Wh-in-situ, part II

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Wh-in-situ, Part II

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4. Alternatives to LF *wh*-movement

It should be noted that any alternative account must be able to explain the fact that in-situ *wh*-words do share some characteristics with moved *wh*-words (as noted in section 2.1 above). I will first discuss accounts making use of movement of an operator associated with *wh*-phrases. In section 4.2, I discuss accounts which argue for no movement at all (of the *wh* phrase or other elements associated with the *wh*-phrase).

4.1 Movement of an operator

One of the problems with *wh*-movement of *wh*-phrases at LF is the asymmetry between movement at LF and movement in overt syntax, as discussed above. Nevertheless, it remains a fact that *wh*-in-situ has a lot in common with *wh*-movement. There are a number of proposals which try to capture such similarities and differences by proposing that what is moved in in-situ *wh*-questions is not the *wh*-phrases themselves but an operator (or a Q-marker) associated with the *wh*-phrase (see also an overview in Watanabe, 2001). The similarities between *wh*-in-situ and moved *wh* stem from the fact that in both cases movement in syntax proper is involved, and the differences derive from the fact that what is moved is not the *wh*-phrase in both cases.

4.1.1 Operator morphologically linked with *wh*-word

Watanabe (1992a) re-examines the controversy over subjacency. In contrast with multiple questions in English and Chinese *wh*-in-situ, which lack subjacency effects, Japanese (and Korean) *wh*-in-situ has been said to in fact induce subjacency effects (see also Wahba, 1991 regarding *wh*-in-situ and subjacency effects in Iraqi Arabic). This then presents a picture of non-uniform *wh*-in-situ: some types of *wh*-in-situ induce subjacency while other types do not. This leads to the question of whether *wh*-in-situ should be uniformly handled at LF. In Japanese, we see subjacency with *wh*-in-situ and also the lack of it, as we can see from the contrast between (43a) and (43b) (from Lasnik and Saito, 1992).

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(43) a. John-wa [nani-o katta hito]-o
John-TOP what-ACC bought person-ACC
sagasite iru no?
looking-for Q
'What is John looking for the person who bought?'

b. ??John-wa [Mary-ga nani-o
John-TOP Mary-NOM what-ACC
katta ka dooka] siritagatte iru no?
bought whether know-want Q
'What does John want to know whether Mary bought?'

Though (43a) is grammatical, (43b) is not; it has the status of a *wh*-island violation (the relative clause in (43a) may have undergone pied-piping). Watanabe (1992a) further shows that the picture is more complicated than this if we consider multiple *wh*-questions in Japanese. In particular, in multiple *wh*-questions in Japanese, if there is one *wh*-word outside of a *wh*-island while another is inside of the *wh*-island, the sentence is grammatical. However, if both *wh*-words are inside the *wh*-island, the sentence is ungrammatical:

(44) a. John-wa [Mary-ga nani-o
John-TOP Mary-NOM what-ACC
katta ka dooka] **dare-ni** tazuneta no?
bought whether who-DAT asked Q
'Who did John ask t whether Mary bought what?'

b. ??John-wa [Mary-ga nani-o
John-TOP Mary-NOM what-ACC
katta ka dooka] Tom-ni tazuneta no?
bought whether Tom-DAT asked Q
'What did John ask Tom whether Mary bought t?'

Lisa Lai-Shen Cheng's State-of-the-Article on *Wh*-in-situ appears in two installments. Here is the complete table of contents of both Part I and Part II.

c. ??John-wa [**dare-ga** nani-o
John-TOP who-NOM what-ACC
katta ka dooka] Tom-ni tazuneta no?
bought whether Tom-DAT asked Q
'What did John ask Tom whether who bought t?'

(44a) not only contrasts with (44b,c) but also (43b). It shows that the addition of a *wh* phrase outside of the *wh*-island voids the *wh*-island effect. Note that this also presents problems for proposals which claim that there is subjacency at LF. (44a) is comparable to multiple *wh*-questions in English:

(45) a. Who did John ask t whether Mary bought what?
b. ??What did John ask Tom whether Mary bought t?

In (45a), there is a *wh*-word *who* outside of the *wh*-island. The sentence is grammatical. The standard explanation is that *who* undergoes *wh*-movement in overt syntax, not crossing any island since it originates outside of the island and the second *wh*-word *what* only undergoes *wh*-movement at LF, which is not subject to subjacency. However, this standard explanation cannot explain the Japanese facts since Japanese only has in-situ elements.

Watanabe argues that the contrast between (44a) and (44b,c) illustrates a two-level movement involved in multiple questions: the first level is sensitive to subjacency while the second level is not. He further maintains that the movement which is sensitive to subjacency is S-structure movement (with the operator part of the *wh*-word moving to SpecCP). This is supported by data showing that an interrogative clause constitutes an island for S-structure movement (such as scrambling) in Japanese. The second level of movement is at LF. (Watanabe's proposal thus supports the view that subjacency only constrains overt operations; see Watanabe, 1992b for more details.)

In other words, given this proposal, Japanese *wh*-in-situ involves S-structure operator movement. Thus, even though we do not ''see'' the movement due to the null operator, it is nevertheless movement in syntax; thus subjacency effects are expected. Watanabe's proposal opens up a new way of looking at *wh*-in-situ: a non-overt part of a *wh*-element undergoes movement in **overt** syntax.

Before I move on to other alternative accounts of *wh*-in-situ, I would like to point out that Watanabe's proposal of Japanese *wh*-in-situ as involving moving an operator which is part of the *wh*-word has some morphological support. Japanese *wh*-words can be considered to be made up of an indefinite and a (non-overt) quantifier (see Kuroda, 1969). Consider a simple paradigm involving Japanese *wh*-words and related quantifiers:

(46)

dare	'who'	dare-mo	'everyone'
nani	'what'	nani-mo	'everything'
doko	'where'	doko-mo	'everywhere'
itsu	'when'	itsu-mo	'whenever'
dare-ka	'someone'		
nani-ka	'something'		
doko-ka	'somewhere'		
itsu-ka	'someone'		

Given (46), it is reasonable to consider *dare* 'who' to have an invisible *wh*-operator (i.e., *dare-Op*). In Watanabe's proposal, it is this invisible operator which undergoes movement to SpecCP (see also Cheng 1991). The question which arises in connection to this account is whether languages with such a morphological make-up necessarily involve this type of movement or vice versa.

Hagstrom (1998) takes Watanabe's proposal further, and claims that what actually moves in Japanese is the question particle. Hagstrom examines data in Sinhala, Japanese and Okinawan and puts forth the proposal that the question marker in these languages moves to the surface position from a position adjacent to the in-situ *wh*-phrase. Consider the sentences in (47a-c). Hagstrom takes the *ka* particle associated with the indefinite in (47a) to be the same as the *ka* in (47b,c). More specifically, *ka* in (47b,c) has moved from the *wh*-word *nani* 'what' to its surface position.

(47) a. John-ga nani-ka-o katta (Kuroda, 1965)
John-NOM what-Q-ACC bought
'John bought something.'
b. John-ga nani-o
John-NOM what-ACC
kaimasita ka (Hagstrom, 1998)
bought.polite Q
'What did John buy?'
c. John-ga [Mary-ga nani-o
John-NOM Mary-NOM what-ACC
katta ka] sitteiru
bought Q know
'John knows what Mary bought.'

See Hagstrom (1998) for details regarding the interpretation of *ka* (as an existential quantifier and an interrogative marker).

Hagstrom's thesis also discusses the semantics of single-pair and pair-list readings in multiple questions. I will not go into the details here. Those whose are interested in issues related to pair-list readings should also consult Dayal (1996, 2002), Bošković (1999), Barss (2000) and Pesetsky (2000).

4.1.2 Aoun and Li (1993b)

Aoun and Li (1993b) argue that no movement of in-situ *wh*-phrases is involved in *wh*-in-situ; instead, there is movement of a question operator, which is associated with the in-situ *wh* phrases. However, this question operator differs from the one posited by Watanabe or Hagstrom. Their argument against LF

wh-movement crucially rests upon the interaction between the adverb *only* and *wh*-in-situ. As shown by the contrast between (48) and (49), *only* can be associated with an element in its c-command domain, but it cannot be associated with a trace (see Tancredi, 1990).

(48) Steve only saw Joanna.
a. ...(but didn't talk to her)
b. ...(but not Sharon)

(49) Joanna, he only saw.
a. ...(but didn't talk to her)
b. *...(but not Sharon)

(48) is ambiguous: *only* can be associated with the verb or with the object NP, but in (49), which involves a topicalized NP, *only* can only be associated with the verb and not the object NP. (50) shows that we have the same pattern with quantifiers.

(50) Someone only loves everyone in the room.

In (50), *everyone in the room* can only have narrow scope with respect to *someone.* This is not surprising since QR raises the quantifier phrase to the left of *only*.

However, *only* can modify in-situ *wh*-phrases, as shown by the multiple question in English (51a) and the Mandarin example in (51b).

(51) a. Who only likes what?

b. ta zhi xihuan shei?
he only like who
'Who does he only like?'

Aoun and Li argue that the contrast between (49)–(50) and (51a,b) suggests that the in-situ *wh*-words have not been extracted. They propose that in-situ *wh*-words are associated with a question operator. In English multiple questions, the *wh*-word that has been preposed to SpecCP is the question operator associated with the in-situ *wh*-word. In Chinese, on the other hand, the *wh*-word is associated with a non-overt question operator, which undergoes movement to SpecCP. They further suggest that this null operator is base-generated in a Qu-projection (QuP) (or ΣP à la Laka, 1990).

By positing a Qu-operator, the scope properties of *wh*-questions involving in-situ *wh* words as well as weak crossover effects in in-situ *wh*-questions can be accounted for. For the argument-adjunct asymmetry, Aoun and Li appeal to Generalized Binding (Aoun, 1986): the relation between the *wh*-phrase and the Qu-operator is a bindee-binder relation. Adjuncts (but not arguments) require a local Qu-operator; in cases where in-situ adjuncts are in islands, the associated Qu-operator must also be generated in islands. The subsequent movement of the Qu-operator can thus lead to island violations.

Note that though Aoun and Li's Qu-operator proposal is quite similar to Watanabe's proposal in that what is moved in overt syntax is a null operator, but they differ from Watanabe's account in that the in-situ *wh*-elements in their account are bound by the operator without any (covert) movement while Watanabe assumes that the in-situ *wh* still undergoes covert movement. It should also be noted that if the null operator associated with arguments can be base-generated far away from the *wh*-arguments (as proposed in Aoun and Li), we would not expect a contrast between (44a) and (44b,c).

4.2 No movement

Having no movement attached to *wh*-in-situ is certainly an alternative to movement in LF. In fact, during the early 70's, movement at LF was not an option, and no movement was the null hypothesis. In Pesetsky (1987), the interpretation by binding à la Baker (1970) is revived for D-linked *wh*-phrases (more specifically, the D-linked *wh*-phrases in-situ are interpreted by unselective binding (Heim, 1982)). Tsai (1994a), after examining the differences between *wh* arguments and *wh*-adverbials in Chinese also argues that there are two types of *wh*-in-situ's, one which undergoes movement (*wh*-adverbials) and one which doesn't (*wh*-arguments).

With the Minimalist Program (Chomsky, 1995), this direction has been further reinforced. In particular, in Chomsky (1995), both the *wh*-feature in C^0 and the *wh*-feature of the *wh*-phrase are interpretable. There is thus no need for the *wh*-feature of the *wh*-phrase (or the *wh*-phrase itself, for that matter) to move to C^0. Chomsky also assumes that the in-situ *wh*-phrase is interpreted via unselective binding.

Reinhart (1998), working with Minimalist assumptions, argues that unselective binding is not adequate. Reinhart first argues that there is in fact no LF *wh*-movement involved in *wh*-in-situ questions (see also Simpson 1995, 2000). Aside from the argument in relation to the non-parallelisms with respect to subjacency, she points out that given the notion of economy (Chomsky 1991), we would not expect (52) to be ambiguous:

(52) Who knows where to find what?

The in-situ *wh*-word *what* in (52) can have either embedded or matrix scope (i.e., associated with either *where* or *who*). If *wh*-movement is involved, we do not expect this since, given economy considerations, movement of *what* to the embedded SpecCP should bar further movement to the matrix SpecCP.

With no actual *wh*-movement taking place in syntax or at LF, Reinhart addresses the question of how the in-situ *wh*-words can be interpreted. Consider a *wh*-question in Mandarin:

(53) Zhang San mai-le shenme
Zhang San buy-PERF what
a. 'which x, x a book, such that Zhang San bought x'
b. 'which x, such that Zhang San bought x, x a book'

If we assume that the *wh*-word in (53) has not undergone traditional *wh*-movement at LF, the interpretation indicated in (53a) is not easily attained (regardless of whether a feature set or an operator associated with the *wh*-word moves or not). Instead, we would have (53b) (the interrogative force can be from a non-overt *wh*-particle (Cheng, 1991) or a non-overt *wh* operator (Aoun and Li, 1993b)). In other words, if an in-situ element is left in-situ and we interpret it without any extra mechanism (with simple absorption or unselective binding), then we have the restriction of the *wh*-element also in-situ. The problem that arises from this can be seen from examples such as (54).

(54) who will be offended if we invite which philosopher
  a. for which <x, y>, if we invite y and y is a philosopher, then x will be offended.
  b. Luci will be offended if we invite Donald Duck.
  c. for which <x, y>, y is a philosopher, and if we invite y, x will be offended.

Given an example such as (54), if the in-situ *wh*-phrase is interpreted in-situ, the restriction of the in-situ phrase remains in an *if*-clause, as shown in (54a). This implies that anything that is not a philosopher can be a value for *y*. This would allow (54b) to be a possible answer to the question in (54). To avoid this, the restriction of the *wh*-phrase *which philosopher* must be ''pulled out'' (as represented in (54c)).

The question that arises is how we can achieve the ''pulling out'' of the restriction without *wh*-movement. Reinhart proposes that Choice functions (i.e., functions applying to a non-empty set and yielding an individual member of the set) can achieve this. Reinhart shows that the wide scope reading of existentials can be explained by quantification over choice functions (since the variable associated with the Choice function can be bound arbitrarily far away; see Reinhart, 1998 for details). By extension, since *wh*-phrases are existential quantifiers, the same mechanism can be applied. (54) then would have the informal representation (55a); the semantic representation is indicated in (55b), from Reinhart (1998: 41, ex. (24b, c)).

(55) a. for which <x, f>, if we invite f(philosopher), x will be offended
  b. {P | (∃<x, f>) (CH (f) & P = ^ ((we invite f(philosopher)) → (x will be offended)) & true (P))}.

Reinhart further argues that the argument-adjunct asymmetry mentioned above should be considered an argument-adverbial asymmetry. Though both *how* and *what way* are adjuncts (syntactically and semantically), only the adverbial adjunct *how* leads to a *wh*-island violation in (56).

(56) a. *who fainted when you behaved how?
  b. who fainted when you behaved what way?

To explain this contrast, Reinhart claims that *wh*-adverbials differ from *wh*-NPs in that (i) the former does not have an N-set (and thus no N-role or variable) and (ii) they denote functions ranging over higher-order entities. In other words, *wh*-adverbials cannot be interpreted via choice functions, and are therefore unable to be interpreted in-situ (and must be interpreted in SpecCP). This, according to Reinhart, explains why sentences such as (57) are ungrammatical:

(57) *who arrived why?

Note however that it is not the case that *wh*-adverbials can never stay in-situ. In Chinese/Japanese, *wh*-adverbials can stay in-situ just as *wh*-arguments. Thus, though Reinhart may be correct that *wh*-adverbials have no N-set, this may not be the reason why (57) is ungrammatical.

Tsai (1994), also argues for an argument-adverbial distinction. However, he argues that though *wh*-arguments do not undergo covert *wh*-movement, *wh*-adverbials do.

The alternatives to LF *wh*-movement proposed have in fact shown that simple covert *wh* movement is not enough. In particular, there are different types of *wh*-in-situ which warrant different treatments. This is the topic that I will turn to in the last section. Before I discuss the typology of *wh*-in-situ, I would like to note that given the copy theory of movement, a possible direction for *wh*-in-situ is that the in-situ effects arise because the lower copy is pronounced instead of the higher copy (see among others Bobaljik, 2002, Nissenbaum, 2000 and Pesetsky, 1998). However, such an account is not immediately workable for *wh*-in-situ because of the possible asymmetries between moved *wh*-constructions and *wh*-in-situ constructions. Nevertheless, only further research in this area will reveal whether or not this is a worthwhile direction for research on *wh*-in-situ.

5. Types of *wh*-in-situ

From the discussion above, we have encountered various types of *wh*-in-situ, e.g., D-linked vs. non-D-linked, *wh*-arguments vs. *wh*-adverbials, Japanese *wh*-in-situ vs. Chinese *wh* in-situ. Recent works (since late 90's) start to take the direction that there are indeed different types of *wh*-in-situ, and that they warrant different treatments: covert phrasal movement, no movement, feature movement. In this section, I briefly discuss some of the issues involved.

5.1 Covert movement: phrasal or featural?

As we have seen above, many arguments have been put forth against covert *wh*-movement. This essentially concerns covert **phrasal** *wh*-movement. Chomsky (1995) argues that covert movement is in fact feature movement (since at LF, there is no reason to pied-pipe the category). In other words, for Chomsky, there is no longer the possibility of covert

''phrasal'' movement. However, several recent proposals argue for treatments which differentiate between covert phrasal movement and covert feature movement. The question then is whether there are in fact arguments to support the claim that covert movement is not just feature movement.

Pesetsky (2000) offers such an argument. He first reviews arguments concerning Antecedent Contained Deletion (ACD) constructions which show that covert phrasal movement must take place to provide a proper antecedent. Consider a classic case such as (58).

(58) a. Mary [$_{vP}$ invited [$_{DP}$ everyone that I did [$_{vP}$ Δ]]]
b. [$_{DP}$ everyone that I [$_{vP}$ invited t]] [Mary [$_{vP}$ invited t]]

In (58), the quantificational DP *everyone that I did* undergoes (covert) phrasal movement (in this case QR). After QR, the elided VP can take the VP *invited t* as its antecedent. ACD constructions which can successfully resolve the ellipsis site can thus be used to test whether or not covert phrasal movement has taken place. Some examples involving ACD showing that *wh*-in-situ in multiple questions in English involves covert phrasal movement can be found in Fiengo and May (1994):

(59) a. Which girl invited which student that John did? (F&M, 1994, 242)
b. Which spymaster suspected which spy that Angleton did?

In both (59a) and (59b), since the VP ellipsis site can be resolved, one can argue that covert phrasal movement of the DP headed by *which*-NP has taken place. In other words, sentences such as (59a,b) argue for covert phrasal movement of *wh*-in-situ in multiple *wh*-questions. (See section 3.2 of Pesetsky, 2000 for arguments against a Case-based theory of ACD.)

Nissenbaum (2000) offers another argument. He re-examines *wh*-in-situ in relation to Condition A of the binding theory. One of the original asymmetries between overt and covert *wh*-movement is that covert *wh*-movement does not feed Condition A. Nissenbaum assumes, following Richards (1997), that in-situ *wh*-phrases undergo ''tuck-in'' adjunction (that is, adjoined elements do not become the outer Spec but the inner Spec). By taking into consideration the tuck-in possiblity as well as movement through intermediate vPs, Nissenbaum shows that covert *wh*-movement in fact feeds Condition A (data from Nissenbaum, 2000).

(60) a. Who$_i$ thinks Mary was looking at *which picture of himself$_i$*?
b. *Who$_i$ thinks Mary was looking at a picture of himself$_i$?

(61) a. *Which boy* thinks Mary$_j$ wants him to buy which picture of herself$_j$?
b *Which boy thinks Mary$_j$ wants him to buy a picture of herself$_j$?

The in-situ *wh*-phrases in (60) and (61) undergo covert *wh*-movement and tucks-in under the matrix *wh*-phrases. In (60a), *himself* is licensed in the vP associated with the matrix verb *think* while in (61a), *herself* is licensed in the vP associated with *want*.

In view of Pesetsky (2000) and Nissenbaum (2000), it is clear that covert phrasal movement of *wh*-in-situ elements does exist. See also Cheng and Rooryck (2002) who argue that the focus-licensed *wh*-in-situ in European Portuguese (Setubal dialect) undergoes covert phrasal movement (see section 2.2 above).

Let us now turn to the question of whether or not there is any evidence that in-situ *wh* elements undergo anything other than covert phrasal movement. Pesetsky (2000) argues that there is. Here I briefly go over his arguments (a) that in some cases of *wh*-in-situ, covert phrasal movement does not take place, and (b) that there is feature movement of in-situ *wh* elements. Consider first (62a) (example from Pesetsky, 2000, p. 31, ex. 61a).

(62) a. *I need to know which girl Sue ordered [which boy that Mary (also) did Δ] to congratulate ___.
b. I need to know which girl ___ ordered [which boy that Mary (also) did Δ] to congratulate Sarah.

Recall from the discussion above that covert phrasal movement resolves ACD (see also the example in (62b)). In (62a), we have another case of ACD involving *wh*-in-situ, but in this case, the ACD is not resolved (note that superiority cases involving D-linked *wh*-phrases are usually only marginal, and not ungrammatical). What is the difference between this case and the previous cases discussed? (62a) involves a superiority violation; the *wh*-phrase which is generated higher in the structure (termed wh$_1$ by Pesetsky) is not moved, but a lower one (wh$_2$) is. Pesetsky argues that in such cases, the wh1 does not undergo covert phrasal movement.

The question that arises is whether or not wh$_1$-in-situ undergoes any movement at all. Here the argument that Pesetsky provides is a bit intricate. I'll present an outline of the argument here and readers who are interested in the details should consult the work.

First, as Richards (1997) shows, in Bulgarian, which has multiple *wh*-fronting, in multiple questions involving more than two *wh*-phrases, the order of the second and the third *wh* phrase is free (i.e., wh$_1$-wh$_2$-wh$_3$ or wh$_1$-wh$_3$-wh$_2$). This, according to Richards, is because Attract Closest only constrains movement once (i.e., only wh$_1$). In English, a similar pattern can be found, as shown in (63) and (64). Note that superiority effects disappear when more than two *wh*-words are involved.

(63) a. What did who give to whom?
b. ?Who did who give what to?

(64) a. ?Who did who persuade to buy what?
b. What did who persuade whom to buy?

Pesetsky argues that given the fact that (63) and (64) are all grammatical, the *wh*-word *who* (i.e., wh_1) must have already checked the *wh*-feature in C^0 (and thus have satisfied Attract Closest). And since *who* certainly does not undergo overt *wh*-movement, and also not covert phrasal movement (because of (62)), feature movement must have taken place.

Pesetsky also notes that intervention effects (involving quantifiers and negation) can probably be used as diagnostics for feature movement. Cheng and Rooryck (2000) have used intervention effects to argue that in French *wh*-in-situ, feature movement is involved. Cheng and Rooryck (2002) take one step further and show that given the different types of *wh* in-situ in European Portuguese, only one type (in embedded questions with *se* 'if') is sensitive to intervention effects (and thus involves feature movement). See also Cheng and Rooryck (2002) for a discussion of *wh*-adverbials in Chinese showing that feature movement is involved.

If these results are interpreted correctly, then there is indeed feature movement, which is different from covert phrasal movement (because of intervention effects and Condition A effects). Chomsky (2001b) argues for the elimination of feature movement. However, if the results discussed above are sustained, then feature movement cannot be eliminated from the computational system. One might wonder whether the relation Agree can replace feature movement. I am of the opinion that it cannot, because Agree is the most basic relation (before any movement takes place, Agree has to take place first). If feature movement is sensitive to intervention effects, it belongs to a subset of relations involving Agree (since Agree itself cannot be sensitive to intervention effects).

5.2 How many types?

In the above discussion, we have looked at *wh*-in-situ from the licenser perspective as well as from the perspective of the *wh*-phrases themselves (i.e., movement possibilities). From the licenser point of view, we have the following possibilities: *wh*-phrase, Q-particle, defective Q, and focus. From the movement possibilities, we have seen *wh*-in-situ with covert phrasal movement, *wh*-in-situ with covert feature movement, and *wh*-in-situ without movement. The question is whether the licenser of *wh*-in-situ ''dictates'' the movement possibility. From the summary table in (65), it appears that the licenser cannot completely determine the movement possibilities:

(65)

	Licenser	Movement
Multiple questions/EP matrix *wh*-in-situ	*wh*-phrase/Focus	Phrasal movement
D-linked wh-phrases/ Chinese *wh*-in-situ (arg)	*wh*-phrase/Q particle	No movement
French *wh*-in-situ/ English wh_1/ Chinese *wh*-in-situ (adv)	defective Q/ *wh*-phrase/ Q particle	Feature movement

It appears to be the case that licensers do play a role, but the properties of the *wh*-phrases also play a role. The availability of certain licensers determines whether or not a language has extra types of *wh*-in-situ (aside from *wh*-in-situ in multiple questions). For instance, French has a defective Q-morpheme, which allows French to have matrix *wh*-in-situ while European Portuguese also allows Focus to license *wh*-in-situ.

Licensers are not, however, the only determining factor in the types of *wh*-in-situ. Take Chinese as an example. The availability of Q-particles in Chinese determines that Chinese allows *wh*-in-situ in matrix and embedded questions. But *wh*-arguments and *wh*-adverbials differ because *wh*-arguments in Chinese are not operators.

In short, the movement possibility of in-situ *wh*-phrases is determined by a combination of factors. From the movement possibilities, it appears that we only have limited types (three, if we are on the right track regarding covert movement).

From the discussion above, one possible extra case involves languages like Japanese, which appears to move an operator out of the *wh*-phrase. Future research will show whether this type can be subsumed under one of the three types mentioned above.

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