
 (you) love-2pl what-acc steal man-acc-(*Q)
 ‘You love the man who stole what?’

However in Malay, overt clausal pied-piping is impossible. In the example below, the *-kah* question marker on the RC is supposed to indicate that pied-piping of the RC has taken place (*-kah* in Malay is equivalent to Quechua *-taq*), and *apa* ‘what’ is in the Spec of its own CP:

- (57) Lack of Overt Pied-Piping in Malay:
 * [perempuan apa yang beli- (**kah**)] kamu sayang?
 woman what that bought -(Q) you love
 ‘You love the woman that bought what?’

Given Minimalist assumptions, when a language has overt movement (i.e., spell-out of the head of the chain) and also allows *wh*-in-situ (spell-out of the tail), if pied-piping occurs at all, it cannot be restricted to occur only covertly (at the tail of the chain). Ancash Quechua is well behaved in this respect, but Malay is not, since in the Multiple Spell-out account for Malay pied-piping will have to occur only at the tail of the chain (covertly). Thus the combined Multiple Spell-out/pied-piping account does not appear to be an appropriate analysis for Malay.

3. Another problem faced by the pied-piping account is the facts related to *wh*-adverbial questions. In Malay, these adverbials cannot be left in-situ. In Chinese, adverbs show up in-situ but cause island violations (an argument for LF movement in these languages, see 6.1 below). As proposed in Nishigauchi (1990), pied-piping is due to feature percolation from a *wh*-word to a larger domain (usually the complex DP or CP containing the *wh*-word). It is not clear at all what would prevent feature percolation from an adverb to the island containing the adverb in this system. Nishigauchi (1990: section 3.2) argues that there may be a feature matching requirement for percolation that limits the occurrence of percolation inside RCs (which are presumably DPs and hence +N) to a +N *wh*-phrase only, thus ruling out feature percolation from an adverb. Following this reasoning, adverbs, that are -N, should be able to launch feature percolation from inside adverbial adjunct islands (which are CP projections and hence neutral with respect to X' features, per Nishigauchi 1990:90). This is actually the situation in Turkish, as described in Özsoy (1990). In Turkish, both nominal and adverbial *wh*-words can occur inside adverbial adjuncts, and as noted by Özsoy, this directly supports a Nishigauchi type feature percolation analysis based on feature matching for Turkish. But as discussed below, adverbs cannot appear inside adverbial islands in either Malay or Chinese.³³ Hence,

³³ Adverbial clauses are clearly not DPs in Malay and Chinese. In Korean (and perhaps also in Japanese) adverbial clauses may indeed be complements of P and hence could be specified as +N (see Kim 1996). In these languages, the feature-matching account correctly predicts that adverb *wh*-questions should not occur inside islands.

feature percolation and clausal pied-piping fail to account for the distribution of adverbs in Malay and Chinese, suggesting that feature percolation (and hence pied-piping) is not an appropriate analysis for these languages.

We therefore reject the combined Multiple Spell-out/pied-piping analysis for Malay (and Chinese). If one adopts instead the idea that *wh*-in-situ is due to unselective binding of a +N variable (thus excluding adverbs), and that unselective binding is possible only if the language allows a pure variable to occur in-situ, the cross linguistic variation is explained. This is explored further for partial movement in the next section.

5.5 *Partial movement, islands and lack of meng- deletion*

5.5.1 *The asymmetry between wh-in situ and partially moved wh with respect to islandhood*

It was shown in section 4 that *wh*-in-situ and partially moved *wh* differ in an important way: while *wh*-in-situ manifests no island effects, in the case of partially moved *wh*, island effects occur not only with regard to the path between the base position of the *wh*-word and its surface position, but also with regard to the path between the surface position of *wh* and its understood scopal position. This was illustrated in (34)–(35) above. These facts are similar to those discussed in Saddy (1991) for Indonesian, and show that partially moved *wh* cannot be analyzed as an instance of partial overt movement to an intermediate Spec,CP followed by coindexation of the partially moved *wh* with an operator in scopal Spec CP (as in (58)):

(58) [_{CP} OP_i [. . . [_{CP} *wh*_i . . . *t*_i . . .]]]

Wh has moved from *t*_i to intermediate Spec,CP and OP is base-generated in scopal position and binds *wh*.

The analysis in (58) is ruled out because coindexation (unselective binding for us) does not involve movement, and therefore is not sensitive to islands. Hence (58) would fail to predict that islands cannot occur between the partially moved *wh* and the scopal Spec,CP.

Thus, we contend, the partially moved *wh* consists of an OP+VAR that moves to non-scopal Spec,CP prior to spell-out. Subsequent to spell-out, the partially moved *wh* undergoes further LF movement to scopal position (as shown in option PM4, highlighted below).

Table (59) summarizes the options for partial movement (PM) in Malay. In (59) we compare two types of analyses for partially moved *wh* in Malay. As is well known, in many languages (e.g., German, Romani, and Hungarian) the PM construction requires the presence of a *wh* scope marker in scopal Spec,CP (see McDaniel 1989 and Horvath 1997). On the assumption that such scope markers are *wh*-expletives (as proposed in Horvath 1997), we consider the possibility that Malay employs a phonologically null counterpart to the *wh*-expletives found in other languages:

(59) Options for Partial Movement in Malay

Derivation	Matrix Q Features	Intermediate Spec CP	Original <i>wh</i> site	Consequences
PM1	STRONG Q no null <i>wh</i> - expletive inserted	[OP+VAR]	T	syntactic OP movement; all islands; <i>meng</i> - deletion above PM site
PM2	STRONG Q no null <i>wh</i> - expletive inserted	[OP ... VAR]	T	syntactic OP movement; all islands; <i>meng</i> - deletion above PM site
PM3	STRONG Q null <i>wh</i> - expletive inserted	[OP ... VAR]	T	LF OP movement (expletive replacement); all islands; no <i>meng</i> - deletion above PM site
PM4	STRONG Q null <i>wh</i> - expletive inserted	[OP+VAR]	T	LF OP movement (expletive replacement); all islands; no <i>meng</i> - deletion above PM site

On the assumption that scopal Q is invariably STRONG, an immediate question arises: How is the STRONG feature of scopal Q checked off when PM, by definition, involves movement of *wh* to a non-scopal Spec,CP prior to spell-out? Bearing this question in mind, we consider two types of derivations, those in which a null *wh*-expletive is hypothesized (comparable to the overt *wh*-expletive *was* in German) as in PM3 and PM4, and those in which no such expletive is proposed, as in PM1 and PM2.³⁴ Turning to the derivations in (59), PM1 is ruled out either because no *wh*-word (neither the *wh*-OP nor a *wh*-expletive) occurs in the scopal Spec,CP to check off the STRONG feature (if further movement, prior to spell-out, of OP to Spec,CP is not assumed), or because OP would have to be separated from VAR to check the STRONG feature in scopal Spec,CP. However, we have assumed throughout that once OP and VAR are combined in the lexicon, they cannot separate prior to spell-out, so PM1 has an unchecked STRONG Q feature.

³⁴ We assume that the *wh*-expletive satisfies the feature checking requirements of the scopal Q, but because the expletive has no semantic content, and therefore is not an operator, it does not satisfy the Variable Binding Condition.

In PM2 OP moves to scopal Spec,CP and thereby checks off the STRONG feature of Q, but PM2 is ruled out because in PM2 the variable and the operator are not combined. Thus, the variable (the question word) would not be pied-piped into the intermediate Spec,CP when the operator passes through that position. As a result, while in PM2 the STRONG feature is checked off, the derivation is not possible since only when OP and VAR are combined can PM occur at all.

PM3 is ill formed for the same reason as PM2. While the STRONG feature of Scopal Q is checked off by the *wh*-expletive, as in PM2, PM (and overt *wh*-movement in general) is not possible unless an OP+VAR configuration obtains.

Finally, PM4 is well-formed because the null *wh*-expletive satisfies the STRONG feature of Q. Overt movement of *wh* to the intermediate Spec,CP is possible because OP and VAR are combined lexically to form a single unit. Subsequent to spell-out, OP moves to scopal Spec,CP to satisfy the requirement that *wh*-questions manifest an operator-variable structure (the Variable Binding Condition).³⁵ According to PM4, the original site of *wh* and the scopal Spec of CP are related by movement. So it is correctly predicted that islands will be respected along the entire path, and not just along the overt portion. Since overt movement takes place prior to spell-out, it is also predicted correctly that *meng-* will be omitted between the underlying site of *wh* and its position at spell-out. However, since post-spell-out movement cannot, by definition, be reflected in pronunciation, it is also expected that *meng-* will not be omitted between the surface position of *wh* and the scopal Q.

We have argued that the relationship between the partially moved *wh* and the scopal Spec,CP must be LF movement. There is, in fact, strong empirical support for that claim. Let us consider as a straw man the possibility that the relationship between the surface and scopal positions is syntactic operator movement. As illustrated in section 3.2, examples (29)–(30), operator movement in the syntax, just like overt *wh*-movement, results in the obligatory omission of *meng-*. Thus *meng-* is deleted in both Relative Clauses and Focus constructions, presumably due to OP movement. Hence, if the covert movement associated with partial *wh*-movement were syntactic operator movement, it would be expected that *meng-* would be omitted between the surface position of *wh* and its scopal position. But this is not the case, since, as shown in example (41), *meng-* is not deleted above the PM site. As a result, syntactic operator movement (i.e., movement before spell-out) is not only an impossible analysis on the basis of Minimalist assumptions, but is to be rejected on empirical grounds as well.

In contrast to syntactic operator movement, LF movement takes place subsequent to spell-out, predicting correctly the possibility of *meng-* between the PM site and the scopal position of the *wh*-OP. PM4, then, correctly

³⁵ Or, alternately, OP moves to scopal Spec,CP to satisfy the requirement that expletives must be replaced prior to LF.

predicts all the seemingly peculiar properties of the PM construction in Malay.

The lack of *meng-* deletion above the PM site and the existence of island effects above this site also make it difficult to analyze PM as Multiple Spell-out. (See section 5.4 for why this type of analysis was rejected for *wh*-in-situ.) At first glance, PM seems like the prime example for the Multiple Spell-out account. If it were to be assumed that in this instance there is a weak Q feature and, hence, (following Groat & O'Neil 1996) only *wh*-features are moved to scopal Spec,CP to check the Q feature, it would be predicted that spell-out would not occur at the head of the chain. However, note that this merely allows for the option of spelling out the *wh*-word in-situ, and does not provide an explanation for why the *wh*-word appears overtly in an intermediate Spec,CP.

In addition, Multiple Spell-out cannot account for the islandhood and *meng-* deletion facts in the PM construction. Unlike *wh*-in-situ, partially moved *wh* obeys island conditions. In the spell-out account this means that pied-piping of the category (the *wh*-word) must somehow be blocked once the *wh* has moved out of its original base generated position. It is entirely unclear what would prevent *wh*-feature percolation and pied-piping in this case. In addition, if PM involved a chain created by feature movement from the partially moved *wh* to scopal Spec,CP, it is unclear why *meng-* deletion should not take place.³⁶ We therefore do not see what advantages the Multiple Spell-out analysis offers over the expletive replacement account adopted here.

To summarize, the architecture of the system we are employing predicts the existence of the seemingly idiosyncratic facts found in Malay. In the section that follows we turn from a Malay specific perspective on *wh*-questions to a cross linguistic perspective, and examine the extent to which the degree of variation predicted by the system we employ corresponds to the variation actually found across natural languages.

6. The Typology of Wh-Movement

In this section we examine the extent to which our analysis for Malay makes correct predictions about the properties of *wh*-questions in other languages. We show that the facts of Chinese and English are predicted by the analysis.

6.1 Chinese and similar languages³⁷

Chinese differs from Malay in two ways. First, argument *wh*-question words do not display the full range of options possible in Malay. Rather, they are

³⁶ To account for the lack of *meng-* deletion, the Multiple Spell-out account would have to assume that feature-movement (as opposed to abstract OP movement in focus and RC constructions) does not affect morphology.

³⁷ Japanese, like Chinese, exhibits *wh*-in-situ and has been described as a language in which *wh*-words are pure variables and can be bound by non Q operators. We would thus predict that

always in-situ and show no sensitivity to islands. Secondly, unlike Malay, adverbial *wh*-words also appear in-situ. In the case of adverbials, however, there is evidence of covert movement since adverbial *wh*-words cannot occur in islands (see Huang 1982, Tsai 1994 inter alia). The problem for our analysis is how the differences between Chinese and Malay might be predicted. Of particular interest is whether our analysis predicts correctly that Chinese *wh*-adverbs will remain in-situ but will nonetheless be sensitive to islands.

We shall make the following assumption about the lexicon of Chinese: Unlike Malay, *wh*-words are invariably OP...VAR rather than OP+VAR. On the basis of this lexical property and Minimalist principles, the differences between Malay and Chinese will fall out without further stipulation.

Consider the possible derivations for Chinese, as summarized in the following table:

(60) Options for *Wh*-Questions in Chinese

	Matrix C	<i>wh</i> -in-situ	Consequences
NP1	STRONG Q OP ...	VAR	in-situ; unselective binding; no island effects
NP2	STRONG Q	[OP...VAR]	OP movement; all islands obeyed
ADV1	STRONG Q	OP ...VAR	Unselective binding impossible
ADV2	STRONG Q	[OP...VAR]	OP movement; all islands obeyed

We shall first examine *wh*-NP. NP1 and NP2 are based on the same numeration, and both derivations converge, so they are in competition. NP1 involves the merger of OP to the scopal C (unselective binding of the *wh*-word), while NP2 involves movement of OP to scopal Spec,CP. Since merger is more economical than movement, NP1 is preferred, and NP2 is blocked.

+N *wh*-in-situ should be exempt from all island constraints, while adverbial *wh* would be forced to launch abstract OP movement (or move at LF). The latter is certainly not disputed: all descriptions of Japanese seem to agree that adverbs like *naze* 'why' are not allowed inside islands and similar facts are reported for Korean *way* 'why' (see Kim 1996).

There is some disagreement about whether other (argument) *wh*-in-situ can appear inside all islands. Some researchers (Takahashi 1993) describe the facts as similar to the ones in Chinese. Others (most notably, Nishigauchi 1990 and Watanabe 1993) have claimed that *wh*-in-situ is not possible inside a *wh*-island. We will assume that the facts in Japanese are identical to the facts in Chinese, the only major difference being that in Japanese (and Korean) the equivalent of 'how' (*doo* in Japanese and *ettekhey* in Korean) has the same distribution as *wh*-NPs and is not subject to island constraints. Further research in Japanese and Korean will have to determine whether the facts are indeed identical to the Chinese facts.

Turning to *wh*-adverbials, ADV1 is not a possible derivation because unselective binding is impossible for *wh*-adverbials. Thus, the only possible derivation is ADV2: In ADV2 the STRONG feature of the matrix C is checked off by movement of OP to matrix Spec CP prior to spell-out. Thus, given that in Chinese question words are always VAR rather than OP+VAR, both the properties of questions in Chinese and the differences between Chinese and Malay fall out automatically.

It should be noted, however, that it was argued by Tsai (1994) that *wh*-adverbials in Chinese are invariably OP+VAR. The basis for this claim is the fact that the distribution of *wh*-adverbials in Chinese is different from that of *wh*-NPs. For instance, while *shenme* 'what' can be bound by an existential quantifier and mean 'something', *weishenme* 'why' cannot be bound in the same way and mean 'for some reason':

- (61) a. Ruguo Akiu mai-le shenme, ta yiding hui lai gaosu wo.
 if Akiu buy-prf what he surely will come tell me
 'If Akiu bought something, he surely would come tell me.'
- b. *Ruguo Akiu weishenme buneng jiao zuoye, ta yiding hui lai gaosu wo.
 if Akiu why cannot hand-in homework he definitely will come tell me
 'If Akiu for any reason could not hand in his homework, he would definitely tell me.'

Examples like (61b) (and similar sentences involving *dou* 'all' quantification) are taken by Tsai to constitute evidence that *wh*-adverbials like *weishenme* cannot be instances of VAR, and are rather "intrinsic operators," i.e., OP+VAR.

While examples like (61b) appear initially persuasive, Tsai provides examples that show that *weishenme* can in fact be bound by a non-interrogative operator:

- (62) Akiu weishenme gaoxing, wo jiu weishenme shang-xin.
 Akiu why happy I then why hurt-feeling
 'I am hurt for whatever reasons Akiu is pleased.'

Sentence (62) appears to have a logical structure in which *weishenme* is a variable ranging over reasons for being happy. This variable is bound by the universal quantifier.³⁸ Thus, (62) shows that *weishenme* can be bound by a non-interrogative operator, and, at least in (62), must be VAR rather than OP+VAR.

If *weishenme* is a variable rather than OP+VAR, what accounts for the ungrammaticality of the binding of *weishenme* by an existential quantifier in

³⁸ See Cheng & Huang (1996). It should be noted that an alternative account in which *weishenme gaoxing* and *weishenme shangxin* are headless relative clauses can be ruled out since question words are not used in headless relative clauses in Chinese.

(61b)? Tsai is correct in noting that the existence of examples like (62) does not undercut the existence of a noun-adverb asymmetry since adverbs like *weishenme* are bound in different environments from those in which nouns like *shenme* ‘what’ are bound. A plausible explanation for the asymmetry is that nouns like *shenme* and *shei* ‘who’ are restricted to individual entities (non-human and human respectively). In contrast, *weishenme* ranges over propositions rather than individuals. This suggests that the difference between *wh*-nouns and *wh*-adverbs is semantic. While both are variables, each is restricted to being bound by a different type of operator: the quantifier in (61) binds individual entities, so it can bind *shenme* but not *weishenme*. In contrast, the quantifier in (62) binds propositions. Thus it can bind propositional variables such as *weishenme* but not individual entities.

Therefore, we take the existence of sentences like (62) in Chinese as empirical confirmation that all *wh*-forms in Chinese, regardless of grammatical category, are instances of VAR rather than OP+VAR. In contrast, in Malay, we have not been able to find any environment in which *kenapa* ‘why’ or *bagaimana* ‘how’ can be interpreted as a variable bound by a non-interrogative operator. Note that sentences similar to (62) are ill-formed in Malay:

- (63) *Ali kecewa kenapa-pun saya gembira.
 Ali disappointed why-also I happy
 ‘Ali is disappointed for whatever reasons I am happy.’

We thus conclude that in Malay *kenapa* and *bagaimana* are invariably OP+VAR.³⁹

6.2 English and similar languages

English and most European languages differ from Malay and Chinese in that OP and *wh* are always joined to constitute a single word. Presumably, UG permits the generation of OP in scopal position to check the STRONG Q feature, but the nonexistence of OP separate from the *wh*-variable in the lexicon of English rules out unselective binding as an option. The fact that

³⁹ We have argued that sentences like (63) are ungrammatical because Malay *wh*-adverbials appear in the lexicon as OP+VAR. This would predict that while *kenapa* and *bagaimana* are lexicalized as OP+VAR, other *wh*-adverbs might be lexicalized differently. There is in fact at least suggestive evidence that this is the case. While formal Malay *bagaimana* ‘how’ was seen to be ungrammatical in (54), colloquial Malay *macam mana* ‘how’ is well formed:

- (i) Saya tak boleh belajar macam mana-pun.
 I not can study how-also
 ‘I cannot study for any reason.’

This suggests that *macam mana* differs from *bagaimana* in permitting both OP+VAR and VAR alone.

There is, however, another analysis possible for *macam mana*. It is possible that *macam mana* is analyzed by speakers as *macam* ‘like’ + *mana* ‘which’, analogous to *buku mana* ‘which book’. If this analysis is correct, *macam mana* is an instance of a *wh*-NP meaning ‘in which way’, and not a *wh*-adverbial like *bagaimana*.

OP and VAR are invariably combined in a single word eliminates the possibility of OP being inserted as the specifier of CP while the *wh*-VAR stays in-situ. The lexical merger of OP and *wh* also eliminates the option of covert OP movement in the syntax since OP and *wh* would be separate in this case as well. LF *wh*-movement is also blocked because the STRONG feature on Q must be checked before spell-out.

As predicted, in English *wh*-words cannot be bound by other operators. PM is not an option, since the STRONG Q feature must be checked prior to spell-out, and (as discussed below) English does not have an alternative device (such as a *wh*-expletive that moves to the Spec,CP) that could check this feature. The only possible derivation for English is as follows:

(64) Options for *Wh*-Questions in English

Matrix C	<i>wh</i> -in-situ	Consequences
STRONG Q	[OP+VAR]	Overt movement; all islands obeyed

Of course, once a STRONG feature is checked by the [OP+VAR] moving into Spec,CP, additional *wh*-words can stay in-situ and can be bound by the OP in the scopal position via unselective binding (as was argued by Reinhart 1993). This explains why the *wh*-in-situ then does not obey any islands constraints in the multiple *wh*-construction.

7. Conclusions

In this paper we have examined the extent to which the facts of *wh*-movement can be captured in a deterministic theory of syntax based on Minimalist principles. The various options for *wh*-question formation in Malay present a particular problem for such a theory because *wh*-questions in Malay include a considerable variety of options, among them *wh* that is moved to scopal Spec,CP, *wh*-in-situ, and partial *wh*-movement. Furthermore, the language appears to manifest a number of language specific constraints on *wh*-questions such as the requirement that certain question words undergo obligatory, overt movement and that some verbal prefixes must be omitted when certain types of *wh*-questions are formed. The challenge for a deterministic theory of *wh*-questions is to predict just which options will occur under which circumstances, and what the properties of each option will be. In addition, the same principles employed for Malay must predict how Malay will differ from previously studied languages like Chinese, Japanese, and English.

Our analysis has been based on a few central principles of the Minimalist Program like Full Interpretation, movement motivated by the need to discharge features and a single economy principle, which specifies that Merge is more economical than Move. While no parametric variation in grammatical principles is permitted, certain lexical variation is posited. Specifically, following Watanabe (1993), Tsai (1994), Aoun & Li (1993), and

others, we propose that languages differ with regard to whether *wh*-words consist of an interrogative operator, or of a *wh*-variable bound by a null interrogative operator. This single lexical difference explains most of the variation found, both within Malay and between Malay and other languages and it obviates the need for parametric variation with respect to feature strength for the Q-feature in the C head. We can thus maintain (following Chomsky 1995) that Q-features are universally STRONG, even in languages like Malay and Chinese, which exhibit *wh*-in-situ. We believe that the success of Minimalist principles in predicting the great surface diversity seen in the languages considered constitutes strong evidence for the fruitfulness of this approach.

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