Wh-in-situ

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1. Introduction

Though the term *wh-in-situ* was not coined until the 1980's (Aoun et al. 1981), properties of *wh*-in-situ have been investigated since the 60's. It is by now a familiar fact that Chinese *wh*-questions, as well as multiple questions in English, contain in-situ *wh*-words, i.e., *wh* words that do not undergo overt *wh*-movement, as in (1), in contrast with (2).

(1) a. Who bought what?
b. Hufei mai-le shenme (Mandarin Chinese)
Hufei buy-PERF what
'What did Hufei buy?'

(2) What did John buy?

The *wh*-words *what* and *shenme* 'what' in (1) stay in-situ in contrast with the moved *wh*-word *what* in (2). Note that *wh*-elements are in-situ in echo questions in English. Echo questions are a special type of question and fall outside the discussion of this article.

Wh-in-situ is not a root clause phenomenon, as we can see in the examples in (3). However, some languages which allow *wh*-in-situ in root clauses, do not allow it in embedded questions; French is such a language as is illustrated in (4) (see Bošković 2000, Cheng and Rooryck 2000, see also Boeckx et al. to appear).

(3) a. John wonders who bought what.
b. Botong xiang-zhidao Hufei mai-le shenme
Botong want-know Hufei buy-PERF what
'Botong wants to know what Hufei bought.'

(4) a. Jean a acheté quoi?
Jean has bought what
'What has Jean bought?'
b. *Je me demande que Jean a acheté quoi
I wonder that Jean has bought what
'Intended: I wonder what Jean has bought.'

Many issues and questions have been raised over the years concerning *wh*-in-situ. For instance, do in-situ *wh*-elements undergo covert *wh*-movement? If so, how is the movement similar and/or different from overt *wh*-movement? If not, how are in-situ *wh*-elements interpreted? Aside from questions concerning movement of in-situ *wh*-elements, there are also questions concerning the licensing of *wh*-in-situ. That is, what allows in-situ elements in Mandarin/French to stay in-situ in single questions (while this is not allowed in English)? In the case of Mandarin, which is unlike French (which also has overt *wh*-movement), the question can also be phrased differently: what prevents *wh*-phrases from undergoing overt *wh*-movement?

In this article, I concentrate on two issues: the licensing of *wh*-in-situ and the ''movability'' of *wh*-phrases in-situ. The discussion below will eventually bring these two issues together. I will not discuss proposals claiming that the in-situness is only apparent (i.e., the in-situ *wh*-elements have actually been raised to the left periphery, but due to remnant movement of the rest of the sentence, the *wh*-movement becomes opaque) (see Munaro et al. 2001, and Simpson and Bhattacharya 2000).

2. Q and licensing

Most current work on *wh*-movement assumes that overt *wh*-movement is related to a Q-feature in C^0 (which may or may not drive the movement). A discussion on *wh*-in-situ is therefore not quite complete without discussing it. I will first provide a brief review of the ancestor of the Q-feature (i.e., the Q-morpheme) and the controversy connected to it. We then turn to more recent renditions of the Q-morpheme before discussing the connection between Q and the question of what licenses/forces *wh*-in-situ.

2.1. The Q-morpheme

The notion of Q-morpheme dominated the discussion of question formation in the late 60's and early 70's. Katz and Postal (1964), working with the assumption that

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transformations do not change meaning (i.e., deep structure determines meaning), posited a Q-morpheme to account for the meaning contrast between (5a) and (5b):

(5) a. Did Bill see John?
b. Bill saw John.

The presence of a Q-morpheme can also account for a similarity between *wh*-questions and yes-no questions: both are paraphrases of ''I request that you answer ...''; this is the so-called ''Performative'' reading. A *wh*-question such as (6a) has a deep-structure representation (6b), under the assumption that *wh*-words, though similar to indefinites, must be specified as ''questioned'':

(6) a. Who saw John?
b. Q [wh someone] saw John

Though Katz and Postal argued that the Q-morpheme is only present in direct (i.e., matrix) questions (to account for the presence of subject-aux inversion and the lack of *whether/if* in direct questions), Baker (1970) countered that the Q-morpheme should be posited in both direct and indirect questions (the differences between direct and indirect questions being subsumed under the notion of subordination). More importantly, Baker made the following claims:

(7) a. Q can be lexically realized; in English, it is realized as *if/whether*. (In other languages, Q can be realized as question particles, e.g., Japanese.)
b. The movement rule has Q as part of the structural description. (He further discussed the ramifications of a ''replacement'' version of the question transformation (i.e., move a *wh*-word to replace Q) based on Jacobs and Rosenbaum (1968).
c. Following a suggestion in Bach (1968), Q functions as an operator.

The claim in (7c) was essentially conceived to account for the famous multiple question in (8), which contains an in-situ *wh*-phrase *which book*. The two different readings of the sentence are reflected in the answers in (8a) and (8b).

(8) Who remembers where we bought which book?
a. John and Martha remember where we bought which book.
b. John remembers where we bought the physics book and Martha and Ted remember where we bought *The Wizard of Oz*.

The crucial function of the operator Q is that it can ''bind'' one or more question words. In the case of (8a), the embedded Q operator binds both *which book* and *where*; in contrast, in (8b), the matrix Q operator binds both *who* and the embedded *which book*. By treating Q as an operator, the ''scope'' of the in-situ *wh*-phrase in (8) can be accounted for.

As far as in-situ *wh*-phrases are concerned, the Q-morpheme serves to determine their scope, nothing more. Though the positing of the Q-morpheme or variations of it has widely been accepted in the literature since Baker (1970), it did lead to objections (see Kuno and Robinson 1972, and Langacker 1974).

Before Bresnan (1970), Q was simply an extra node above a sentence. Bresnan (1970) argued that Q is a Wh complementizer (with interrogative Comp nodes represented as [+wh]). Since then, a *wh*-question is assumed to have a [+wh] feature in Comp (see for example Chomsky 1981). It should be noted that objections to the Q-morpheme were raised essentially because of the fact that the model of grammar was changed. For instance, Grimshaw (1977) argued that, assuming that interpretation is not at D-structure (but at Logical Form (LF)), there is no need to posit a Q-morpheme since a moved *wh*-phrase would be interpreted accordingly at LF.

Since Chomsky (1981), [+wh] has been assumed to be in Comp/C^0. Various treatments of *wh*-movement make use of the [+wh] feature (see among others Rizzi 1991, and Chomsky 1991). More recently (e.g., Chomsky 1995, chapter 4), interrogative C^0 contains a Q feature. Note that even though Q is in C^0, it is not an operator itself. Chomsky (1995) considers the Q feature to be an interpretable feature, and only when it is strong, it triggers overt movement. See section 4 for more discussion regarding interpretability of Q as well as movement associated with in-situ *wh*-phrases.

2.2. Licensing

The question of what licenses *wh*-in-situ does not have a simple answer, especially if we consider the differences in types of *wh*-in-situ (discussed further in section 5). Even if we assume that in-situ *wh*-elements are on a par with moved *wh*-phrases in that they also undergo *wh*-movement (albeit at LF), the question still arises why the in-situ *wh*-elements do not undergo movement in overt syntax.

Not surprisingly, most of the proposals addressing this issue link *wh*-in-situness with the CP domain. There is a group of proposals which we can characterize as ''landing site'' proposals. Baker (1970) is probably the first to link the Q-morpheme with the in-situness of *wh*-phrases in Japanese. In particular, the *wh*-movement transformation rule posited by Baker moves a question word to be adjacent to an **initial** Q (or to replace an initial Q). Since Japanese question particles are sentence final (i.e., Q is final), the structural description of the transformation is not met in Japanese. In other words, Baker considers the position of the Q-morpheme to be a major factor in the lack of overt *wh*-movement in Japanese. Kayne (1994) represents a more recent attempt from such a perspective. To account for sentence final particles (assumed to be in C^0) within the antisymmetry framework, Kayne claims that IP in languages like Japanese moves to SpecCP. In other words, in languages with final particles, the SpecCP is always occupied. This in turn provides an explanation for why *wh* phrases in Japanese do not undergo overt

wh-movement: there is no SpecCP for *wh*-elements to move to (cf. Sybesma 1999 for IP-to-SpecCP movement in Chinese as *wh*-movement). Fukui (1986) discusses the more general differences between Japanese and other languages in their functional projections. He proposes that Japanese does not have the CP layer at all, and hence no landing site for *wh*-phrases (cf. Kuroda 1988).

Pesetsky (2000), taking a typological view of *wh*-movement, argues that languages differ as to how many specifiers are allowed in CP. In *wh*-in-situ languages such as Japanese and Korean, the setting is $C_{0\text{-spec}}$, i.e., no specifier is allowed in CP, in contrast with languages like Bulgarian, which allows multiple specifiers in CP ($C_{m\text{-spec}}$), (some details of Pesetsky's proposal are discussed in section 5).

Cheng (1991) also correlates the availability of question particles (and thus Q) with *wh*-in-situ. She puts forth the Clausal Typing Hypothesis stating essentially that the clause type/force of a sentence is determined in overt syntax. In languages with question particles, the question particles (overt or covert) can determine the type/force of question and therefore render overt movement unnecessary (and thus not possible). In languages without question particles, clause typing has to be done by moving a *wh*-phrase to SpecCP. In other words, not all languages have a Q-morpheme (or a Q-feature) in C^0.

Chomksy (1995, Ch. 4) also takes the Q-feature in C^0 to be connected to in-situness. But he assumes that all languages have a Q-feature in interrogative C^0's. The difference between English and Chinese/Japanese rests upon the strength of the Q-feature. In particular, the Q-feature in Chinese/Japanese is weak and since only strong features must be checked in overt syntax, no overt movement is necessary to check the weak Q-feature in this type of language. Note that the strength of Q is not correlated with other properties in a language.

Since Chomsky (1995), most works within the Minimalist Program assume the Q-feature in C^0, though how it is connected to in-situness differs. In Chomsky (2000) (without feature strength), the Q-feature is not directly related to *wh*-in-situ anymore (the proposal is more in line with Hagstrom 1998, and Watanabe 1992a, 1992b, see section 4). In Nissenbaum (2000) (see also Chomsky 2001a, and 2001b), *wh*-in-situ or covertness of movement is not due to any particular driving force or the lack of it. Rather, it has to do with when movement takes place in relation to Spell-out.

All of the above proposals put the burden on the CP domain. Sharply different from such proposals, Kim (1991) claims that the in-situness of *wh*-phrases in Korean/Japanese comes from the *wh*-phrases themselves. Kim correlates the fact that *wh*-words in Korean/Japanese serve as morphological bases for forming indefinite and universal quantifiers with their inability to undergo overt *wh*-movement. He argues that *wh*-elements in Korean/Japanese are simply quantifiers (i.e., not *wh*-words) (see also Nishigauchi 1986). Thus movement of *wh*-elements in these languages is akin to Q(uantifier) R(aising), which takes place in LF. Tsai's (1994b) proposal also rests upon the nature of *wh*-elements. He claims that languages differ as to where the wh/Q-feature/operator is generated: at the word level (e.g., English), at the phrasal level (e.g., Japanese) or at the sentence level (e.g., Chinese). The proposal amounts to saying that *wh*-elements in Chinese and Japanese are not *wh* operators (cf. Cheng 1991 and Li 1992) (see section 4 for further discussion). Note however that there are languages such as Hungarian which form quantifiers based on *wh*-elements but do not have *wh*-in-situ.

The above mentioned proposals concentrate essentially upon obligatory *wh*-in-situ languages such as Chinese and Japanese (in contrast with English types of languages with obligatory *wh*-movement). According to Tsai (and also Cheng and Rooryck 2002, Pesetsky 2000, Watanabe 2001), there is more than one type of *wh*-in-situ and certainly more than one type of *wh*-in-situ language. Aside from obligatory *wh*-in-situ languages, there are also optional *wh*-in-situ languages (e.g., French and European Portuguese among others; see Cheng 1991, Denham 2000). These languages force us to reconsider the licensing issue. How is the CP domain or the *wh*-element itself responsible for ''optional'' in-situ? Bošković (2000) suggests the possiblity of late insertion of Q-feature in C^0 in French, while Cheng and Rooryck (2000) claim that French in-situ questions are licensed by a special intonational Q-morpheme. These are nonetheless still connected to the C-domain. Cheng and Rooryck (2002) provide data in European Portuguese (Setubal dialect) suggesting that Focus can also license *wh*-in-situ. In particular, the positions which allow non-fronted *wh*-elements correlate with positions in which the corresponding non-*wh*-elements may be interpreted as having focus. (9a,b) show that the VOS order (which is allowed if no *wh*-elements are involved) is not possible if the object is a *wh*-phrase, in contrast with the SVO order.

(9) a. O João viu *quem*? (SVO)
João see who
b. *viu quem o João? (VOS)
saw who João
'Who did Joao see?'

(10)

Word order	**Focus set**
SVO	O, VP, or IP
VSO	S and O
VOS	S

From (10) (based on the discussion of focus in Costa 1997), it is clear that in a VOS order, O is not in the focus set whereas in an SVO order it is. Further, in European Portuguese, non-fronted *wh*-subjects in an embedded clause taking matrix scope can also be in postverbal position, as illustrated in (11). As we can see from (10), both VSO and VOS order allow the subject to be in the focus set.

(11) a. *O João pensa que **quem** viu a Maria?
João think that who saw Maria
(SVO order: echo only)
b. O João pensa que viu a Maria **quem**? (VOS order)
c. O João pensa que viu **quem** a Maria? (VSO order)
'Who does João think saw Maria?'

In short, there are many proposals concerning the licensing of *wh*-in-situ. If we take into consideration the different types of *wh*-in-situ, different licensing strategies may indeed be needed (see Cheng and Rooryck 2002 for discussion).

3. Covert movement or not

Since the late 70's, with the development of trace theory, meaning is no longer attached to D-structure or S-structure. Instead, there is a level of semantic interpretation, called Logical Form (LF) (see Chomsky 1976 among others). Given LF, it is quite natural to consider in-situ *wh*-words on a par with quantifiers (i.e., to undergo raising). Huang (1982a) and Aoun, Hornstein and Sportiche (1981) (henceforth AHS) first argued for movement of in-situ *wh*-words at LF. AHS specifically argued against treating this movement as Q(uantifier) R(aising) (see Mahajan 1990 for treating Hindi *wh*-in-situ as QR). Below I first summarize the arguments for LF *wh*-movement. In section 3.2, I discuss arguments against *wh* movement at LF.

3.1. Arguments for LF *wh*-movement

Various arguments for LF *wh*-movement have been presented in the literature. Most of them rest upon the similarities between in-situ *wh*-questions and *wh*-questions with extraction (see also Bayer 2000). Below I present some of these arguments.

3.1.1. Parallels between *wh*-extraction and *wh*-in-situ

Selectional requirements

It is well-known that different verbs select for different types of complement clauses. For instance, verbs such as *ask* require an interrogative complement, verbs such as *believe* must have a declarative complement, and verbs such as *know* can take both. Huang (1982b) argues that verbs in Mandarin Chinese show the same selectional requirements as those in English (see (12)–(14)); movement of in-situ *wh*-words can account for the selectional requirement with the *wh*-words satisfying the requirements as in the English counterparts. (For issues of selection, see Grimshaw 1977, 1979, Pesetsky 1982, and Lahiri 1991, 2002).

(12) Huangrong xiangxin Guojing mai-le shenme?
Huangrong believe Guojing buy-PERF what
'What does Huangrong believe that Guojing bought?'

(13) a. Qiaofeng wen wo Guojing mai-le shenme
Qiaofeng ask me Guojing buy-PERF what
'Qiaofeng asked me what Guojing bought.'
b. *Qiaofeng wen wo Guojing mai-le shu
Qiaofeng ask me Guojing bought-PERF book
'*Qiaofeng asked me Guojing bought a book.'

(14) Botong zhidao Huangrong xihuan shei (?)
Botong know Huangrong like who
a. 'Botong knows who Huangrong likes.'
b. 'Who does Botong know Huangrong likes?'

The movement of *shenme* 'what' in (13a) yields the same representation as its English counterpart (as in (15)).

(15) $[_{CP}\ [_{IP}$ Qiaofeng wen wo $[_{CP}$ shenmei $[_{IP}$ Guojing mai-le t_i]]]]
Qiaofeng ask me what Guojing buy-PERF

Though selectional requirement at first glance may provide arguments for LF *wh*-movement, it is not a clear-cut fact that it is not something else which satisfies the selectional requirement, e.g., a question particle (see Cheng 1991).

Locality effects

Just like *wh*-questions involving moved *wh*-words, *wh*-questions involving in-situ *wh*-words show locality effects. In particular, the typical argument-adjunct asymmetry is also found with *wh*-in-situ. A comparison of (16) and (18) and (17) and (19) shows that though in-situ arguments can be interpreted as taking scope out of *wh*-islands and relative clauses, in-situ adjuncts cannot. This is accounted for if in-situ *wh*-words undergo movement at LF: overt adjunct extractions illustrate the same ungrammaticality. (Note that three different interpretations are possible in (16) with the readings in (b) and (c) as less preferred interpretations).

(16) Judou xiang-zhidao shei mai-le shenme (?)
Judou want-know who buy-ASP what
a. 'Judou wonders who bought what.'
b. 'for which y, y a thing, Judou wonders who bought y'
c. 'for which x, x a person, Judou wonders what x bought'

(17) Hufei xiang-zhidao shei weishenme shengqi (?)
Hufei want-know who why get-angry
a. 'Hufei wonders who gets angry why.'
b. 'for which x, x a person, Hufei wonder why x gets angry'
c. '*what is the reason x, Hufei wonders who gets angry for x'

(18) Botong xihuan shei xie de shu?
Botong like who write de book
'for which x, x a person such that Botong likes the book that x wrote'

(19) *Qiaofeng xihuan Botong weishenme
Qiaofeng like Botong why
xie de shu?
write de book
'for what reason x such that Qiaofong like the book that Botong wrote for x'

Crossover (see Simpson 1995, Hornstein 1995 among others)

(21a, b) illustrate that *wh*-in-situ also generates strong and weak crossover, just like their moved counterparts in (20). Again, this is explained if the in-situ phrases move at LF.

(20) a. *who$_i$ did he$_i$ give a book to t$_i$
b. *who$_i$ did his$_i$ mother give a book to t$_i$

(21) a. *who$_j$ said that he$_i$ gave a book to who$_i$
b. *who$_j$ said that his$_i$ mother gave a book to who$_i$

3.1.2. Explanations offered by LF *wh*-movement

Scope of in-situ wh-words

In-situ *wh*-words always have wide scope with respect to other quantifiers. If in-situ *wh* words undergo *wh*-movement (to SpecCP), the wide scope property of *wh*-in-situ is explained.

(22) mei-ge-ren dou mai-le shenme?
every-CL-person all buy-ASP what
'What did everybody buy?'

(23) mei-ge-ren dou shuo shei zui congming?
every-CL-person all say who most clever
'Who does everybody say is most clever?'

In the above two sentences, the questions have the reading in which the *wh*-word takes scope higher than the universal quantifier (cf. Aoun and Li 1993a).

Superiority

If *wh*-in-situ undergoes *wh*-movement, superiority effects such as the one in (24b) can be subsumed under the E(mpty) C(ategory) P(rincple) (see Pesetsky 2000 for a recent treatment and also the discussion in section 5.1. below).

(24) a. Who hid what?
b. *What did who hide?

3.1.3. Two types of *wh*-in-situ

Pesetsky (1987) presented a different argument for LF *wh*-movement. He argued that there are two types of in-situ *wh*-phrases: D(iscourse)-linked and non-D(iscourse)-linked. D-linked *wh*-phrases do not undergo *wh*-movement (licensed instead by *wh*-binding (unselective binding) à la Baker) while non-D-linked ones do. By arguing that there are two types of *wh*-in-situ, one of which involves LF *wh*-movement, he in turn argues for LF *wh* movement.

Pesetsky's argument rests upon superiority effects and the so-called ''strongly non-D-linked'' *wh*-words. As we have seen in (24b), superiority effects arise when an object *wh*-word moves over a subject *wh*-word. However, when the *wh*-words involved are not *who* and *what*, but *which*-NPs, the superiority effect disappears, as shown by the contrast between (25) and (26).

(25) a. ??What$_i$ did you persuade who(m) to read e$_i$?
b. *Mary asked [what$_i$ [who read e$_i$]]?

(26) a. Which book$_i$ did you persuade which man to read e$_i$?
b. Mary asked which book$_i$ which man read e$_i$?

Pesetsky's account for the difference between (25) and (26) is that *which*-NPs are D-linked (and thus are not quantifiers), and they do not undergo LF *wh*-movement, in contrast to *who* and *what*, which are non-D-linked (and are quantifiers), and thus subject to *wh*-movement.

The second argument concerns the so-called ''strongly non-D-linked'' *wh*-words such as *what-the-hell* in English (see also Lasnik and Saito 1992, and den Dikken and Giannakidou 2002). The Japanese equivalent is *wh-ittai* (as in (27)) (see also Hagstrom 1998). As we see from the contrasts between (28) and (29), though typical *wh*-words do not trigger subjacency effects in Japanese, *wh-ittai* does.

(27) Mary-wa John-ni ittai nani-o ageta-no?
Mary-TOP John-DAT the-hell what-ACC gave-Q
'What the hell did Mary give to John?'

(28) a. Mary-wa [[John-ni nani-o ageta]
Mary-TOP John-DAT what-ACC gave
hito-ni] atta-no?
man-DAT met-Q
'What did Mary meet the man who gave (it) to John?'
b. Mary-wa [John-ga nani-o yomu mae-ni]
Mary-TOP John-NOM what-ACC read before
dekaketa-no?
left-Q
'What did Mary leave before John read (it)?'

(29) a. *Mary-wa [[John-ni ittai nani-o
Mary-TOP John-DAT the-hell what-ACC
ageta] hito-ni] atta-no?
gave man-DAT met-Q
b. *Mary-wa [John-ga ittai nani-o
Mary-TOP John-NOM the-hell what-ACC
yomu mae-ni]dekaketa-no?
read before left-Q

If strongly non-D-linked *wh*-words must undergo movement, the ungrammaticality of (29) is explained. However, it should be noted that *nani* in (28) does not have to be D-linked. If that is the case, the question that arises is why subjacency is not induced, on a par with (29).

3.2. Subjacency and arguments against LF *wh*-movement

Though LF *wh*-movement appears to share many properties with overt *wh*-movement, the asymmetry breaks down when it comes to subjacency effects. This is a problematic point for proponents of LF movement

of *wh*-in-situ. Consider first the lack of subjacency effects in multiple *wh*-questions in English (data taken from Huang 1995). (I will come back to subjacency effects in Japanese *wh*-in-situ in section 4):

(30) a. who remembers why we bought what?
→ *wh*-island
b. who likes books that criticize who? → CNPC
c. who thinks that pictures of who are on sale?
→ subject condition
d. who got jealous because I talked to who?
→ adjunct condition
e. who bought the books on which table?
→ adjunct
f. what saw John and who? → coordinate structure constraint

The movement counterparts of (30a–f) are all ungrammatical. Huang (1982b) considers bounding theory to be a condition on overt movement only; thus, (30a–f) fall outside the realm of bounding theory. This essentially treats subjacency as a well-formedness condition on S-structure chains rather than a condition on movement.

This treatment is however not satisfactory. It is argued by Longobardi (1991) as well as Reinhart (1991) among others, that subjacency effects arise with quantifier raising (QR) (see also Simpson 2000). Longobardi shows that although n(egative)-words and the negation marker *non* can have an intervening clausal boundary (as in (31)), no islands can intervene (as in 32a–c).

(31) non credo che lui pensi che io desideri
NEGbelieve-I that he thinks that I wish
vedere nessuno
to see no one
'I do not believe that he thinks that I wish to see anyone.'

(32) a. Complex NP
*non approverei la tua proposta di vedere nessuno
NEG approve-I the your proposal of to-see no one
'I would not approve your proposal of seeing anybody.'
b. Sentential subject
*chiamare nessuno sara possibile
to-call no one will be possible
'To call no one will be possible.'
c. Adjunct clause
*non fa il suo dovere per aiutare nessuno
NEG does-he the his duty for to-help no one
'He does not do his duty in order to help anyone.'

The contrast between data such as (32a–c) and (30a–f) leads to proposals which look for explanations as to why sentences such as (30a–f) are grammatical. One such explanation, which is still often appealed to, is pied-piping (see Nishigauchi 1986, Choe 1987, and Pesetsky 1987). Pesetsky (1987) argues that by considering answers to questions, we can see that pied-piping is at work. In particular, in Japanese, normal answers to questions can just be one word (plus a copula) (as in (33)), but when an island is involved, a felicitous answer must recapitulate the entire island (as in (34)).

(33) Q: John-wa nani-o yonda-no?
John-TOP what-ACC read-Q
'What did John read?'
A: ''Sensoo to Heiwa'' desu
War and Peace COP
'It's *War and Peace*.'

(34) Q: Mary-wa [[John-ni nani-o ageta]
Mary-TOP John-DAT what-ACC gave
hito-ni] atta-no?
man-DAT met-Q
'What did Mary meet the man who gave to John?'
A: */?? Konpyuutaa desu
Computer COP
'It's a computer.'
A: [[konpyuutaa-o ageta] hito] desu
computer-ACC gave man COP
'It's the man who gave a computer (to him).'

The contrast between (33) and (34) suggests that in the question in (34), *nani* 'what' does not move out of the complex NP; instead, the whole complex NP pied-pipes (the *wh*-feature of the *wh*-word gets percolated to the complex NP).

The pied-piping explanation of the lack of subjacency effects, however, cannot be the whole story. Aside from the problems pointed out by Fiengo et al. (1988) regarding question-answer pairs, and by von Stechow (1996) regarding the semantic interpretation of large scale pied-piped constituents, the pied-piping account yields the wrong predictions. First, as Huang (1982b) points out, if sentences such as (35b) are grammatical because of pied-piping, then sentences such as (36a,b) (i.e., standard superiority violations) should also be grammatical.

(35) a. *Who did [pictures of t] please who?
b. Who did [pictures of who] please t?

(36) a. *What did who buy?
b. *Who did what please?

Huang (1982b), assuming an ECP analysis of superiority violations, argues that if the extraction of *who* in (36a) leads to an ECP violation, then the extraction of *pictures of who* in (35b) should yield an ECP violation as well. Second, though pied-piping also exists in overt syntax, it is much more constrained, as we can see in (37) (from Lasnik and Saito 1992). In fact, when embedded questions are involved, very little pied-piping is allowed, as shown in (38).

(37) a. On which table did you put the book?
b. *After buying what did John leave?
c. *The man that bought what did John see?

(38) a. I wonder who Bill spoke to.
b. ?I wonder to whom Bill spoke.
c. I wonder whose mother Bill spoke to.
d. *I wonder pictures of whom Bill saw.
e. *I wonder Mary and whom Bill saw.
f. *I wonder the books that who wrote Bill bought.

Given the contrast between overt pied-piping and LF pied-piping, the pied-piping account appears to switch the asymmetry from *wh*-movement to pied-piping. That is, the difference between overt and covert *wh*-movement is explained by pied-piping; however, there exists an asymmetry between overt and covert pied-piping.

Aside from the non-parallelism displayed with respect to subjacency (see also Cole and Hermon 1994), several other arguments have been put forth to argue against LF *wh* movement (see Simpson 2000 for a detailed discussion). The arguments are essentially based on asymmetries between LF and overt *wh*-movement, or between LF *wh*-movement and QR. I discuss a couple of these asymmetries here to show that the arguments are not entirely non-problematic, and thus leaving the debate not completely settled.

Consider first the following examples by Brody (1995, p. 133):

(39) a. John_i wondered [which pictures of $\text{himself}_{i/k}$] Bill_k liked t.
b. *John wondered when Mary saw [which pictures of himself].

In (39a), *himself* can have either *John* or *Bill* as antecedent. If *wh*-in-situ undergoes LF *wh* movement, one would expect *himself* in (39b) to be able to be anaphoric to *John* (i.e., similar to *John wondered which pictures of himself Mary liked*). In other words, the asymmetry between (39a) and (39b) supports a view that there is no LF *wh*-movement of in-situ *wh* phrases. However, consider an example such as (40):

(40) John_i wondered who saw which pictures of himself_i.

The fact that the coreference between *John* and *himself* can in fact be established shows that the situation is more complicated than the apparent contrast presented in (39) (see also Nissenbaum 2000, and related discussion in section 5).

Simpson (2000) puts forth an argument based on an asymmetry between LF *wh* movement and QR. He shows that though QR can license VP-ellipsis of the kind shown in (41a) (for a discussion on Antecedent Contained Deletion, see May 1985), LF *wh*-movement cannot (41b,c) (examples are from Simpson 2000):

(41) a. John likes everyone who Bill does [$_{\text{VP}}$]
b. *Who used which argument that he could [$_{\text{VP}}$]?
c. *Who criticized which course that Mary did [$_{\text{VP}}$]?

However, there are apparent judgement differences. Fiengo and May (1994, 242) presented sentences such as (42) as grammatical (see also Pesetsky 2000, which I will further discuss below).

(42) Which spymaster suspected which spy that Angleton did [$_{\text{VP}}$]?

Given the disagreement in terms of judgement, it is quite difficult to consider this argument as a knock-down argument against LF *wh*-movement.

In short, there are arguments for and against LF *wh*-movement. The analysis that *wh* in-situ involves *wh*-movement of the *wh*-phrase at LF has been vigorously re-examined in the 1990's. Not only is the asymmetry concerning subjacency a sore thumb, we are no longer satisfied with the stipulation that the parametric difference rests upon the level of movement (see Cheng 1991, and Tsai 1994b among others). Recent development within the Minimalist Program further provides theoretical grounds for re-examining covert movement.