Multiple Movement AND D-LINKING*

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aims to resolve problems with multiple movements of *wh*-phrases,
particularly, in Bulgarian. The topic includes discussions of (i) why and
how multiple movements are possible, (ii) what kind of movement they
are, that is, whether they are WH movement as Pesetsky (2000) argues
or focus movement as Bošković (1998) claims, and (iii) why D-linked
wh-phrases can remain in situ. I will argue that multiple movement of
wh-phrases is not WH but focus movement and will show that D-linked
wh-phrases can omit their WH features due to pragmatic support and,
because of this, they can escape overt movement.

Key words: D-linking, Focus, Multiple movement of *wh*-phrases

1. Introduction

Here I would like to discuss the syntactic mechanism of multiple
movement. As Rudin (1988) has shown, *wh*-phrases in Bulgarian are
all raised to spec of CP. But the notion of multiple movement has been
regarded as problematic in the literature. As we will discuss in detail
later, Chomsky (1995) claims that when an *attracter* has a strong
feature, a phrase is raised to it checking the strong feature. If this is
the case, there should not be any multiple movement because movement
of one phrase should be sufficient to check the strong feature of
attracter. Thus multiple movement poses a theoretical problem. What
is worse, it is not clear whether multiple movement of *wh*-phrases is
due to WH (cf. Pesetsky (2000)) or focus movement (cf. Bošković
(1998)). This is mainly because there are two contradictory factors
involved. The first factor is that D-linked *wh*-phrases can remain in
situ in English and Bulgarian even when they are expected to move.

For example, as I will discuss later, D-linked *wh*-phrases can avoid the Superiority condition in English. In addition, D-linked *wh*-phrases do not have to move in multiple-*wh* questions in Bulgarian as long as at least one *wh*-phrase is raised to CP. But every non-D-linked *wh*-phrase in the same interrogative clauses must be raised to CP in Bulgarian as Rudin (1988) shows. This factor may suggest that D-linked *wh*-phrases somehow can cancel WH movement. If this is correct, then we should claim that multiple movement of *wh*-phrases in Bulgarian is due to WH movement as Pesetsky (2000) does. However, the other factor suggests otherwise. Empirically speaking, languages which show overt focus movement also show multiple movement of *wh*-phrases (e.g. Imbabura Quechua, Serbo-Croatian, and Bulgarian) while languages which do not have overt focus movement exhibit single movement of *wh*-phrase (or no movement). This fact supports that multiple movement of *wh*-phrases is caused by focus as Bošković (1998) claims. Therefore we are in a dilemma. In this paper I will claim that multiple movement of *wh*-phrases is due to focus movement as Bošković (1998) argues and will present solutions to problems which may arise from this claim. For the sake of exposition, I concentrate on movement of *wh*-phrases, particularly, in Bulgarian. This paper is organised as follows. In the first two sections I will compare Pesetsky (2000) and Bošković (1998) and present problems with these approaches. In the third section, I will introduce Pesetsky and Torrego (2000), whose framework makes it possible to initiate multiple movement. I will also discuss why there is only one WH movement per interrogative clause here, which accounts for single movement languages such as German and English. Then I will argue that D-linked *wh*-phrases can omit WH features and WH features are contrastive-focus features. In this way we can resolve the above contradictory situation: multiple movement of *wh*-phrases are focus movement and WH features are focus features.

2. The multiple movement of *wh*-phrases is WH movement: Pesetsky (2000)

Pesetsky (2000) argues that there are three kinds of complementiser: $C_{0\text{-spec}}$, $C_{1\text{-spec}}$, and $C_{m\text{-spec}}$. These complementisers allow a different number of spec positions. For example, $C_{0\text{-spec}}$ does not provide any spec position, which implies that no *wh*-phrase moves to C. So, he thinks that in-situ languages such as Japanese employ this complementiser in the case of *wh*-questions. $C_{1\text{-spec}}$ generates one spec position, which implies that one *wh*-phrase must move to the spec, and Pesetsky argues that German, where one and only one *wh*-phrase is raised every time, is such an example. Finally $C_{m\text{-spec}}$ prepares more than one spec position. Thus more than one *wh*-phrase must move if a language employs this complementiser. He claims that Bulgarian can have this complementiser, so that every *wh*-phrase goes through WH movement in this language. But there are a few problems with this analysis. First, Pesetsky (2000) argues that in the case of multiple-*wh* questions, $C_{m\text{-spec}}$ must be introduced, whereas in the case of single-*wh* questions, $C_{1\text{-spec}}$ must be employed in a language such as Bulgarian. If this rule is violated under normal situations, it causes ungrammaticality. However, it is very difficult to implement this idea. For example, how can we guarantee that a derivation which includes more than one *wh*-phrase and $C_{1\text{-spec}}$ causes a crash in Bulgarian? At least, the requirement that only one spec position is generated and filled with a *wh*-phrase in CP can be satisfied with the overt movement of one *wh*-phrase. Then the rest of the *wh*-phrases initiate feature movement, which adjoin to heads, so that it does not need spec positions[1]. In this case, it should be grammatical, but it is not.

Secondly, relevant to the first problem, $C_{m\text{-spec}}$ itself does not require that every *wh*-phrase go through WH movement, but it instead demands that more than one *wh*-phrase do so. Thus we expect that if there are more than two *wh*-phrases in a single question in Bulgarian,

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1) I do not consider feature movement here. See Pesetsky (2000) for details

wh-phrases except the first two can basically stay behind. However, as Pesetsky notices, this is not the case. Examine the following sentences:

(1) (from Pesetsky (2000: 21))

(a) Koj na kogo kakvo s kakvo napisa? [all *wh*-phrases move]
who to whom what with what wrote
'who wrote what to whom with what?'

(b) ?Koj na kogo kakvo napisa s kakvo? [3 out of 4 *wh*-phrases move]

(c) ???Koj na kogo napisa kakvo s kakvo? [2 out of 4 *wh*-phrases move]

(d) **Koj napisa kakvo na kogo s kakvo? [1 out of 4 *wh*-phrases moves]

Suppose, as Pesetsky argues, $C_{m\text{-}spec}$ must be employed in multiple-*wh* questions. Then, the ungrammaticality of (d) is explained because more than one spec position must be created in CP. In contrast, though (b) and (c) satisfy the requirement that more than one spec position should be filled with *wh*-phrases, they are marginal. Somehow, against his prediction, every *wh*-phrase must move as in (a). Furthermore, as the grammatical difference between (b) and (c) suggests, the more *wh*-phrases are left behind, the more deviant the sentence becomes. This seems to imply that it is not a complementiser but *wh*-phrases that are causing the ungrammaticality as Bošković (1998) argues, whose proposal we will see below. To explain this problem as well as the first one, Pesetsky stipulates that as general preference every *wh*-phrase in a multiple-*wh* question moves. However, it is not clear why this is so.

    The third problem is that, as Bošković (1997) and Pesetsky (2000) claim, the ungrammatical sentences in (1) becomes grammatical if those in-situ *wh*-phrases are D-linked (Discourse Linked, see Pesetsky (1986, 87)). Pesetsky (2000) considers that the reason for this is either that D-linked *wh*-phrases somehow nullify the requirement of $C_{m\text{-}spec}$ or that D-linked *wh*-phrases somehow allow $C_{1\text{-}spec}$ to be employed instead of

C_{m-spec}. Neither of the reasons is convincing. Nevertheless, this is the main reason why one may think that multiple movement of *wh*-phrases is WH movement. This is because it is true that D-linked *wh*-phrases can avoid overt movement. One example is Bulgarian, where every non-D-linked *wh*-phrase must be overtly raised. D-linked *wh*-phrases can remain in situ, so this suggests that D-linked *wh*-phrases can escape overt movement. The other example is the cancellation of the Superiority effect in English. Examine the following examples:

(2) (from Pesetsky (1987: 104))
   (a) Who did you persuade t to read what?
   (b) ?? What did you persuade who(m) to read t?

(3) (from Pesetsky (1987: 106))
   (a) Which man did you persuade t to read which book?
   (b) Which book did you persuade which man to read t?

The Superiority effect says that the closest *wh*-phrase to CP must be raised in English. Thus, (2)(b) is ungrammatical because the effect is violated. However, as (3)(b) shows, D-linked *wh*-phrases are not subject to the Superiority effect. This may suggest that D-linked *wh*-phrases can avoid overt movement in English as in Bulgarian. These two phenomena in Bulgarian and English can be reasonably explained in the same manner once we assume that D-linked *wh*-phrases can avoid WH movement. If this is the case, it is natural to claim that multiple movement of *wh*-phrases is due to WH movement as Pesetsky argues. (But I will argue that this is not the case below.)

   Above we have seen Pesetsky's (2000) account of why multiple movement of *wh*-phrases takes place in languages such as Bulgarian. He argues that the reason is due to the selection of complementisers, more precisely, C_{m-spec}, which requires that more than one spec should be generated, hence multiple movement of phrases follows. Thus, if multiple movement of *wh*-phrases does not take place in the case of

C_{m-spec}, ungrammaticality follows. However, as we have seen above, the ungrammaticality cannot totally be due to complementisers because the more *wh*-phrases are in situ, the more deviant the sentence becomes, which seem to suggest that it is *wh*-phrases, not complementisers, that cause multiple movement of *wh*-phrases. Next we will consider Bošković (1998), who attributes the existence of multiple movement to (strong features of) *wh*-phrases, not complementisers.

3. The multiple movement is due to focus movement: Bošković (1998)

Bošković (1998) argues that there is, in fact, just one WH movement per interrogative clause in Bulgarian and the rest of the movements of *wh*-phrases are due to focus movement. He presents two reasons for this. The first reason is that, following Chomsky (1995) in assuming that a strong WH-feature of C causes overt movement of a *wh*-phrase, Bošković argues that just raising one *wh*-phrase is sufficient to check off the strong feature of C. Therefore it is not the strong feature of C but something else that initiates the rest of the movements of *wh*-phrases to C. Thus, English and German, where just one *wh*-phrase is raised, are standard cases and Bulgarian, where every *wh*-phrase is raised, is an exceptional one. The second reason why Bošković thinks that some of multiple movement are focus movement is the following. On the basis of Serbo-Croatian, where he thinks that every *wh*-phrase goes through focus movement and this movement is not subject to the Superiority effect, he argues that WH movement is sensitive to the Superiority effect whereas focus movement is not (see also Rudin (1988)). The Superiority effect, which is originally presented in Chomsky (1973), is explained by the economy principle, *Attract the closest*, under the present interpretation. Thus, the effect says that the closest *wh*-phrase to C must be attracted (first). Examine the following Serbo-Croatian examples:

(4) (from Bošković (1999: 163))

  (a) Ko je koga vidio
  who is whom seen
  'Who has seen whom?'

  (b) Koga je ko vidio

  (c) Ko kako udara Ivana
    who how   hits Ivan
    'Who hits Ivan how?'

  (d) Kako ko udara Ivana

As (4) shows, Serbo-Croatian is not subject to the Superiority effect in short-distance matrix questions.   In addition, Bošković considers that multiple-movement of *wh*-phrases in Serbo-Croatian is due to focus movement.   This is due to the fact that *wh*-phrases generally cannot remain in situ even on the echo question interpretation in Serbo-Croatian (cf. Bošković (1997)).   Thus he concludes that movement of *wh*-phrases is not necessarily an instance of WH movement. Furthermore, following Stjepanović (1998), Bošković considers that contrastive-focused phrases must move overtly in Serbo-Croatian and *wh*-phrases are contrastive-focused.   Hence, he reaches a conclusion that the movements of *wh*-phrases in (4) are focus movements and focus movements are not subject to the Superiority effect.

  On the basis of these findings, Bošković argues that the first *wh*-phrase, which he considers goes through WH movement, is subject to the Superiority effect, but the rest of *wh*-phrases, which he considers adopt focus movement, are not in Bulgarian.   These are illustrated as follows:

(5) (from Bošković (1999: 165))

    (a) Kogo kak e tselunal Ivan
      whom how is kissed Ivan
      'How has Ivan kissed whom?'

    (b) *Kak kogo e tselunal Ivan

(6) (from Bošković (1999: 165))
>   (a) Koj kogo kak e tselunal
>   who whom how is kissed
>   Who has kissed whom how?'
>   (b) Koj kak kogo e tselunal

(5) shows that in accordance with the Superiority effect, the first *wh*-phrase, which is the closest to CP, must be raised to CP first and then the second *wh*-phrase is raised. I do not question whether the second *wh*-phrase is moved to a newly created spec position between the first *wh*-phrase and the C (cf. Richards (1997)) or it is adjoined to the first *wh*-phrase (cf. Rudin (1988)) in this paper. But I assume that a phrase which is attracted first ends up being in a higher position than one which is attracted to the same functional head later in a derivation and this assumption is compatible with either of the two proposals above. Thus, the ungrammaticality of (b) in (5) is due to the reason that "kak" (how), which is not the closest to C, is attracted first to the C violating the Superiority effect. Interestingly, (6) shows that the Superiority effect does not need to be observed in the case of the second *wh*-phrase and ones after. Thus, as long as the closest *wh*-phrase, "koj" (who), is attracted to C first, the order of raising the second and the third *wh*-phrase does not matter as in (a) and (b) of (6). Based on this, Bošković (1998, 99) concludes that the movements of *wh*-phrases except one are focus movements.

   Because of the two reasons above, Bošković concludes that even Bulgarian has just one WH movement per question like German and English, and the rest of the movements are due to focus movements. Empirically this proposal seems to be supported: languages which show multiple-movement of *wh*-phrases always have focus movements (e.g. Bulgarian, Serbo-Croatian, and Imbabura Quechua). However, as he admits, it is difficult to implement focus movements syntactically. Below I will show problems with Bošković's analysis including the implementation problem.

   It seems to be the case that multiple movement of *wh*-phrases are

due to focus movement except one WH movement in Bulgarian.   One possible implementation of this idea is to posit the strong focus feature in C, but we expect that just raising one *wh*-phrase is sufficient to check off the strong feature of C, which is in conflict with the fact that every *wh*-phrase must move to CP in Bulgarian.   Furthermore, we have seen above that the more (non-D-linked) *wh*-phrases are in situ, the more deviant the sentence becomes in Bulgarian.   Accordingly, it is likely that it is not a feature of C but those of *wh*-phrases that cause multiple movement.   On the basis of this, Bošković (1998) argues that every *wh*-phrase has a strong focus feature.   Strong features must be deleted with checking, so that categories with the features must initiate movement.   However, according to Chomsky (1995), it is not *attractees* but *attractors* that have strong features, so a problem may arise if we assume that *wh*-phrases, which are *attractees*, have a strong focus feature.

Even if this theoretical problem is somehow resolved, an empirical problem arises.   As we have already discussed, it is possible to keep *wh*-phrases in situ if (i) at least one *wh*-phrase is raised to CP and (ii) in-situ *wh*-phrases are D-linked.   However, it is not clear why D-linking has something to do with focus movement under Bošković's approach.   In other words, his account predicts that every *wh*-phrase must move even if they are D-linked.   Suppose that D-linking has something to do WH-features (as we will show it is the case).   Then, it seems that WH-features are not independent of focus features, but they are closely related unlike Bošković's claim.   Thus, the problem of D-linking is problematic for Bošković (1998).   However, his main argument is still valid: languages which show multiple-movement of *wh*-phrases always have focus movements.

We summarise problems with multiple movement as follows.   We would like to explain what causes multiple movement of *wh*-phrases in Bulgarian.   There are a few problems.   The first problem is complicated due to two seemingly conflicting factors.   First, we like to avoid assuming that *attractees*, that is, *wh*-phrases, cause multiple movement because, according to Chomsky (1995), it is *attractors*, that is,

complementisers that cause movement. However, we have also observed that the more (non-D-linked) *wh*-phrases are in situ, the more deviant the sentence becomes in Bulgarian, which seems to suggest that it is in fact *attractees*, that is, *wh*-phrases, that cause movement. This is the first problem. The second problem is why D-linked *wh*-phrases can cancel overt movement. We have learned that the violation of the Superiority effect is lifted in English when *wh*-phrases are D-linked. This suggests that D-linked *wh*-phrases can escape WH movement. Furthermore, D-linked *wh*-phrases can remain in situ in Bulgarian, where every *wh*-phrase is expected to be raised. Thus, this may support Pesetsky (2000) in assuming that multiple movement of *wh*-phrases in Bulgarian is WH movement. This is because we can explain the English and the Bulgarian phenomena with the same account, which says that D-linked *wh*-phrases can cancel WH movement. In contrast, if Bošković (1998) is correct in saying that multiple movement is caused by focus movement, we have to argue that D-linked *wh*-phrases can avoid WH and focus movement. This claim, at first glance, may sound unattractive either because we must present two independent accounts for the two distinct phenomena or because we must discover that WH and focus features are the same kind. I will argue below that WH features are, in fact, focus features, so that with certain modifications, Bošković's (1998) proposal can be made plausible.

4. A new proposal

4.1 Pesetsky and Torrego (2001)

Before presenting my proposal, I would like to introduce Pesetsky and Torrego (2001) (henceforth, P&T). P&T argue that C has an interpretable Q and an uninterpretable WH feature whereas a *wh*-phrase has an uninterpretable Q and an interpretable WH feature. Considering that removing uninterpretable features is the main task of syntax, there must be some kind of interaction between the C and the *wh*-phrase

because they have complementary features with regard to Q and WH. We already know that movement does the job. Here P&T assume that uninterpretable features of *attracters*, in this case, the WH of the C, have the EPP features as their sub-component[2]. The EPP features here can be compared to the strong features in Bošković (1998) in that they cause overt movement.   In this system, the EPP features are never generated in *attractees* following Chomsky (1995) in that it is always *attracters* that cause movement.

This relation between *attracters* and *attractees* in general can be expressed as follows:

(7) step1: attracter ...   attractee   ...   ?
             [+A, uB(EPP)]   [uA, +B]
             ——————

    step2: attractee$_i$ attracter ...   t$_i$ ...   ?
             [uA, +B][+A, uB(EPP)]
                                               ——

In (7), "u" means uninterpretable.   Due to the EPP of "uB", the *attractee* must be overtly raised to C as in step 2.   "uA" indicates that this uninterpretable "A" feature is checked and becomes syntactically null.   There are two reasons why I adopt this framework here.   The first reason is that the fact that both *attracters* and *attractees* have uninterpretable features nicely explains why at least one *wh*-phrase must be raised every time.   Consider the following examples:

(8) *Ivan e tselunal kogo
    Ivan is kissed whom
    'Whom has Ivan kissed?'
(9) *John saw which student?

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2) In fact, Pesetsky and Torrego (2001) claim that there are two kinds of EPP: +EPP andEPP.   He distinguishes movement languages from in-situ languages with the two EPPs.   That is, ifWH has +EPP, WH movement takes place like English and Bulgarian, but if it hasEPP, no WH movement takes place like Japanese.   However, the choice does not matter because we are discussing only WH movement languages here, so I ignore the distinction in the present paper

(8) and (9) are ungrammatical unless they are echo questions.   In addition, they are not saved even if the *wh*-phrases are D-linked as in (9).   However, this fact seems to be contradictory to what I have argued above: D-linked *wh*-phrases can escape WH movement.   If we assume P&T, this problem is resolved.   In their framework, the schematic relation between C and a *wh*-phrase is represented as follows:

(10)   C   ...   ...   *wh*
    [+Q, *u*WH(EPP)]   [*u*Q, +WH]

In (10), the *wh*-phrase is raised to C due to the EPP of WH feature in C.   Because of this uninterpretable feature, at least one *wh*-phrase must be raised.   Since this is a requirement of C and this must be satisfied with the movement of one *wh*-phrase, it does not matter whether *wh*-phrases are D-linked or not.   Hence, although D-linked *wh*-phrases can avoid WH movement, at least one *wh*-phrase must be raised in order to satisfy complementisers.

The second reason why I adopt P&T is that the EPP features are sub-features of uninterpretable features in *attracters*.   This enables multiple movement to arise in principle because it is not an *attracter* but its features that have an EPP, so if the *attracter* has more than one uninterpretable feature of the same kind, multiple movement is expected to take place.   If this reasoning is correct, the multiple focus movement is no longer a problem, but it should be generally the case.   I represent the checking relation in the case of multiple focus movement in Bulgarian as follows:

(11) step 1: [$_{CP}$ C   ...   F-phrase$_1$ ...   F-phrase$_2$ ...]
    [+Q, *u*Focus(EPP), *u*Focus(EPP)] [+Focus, *u*Q]   [+Focus, *u*Q]
    step 2: [CP F-phrase$_1$ C..   t$_1$ ...   F-phrase$_2$ ...]
    [+Focus, *u*Q] [+Q, 1), *u*Focus(EPP)] [+Focus, *u*Q]
    step 3: [$_{CP}$ F-phrase$_1$ F-phrase$_2$ C..t$_1$ ...   t$_2$ ...]
        [+Focus] [+Focus, *u*Q] [+Q, *u*Focus(EPP)]

"F-phrase" represents a focused phrase.   Following P&T, the *attracter*, C, and the *attractees*, "F-phrase$_1$" and "F-phrase$_2$", have complimentary features with respect to Q and Focus.   (I will explain these two features later.)   In step 1, the C has two "uFocus(EPP)", so the derivation will succeed if two focused phrases are overtly raised to the C.   In step 2, following the economy principle or the Superiority effect, "F-phrase$_1$" is raised to C first checking Q and Focus features.   Then in step 3, "F-phrase$_2$" is raised and all remaining uninterpretable features are checked.   If P&T's framework is correct, we can account for the existence of multiple movement in a straightforward manner. This is because what causes overt movement is not an *attracter* itself but the EPP of its features.   Thus, if an *attracter* has more than one uninterpretable feature, multiple movement should take place.   In addition we can capture the generalisation that the more non-D-linked *wh*-phrases are in situ, the more deviant the sentence becomes in Bulgarian.   This is because unless *wh*-phrases are overtly raised, their uninterpretable Q features will not be checked and this causes ungrammaticality.   Hence the degree of deviancy changes according to the number of not raised *wh*-phrases.   In this way we can explain the two conflicting factors.

   If the account above is correct, we have to restate the problem mentioned earlier.   We should not ask why multiple movement takes place in the case of focus movements.   Rather we should consider why multiple movement does not take place in the case of *wh*-questions.   In a similar manner to the derivation of focus movement, we expect that C has more than uninterpretable WH feature in the case of a multiple-*wh* question.   If so, multiple WH-movement (as well as multiple focus movement) should be possible.   But this is not the case: one and only one *wh*-phrase must be raised in a multiple-*wh* question, that is, there is always only one WH-movement per (indirect or direct) question. Bulgarian is not an exception to this generalisation because we have seen that, following Bošković (1998), just movement of one *wh*-phrase counts as WH movement and the rest of the *wh*-phrases go through focus movement.   Thus, we have to seek for an explanation of why

multiple movement of *wh*-phrases does not take place in a multiple-*wh* question.

4.2 The reason why there is no overt multiple WH movement

4.2.1. Answerability

   According to Comorovski (1989) and Erteschik-Shir (1997), in the case of multiple-*wh* questions, at most one *wh*-phrase can be non-D-linked.   For example, when there are two *wh*-phrases in a question, at least one *wh*-phrase must be D-linked.   This is because a non-D-linked *wh*-phrase provides a set of infinite propositions.   But before explaining this further, let me explain the meaning of questions. Following Hamblin (1973), I assume that the meaning of a *wh*-question is a set of propositions.   Thus, the meaning of a question "What did Mary buy" is as follows:

   (12) Mary bought *a*1
         Mary bought *a*2,
         Mary bought *a*3
            ...
                  where *a* is a thing.

What a listener is expected to do is to pick up true propositions out of the set and utter them as an answer.   Thus, if Mary really bought *a1* and *a2*, the listener will say "Mary bought *a1* and *a2*" as an answer. Bearing this in mind, consider the following sentence:

   (13)Who bought what?

In (13), it is reasonable to think that both "who" and "what" provide a set of alternatives individually because they are contrastive-focused (e.g. Rooth (1985, 92, 96)).   In other words, "who" generates a set of people and "what", a set of things.   Suppose the alternatives of "what"are

inserted to (13). Then we have the following set of propositions:

(14)   {who bought x_1,
        who bought x_2,
        who bought x_3,
            ...   } where x is a thing.

When the alternatives of "who" are inserted, we have the following set of sets of propositions:

(15)   {y_1 bought x_1, y_1 bought x_2, y_1 bought x_3, ...
        y_2 bought x_1, y_2 bought x_2, y_2 bought x_3, ...
        y_3 bought x_1, y_3 bought x_2, y_3 bought x_3, ...
            ...   } where y is people.

The hearer of (13) must choose true propositions from (15) as before, and this can be done by picking up true propositions from each line. That is, s/he needs to answer what y_1 bought, first. Suppose y_1 really bought x_1.   Then the listener utters "y_1 bought x_1" as a part of the whole answer.   Next s/he must answer what y_2 bought.   Suppose y_2 bought x_2.   Then s/he should say so as another part of the answer. The listener must continue answering in this way until s/he reaches the end of the set of y.   If s/he finishes answering every line of (15), then that is the end of answering. Suppose "who" is non-D-linked.   Then the set of "y" is infinite, so the lines in (15) are infinite (see below for this reason).   This is equivalent to an infinite number of single-wh questions as in (16):

(16)   {What did y_1 buy?,
        What did y_2 buy?,
        What did y_3 buy?,
            ...   }

(16) is equivalent to (15). Therefore, the hearer is never able to finish

answering the question. This is why Comorovski (1989) and Erteschik-Shir (1997) argue that at least one *wh*-phrase must be D-linked when there are two *wh*-phrases in a question. To paraphrase this, if there are more than one non-D-linked *wh*-phrases in a question, the question is simply unanswerable because it generates a set of infinite sets of infinite propositions. By contrast, in (15), if "who" is D-linked, the set of "y" is finite. Hence, (15) would be equivalent to a finite number of single-*wh* questions and this is possible to answer.

4.2.2. The WH absorption

Despite the answerability restriction above, we know that we can use more than one non-D-linked *wh*-phrase (e.g. who gave what to whom?) and we can answer the question. Thus, there must be a certain device which resolves this problem. This may be a WH-absorption mechanism, which changes more than one *wh*-phrase into one *wh*-operator (cf. Higginbotham and May (1981) and Huang (1982)). If a question has just one *wh*-operator, it is the same as a question with just one *wh*-phrase. If the WH-absorption is applied to (13), and hence, (15), then we would have the following set of propositions:

(17)   Which pair is true?
   $\{\{<x, y>|$ where x bought y$\} = <x_1, y_1>,$
   $\{<x, y>|$ where x bought y$\} = <x_1, y_2>,$
   $\{<x, y>|$ where x bought y$\} = <x_1, y_3>,$
   $\{<x, y>|$ where x bought y$\} = <x_1, y_4>,$
   ... $\}$ where x is people and y is a thing.

Since (17) has just one set, it is answerable. This suggests that questions like "who gave what to whom" are grammatical because of the WH-absorption.

   If this is correct, we can attribute the unavailability of multiple-*wh* movement to the WH-absorption mechanism. This is illustrated as follow. Suppose a question has two *wh*-phrases. Then it is natural

that there is more than one uWH(EPP) in C as in (18):

(18) C   ...wh$_1$ ...   wh$_2$ ...
 [+Q, uWH(EPP), uWH(EPP), ..][uQ, +WH] [uQ, +WH]

If so, every *wh*-phrase is expected to adopt overt movement. However, this is not the case.   Hence, following Huang (1982), I propose the following WH-absorption mechanism:

(19) The WH-absorption mechanism
        [uWH1(EPP), uWH2(EPP), uWH3(EPP), ...]
     → [[uWH<1, 2, 3, ... >(EPP)]

If (19) takes place in the C in (18), the EPP features are decreased to one. If this is correct and obligatory, then it is understandable that one and only one *wh*-phrase is raised overtly[3]. Since the WH-absorption is cognitively motivated, it must be a universal principle. Hence, we can confirm that movement of one and only one *wh*-phrase counts as WH movement even in a multiple-*wh* question and this is universally the case.   In contrast, there is no reason to resort to the absorption mechanism in the case of focus movement because absorption is not motivated in any way there. Thus we expect that movement of every focused phrase takes place and this is indeed the case.

    Above I have discussed multiple movement. Unlike Bošković (1998) I have shown that movement of more than one phrase which is attracted by the same functional category is possible in principle if P&T's framework is adopted. This framework also satisfies two conflicting requirements. One is that, following Chomsky (1995), it should be not *attractees* but *attracters* that cause overt movement.   The other

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    3) There are two possible analyses of in-situ *wh*-phrases.   One is that the *wh*-phrases adopt feature movement or *Agre* as Pesetsky (2000) and Pesetsky and Torrego (2001) argue.   Alternatively, the in-situ *wh*-phrases go through covert movement as Huang (1981/82 and 1982) claims.   Though I leave this unsettled here, the choice does not affect the present argument.

requirement is to explain the generalisation that the more non-D-linked *wh*-phrases remain in situ, the more deviant the sentence becomes. This generalisation seems to suggest that it is *wh*-phrases, which are *attractees*, that cause multiple movement. Thus, the two requirements seem to be contradictory to each other. However, this problem is resolved because (i) only *attracters* can have the EPP features and (ii) both *attracters* and *attractees* have uninterpretable features in P&T's framework. Therefore, the above generalisation arises not because *wh*-phrases are causing movement but because their uninterpretable features will be unchecked if they are not raised. If this is a correct explanation of multiple movement, we must reconsider the problem mentioned earlier. That is, a problem is not why multiple movement takes place in the case of focus movement but why multiple movement does not arise in the case of a multiple-*wh* question. I have attributed this phenomenon to the WH-absorption mechanism, which is cognitively necessary to make unanswerable questions answerable.

4.3. The relation between D-linking and focus movement

4.3.1 The differences between D-linked and non-D-linked *wh*-phrases

The next problem is why D-linked *wh*-phrases manage to remain in situ in Bulgarian. Before discussing this problem, let us consider what differences D-linked and non-D-linked *wh*-phrases have. The terms of D-linked and non-D-linked were introduced by Pesetsky (1986, 87). He notes that there are a few differences between D-linked *wh*-phrases and non-D-linked ones. First, when one uses D-linked *wh*-phrases, s/he knows that the domains of the *wh*-phrases are contextually defined. Pesetsky argues that "which NP" as well as heavy *wh*-phrases such as "pictures of who" are D-linked. For example, a question, "which students did you see yesterday", presupposes that there is a set of students whose members are contextually known to both speakers and listeners. Then the listeners choose the students who the speakers saw yesterday among the set because they know that the same students

must be among the set.　Thus, possible answers are limited and can be predicted in this case.　By contrast, non-D-linked *wh*-phrases do not limit their domains contextually.　Pesetsky argues that *wh*-phrases become "aggressively non-D-linked" if "the hell" is added.　For example, a question, "who the hell did you see yesterday?", presupposes that the speaker has absolutely no idea of who it could be, that is, s/he thinks that the people who the listener saw yesterday could be anyone in the world.　Hence the possible candidates for a non-D-linked *wh*-phrase are undefined, hence, infinite as we have seen above.

　Aside from the semantic difference above, Pesetsky (1987) shows a syntactic difference between the two kinds of *wh*-phrase.　He argues that D-linked *wh*-phrases can escape the Superiority violation while non-D-linked *wh*-phrases cannot.　This is illustrated as in (2) and (3), which are repeated:

　(2) (from Pesetsky (1987: 104))
　　　　　(a) Who did you persuade t to read what?
　　　　　 (b) ?? What did you persuade who(m) to read t?
　(3) (from Pesetsky (1987: 106))
　　　　　(a) Which man did you persuade t to read which book?
　　　　　(b) Which book did you persuade which man to read t?

As in (2), non-D-linked *wh*-phrases must follow the Superiority effect, that is, the closest *wh*-phrase to C, which is "who", must be overtly attracted.　But as in (3), if *wh*-phrases are D-linked, the Superiority effect seems not to be operational.　Therefore, one could raise either "which man" or "which book", the latter of which is not the closet to C, though.　Note that, in order to be insensitive to the Superiority effect, raised *wh*-phrases do not need to be D-linked as long as in-situ *wh*-phrases are D-linked.　Examine the following examples:

　(20) (from Fiengo et al (1988))
　　　　What did [people from where] buy?
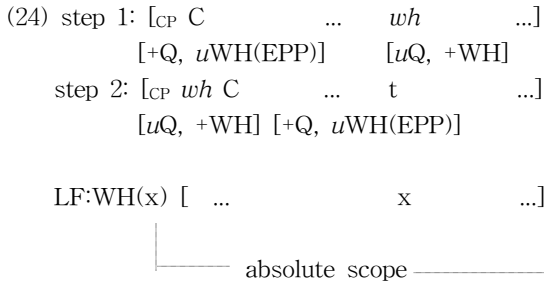　　　　cf. *What did who buy?

(21) (from Fiengo et al (1988))
　　　Who did [pictures of who] please?
　　　cf. *Who did who please?

The examples above show that the heavy *wh*-phrases, "people from where" and "pictures of who", are D-linked, so that the Superiority violation is avoided.　In these cases, it does not matter whether the raised *wh*-phrases, "what" and "who", are D-linked or not.

　Let me explain the derivation of multiple-*wh* questions again.　The following schematic derivation is thought to arise:

(22)　step 1:　C　　　　　　　　　　…　wh$_i$　　　…　　　wh$_j$
　　　　　[+Q, uWH$_1$(EPP), uWH$_2$(EPP)]　[uQ, +WH] [uQ, +WH]

　　　　step 2:　C　　　　　　　　　　…　wh$_i$　　　…　　　wh$_j$
　　　　　[+Q, uWH$_{<1,2>}$ (EPP)]　　　　　[uQ, +WH] [uQ, +WH]

　　　　step 3: wh$_i$　　C　…　　　　　　　　t$_i$　　　…　　　wh$_j$
　　　　　[uQ, +WH] [+Q, uWH$_{<1,2>}$ (EPP)]　　　[uQ, +WH]

　In step 2, the WH-absorption takes place, so that the number of the EPP decreases to one, which implies that only one overt WH movement takes place.　In step 3, following the economy principle or the Superiority effect, the closest *wh*-phrase to C, that is, wh$_i$, is raised to C.　Therefore, it is mysterious that wh$_j$ can be raised when wh$_i$ is D-linked (cf. (20) and (21)).　In other words, D-linked *wh*-phrases can avoid overt WH movement, which reminds us of the Bulgarian examples.　In Bulgarian, where every *wh*-phrase is expected to be overtly raised to C, D-linked *wh*-phrases can escape the overt movement.

4.3.2. D-linked *wh*-phrases can omit WH features

　Coming back to (22), we would like to know why the Superiority

effect disappears when *wh*i is D-linked. I argue that D-linked *wh*-phrases can optionally omit WH features. If so, the derivation will be as follows:

(23) step 1: C   ...   D-linked *wh*$_1$ ...   *wh*$_2$ ...
      [+Q, *u*WH(EPP)]   [*u*Q]   [*u*Q, +WH]
      step 2 : C   ...   D-linked *wh*$_1$ ... *wh*$_2$ ...
      [+Q, *u*WH(EPP)]   [*u*Q]   [*u*Q, +WH]
      step 3: *wh*$_2$ C...   D-linked *wh*$_1$ .. t$_2$ ...
      [*u*Q, +WH] [+Q, *u*WH (EPP)] [*u*Q]

Following P&T, I assume that the EPP is a sub-feature of uninterpretable features in *attracters*. If it is so, WH features cause overt WH movement because WH features of C have the EPP. Thus, if the D-linked *wh*$_1$ does not have +WH, C will attract the *wh*$_2$ instead. In this case, no economy principle is violated. However, two problems arise here. First, why can D-linked *wh*-phrase omit +WH?. Secondly, what happens to the D-linked *wh*1 in step 3, which still retains the uninterpretable Q feature?

   To answer the first problem, I have to explain what significance Q and WH features have. The Q features seem to be most obvious. They have a semantic function which decides absolute scope for *wh*-operators. Thus, the fact that complementisers have +Q indicates that absolute scope for *wh*-operators is defined in a way such that the domain which the complementisers c-command serves as the absolute scope for *wh*-operators. As for the WH features, I argue that they also have a semantic effect and they are equivalent to contrastive-focus features. Aside from their phonological effect, contrastive-focus features contribute to providing a set of alternatives (cf. Rooth (1985, 1992, 96)). For example, "who" generates a set of people and "what", a set of things. Considering that the meaning of *wh*-questions is the set of propositions (cf. Hamblin (1973)), the semantic side of contrastive-focus features in *wh*-phrases must have an effect on the meaning of *wh*-questions. Though I omit the detailed discussion of the semantics

of *wh*-questions, the checking relation between C and a *wh*-phrase directly contributes to the creation of the meaning of *wh*-question in the following manner:

(24) step 1: [CP C   ...   *wh*   ...]
              [+Q, *u*WH(EPP)]   [*u*Q, +WH]
      step 2: [CP *wh* C   ...   t   ...]
              [*u*Q, +WH] [+Q, *u*WH(EPP)]

      LF:WH(x) [...   x   ...]
               └──────── absolute scope ────────────┘

The step 1 and 2 are the same as before. After the Spell-Out, the semantic features will be sent to LF. There, +WH will provide a set of alternatives and +Q determines the absolute scope for +WH. Suppose that the *wh*-phrase in (24) is "who" and '... x ...' represents "Ken saw x yesterday?". Then the LF will be represented as follows:

(25) LF: Who(x)[Ken saw x yesterday]

Since the *wh*-phrase is contrastive-focused, it will provide a set of people. As a result, we have a set of propositions as in (26), which is the meaning of "who did Ken see yesterday?":

(26)   {Ken saw *a*1 yesterday,
         Ken saw *a*2 yesterday,
         Ken saw *a*3 yesterday,
            ...   } where *a* is people.

In this way, both Q and WH features help the derivation to create the meaning of *wh*-questions. If the above account is correct, both features are important. So this seems to make it implausible to argue that D-linked *wh*-phrases can omit WH features. WH features generate the

set of alternatives, so they are essential to create the set of propositions. Nevertheless, I claim that the WH features of D-linked *wh*-phrases can be omitted. This is possible because the domains of D-linked *wh*-phrases are contextually salient, so that possible alternatives can be supplied from discourse. For example, "which students" presupposes that there is a set of students assumed in a current discourse. Suppose that we are talking about students in a certain classroom and this classroom has five students. Then these five members are always available and serve as possible alternatives. Thus the D-linked wh-phrase can provide a set of alternatives without contrastive-focus features. Therefore, it is possible for D-linked *wh*-phrases to omit WH features.

The second problem is that even if D-linked *wh*-phrases can omit WH-features, they still retain uninterpretable Q features. These Q features cannot be left out because the absolute scope for each *wh*-phrase must be unambiguously determined. Consider step 3 of (23) again, which is repeated below:

(27) step 3: wh_1 C   … D-linked wh_1… t_2 …
            [uQ, +WH] [+Q, uWH (EPP)] [uQ]

A problem is how the derivation can check the uninterpretable feature of the D-linked *wh*-phrase. According to Chomsky (2000), this configuration causes ungrammaticality. This is because he assumes that in order for checking (*Agree* in his terms) to take place, both *attracters* and *attractees* must have uninterpretable features. He adds that items with uninterpretable features are "active" and only "active" items can enter the checking relationship. It is not clear why Chomsky means by "active". But suppose that *attracters* which are at the top of trees are always active. This seems to be reasonable because some optional elements (e.g. adverbs) can merge with a head of a tree even when the head seems not to have uninterpretable features, and because *Merge* is thought to be one instance of *Agree* (cf. Chomsky (2000)).[4] Then, as long as *attractees* have uninterpretable features, *Agree* takes

place.   Thus, the uninterpretable feature of the D-linked *wh*-phrase can enter the checking relationship with C, so that it will be checked off in (27).

Above we have seen that the domains of D-linked *wh*-phrases are contextually salient, so that they do not need to generate a set of alternatives.   Hence D-linked *wh*-phrases can omit WH features.   Due to this condition, it is now understandable that D-linked *wh*-phrases are not subject to the Superiority condition, in other words, they can escape WH movement.   Nevertheless, this argument still cannot explain why D-linked *wh*-phrases can remain in situ in Bulgarian because, as Bošković (1998, 99) shows, multiple movement is due to not WH but focus features.   Therefore, even if WH features can be omitted in D-linked *wh*-phrases, these *wh*-phrases are still expected to move to CP because they also have focus features.   So far I have been assuming that focus features in Bulgarian are not information but contrastive focus.   Echepare (1996), among others, argues that information focus movement fronts phrases which are new information, while contrastive-focus is quite distinct from new/old distinction (thought the two often overlap).   Instead, contrastive-focused phrases, which provide a set of alternatives following Rooth (1985, 1992, 1996), are raised. Suppose that the focus features of *wh*-phrases are information focus features against the present proposal.   At first glance, this seems to be able to explain why D-linked *wh*-phrases can remain in situ in Bulgarian reasonably.   This is because the domains of D-linked *wh*-phrases are contextually salient, so that we may regard these *wh*-phrases as old information.   Hence, D-linked *wh*-phrases do not move.   However, this is problematic because movement of D-linked *wh*-phrases is optional.   If focus features in question are information focus, we expect that D-linked *wh*-phrases remain in situ every time, but this is not the case.   Hence, I conclude that the focus features of *wh*-phrases are contrastive-focus features, which is reasonable from the discussion of the meaning of *wh*-questions.

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4) However, Cinque (1999) argues that there are even functional heads to check adverbs.   If so, the claim above does not hold.

4.3.3 WH features are made of semantic and phonological features

4.3.3.1 WH features are focus features

   Here I argue that WH features are in fact focus features, which is plausible because we have seen that WH features are contrastive-focus features providing a set of alternatives. If so, we can account for why D-linked *wh*-phrases can remain in situ in Bulgarian. This is because WH features of D-linked *wh*-phrases can be omitted. However, we have also seen that WH movement and focus movement are distinct. Thus, it seems contradictory to say that the same WH feature causes both WH movement and focus movement and that the two movements are due to different kinds of feature. However, this is not so. Remember that contrastive-focus features have two effects: phonological and semantic. The semantic one is that they provide a set of alternatives, which is necessary to make the meaning of *wh*-questions. The phonological effect is that lexical items with contrastive-focus features must receive phonological stress. This is illustrated even in English:

   (28) Only **John** passed the exam.

In (28), "John" is contrastive-focused and phonologically stressed. According to Rooth (1985, 92, 96), its interpretation is the following:

   (29)   John passed the exam,
          Mary passed the exam,
          Bob passes the exam,
                    ...   where only the first proposition is true.

Rooth argues that the reason why the set of propositions is generated in (29) is because the contrastive-focused "John" provides a set of alternatives such as "Mary", "Bob", and so on, and these alternatives are inserted into "x" of the following proposition, "x passed the exam."

This illustrates that contrastive-focus creates phonological and semantic effects. Thus, one contrastive-focus feature affects both LF and PF outputs. Accordingly, it is natural to argue that the WH features of *wh*-phrases, which are contrastive-focus features, are made of semantic and phonological features. To represent this explicitly, I use +WH$_{<LF, PF>}$ instead of +WH from now on. Equally the uninterpretable counterpart, uWH(EPP), should be changed into uWH$_{<LF, PF>}$(EPP). We know that complementisers generally have uWH$_{<LF, PF>}$(EPP) in the case of *wh*-questions. Suppose that the uninterpretable feature is split into two as in uWH$_{LF}$(EPP) and uWH$_{PF}$(EPP) in Bulgarian. Then, since uninterpretable features of *attracters* have the EPP, the same complementisers must attract *wh*-phrases overtly for two reasons: to check the EPP of uWH$_{LF}$ and that of uWH$_{PF}$. Then, it is not surprising that the same feature enters a checking relationship twice. Because of this, multiple movement arises in Bulgarian. In the case of a single-*wh* question, raising one *wh*-phrase, which has +WH$_{<LF, PF>}$, is sufficient to check the two uninterpretable features of C. But in the case of a multiple-*wh* question, every *wh*-phrase must move. As discussed in (22), because of the WH-absorption, several uninterpretable WH features in C are combined into one uninterpretable WH feature, so that the EPP is decreased to one. However, the WH-absorption applies to uWH$_{LF}$(EPP), not to uWH$_{PF}$(EPP), because it is motivated just semantically. This implies that even after the WH-absorption, several instances of uWH$_{PF}$(EPP) still remain in C. Therefore, the C ends up having one uWH$_{LF}$(EPP) and several uWH$_{PF}$(EPP). Following the economy principle, the closest *wh*-phrase, which has +WH$_{<LF, PF>}$, is raised to the C checking one uWH$_{LF}$(EPP) and one uWH$_{PF}$(EPP). Since a movement which checks uWH$_{LF}$ is semantically motivated, we regard it as WH movement. Then the movement of the closest *wh*-phrase is WH movement as Bošković (1998, 99) argues. The C still has several uWH$_{PF}$ and each of these has the EPP. Hence, the rest of *wh*-phrases must move to check them. Since these movements are phonologically motivated, we regard them as focus movement. In this way we can resolve the contradictory phenomenon, which is summarised in the

following way.   As Bošković (1998, 99) shows, WH movement and focus movement are different.   However, D-linked *wh*-phrases seem to be able to cancel both WH movement and focus movement and we have found that D-linked *wh*-phrases can omit +WH$_{<LF, PF>}$ alone, which seems to suggest that WH movement and focus movement are the same kind.   To resolve this problem, I have argued that the same feature, +WH$_{<LF, PF>}$, triggers the two distinct movements and this is possible because +WH$_{<LF, PF>}$ is made of semantic and phonological sub-features.

4.3.3.2 Separation of the semantic and phonological features of WH

   In fact, if we turn to other languages, we can find that even +WH$_{<LF, PF>}$ of *wh*-phrases can be split into +WH$_{LF}$ and +WH$_{PF}$.   Examine the following Basque sentence:

   (30) (from Ortiz de Urbina (1989: 249-252))
         ?[$_{island}$ **Zer**$_i$ t$_i$ ikusi ondoren]$_j$ joan ziren hemen-dik t$_j$?
               what   see   after   go AUX here-from
         '(Lit.) [After seeing what]j did they leave t$_j$?'
         '* What did they leave after seeing t?'

The above example shows that Basque can resort to a large-scale overt pied-piping. Interestingly, the *wh*-phrase, "zer" (what), must go through internal movement within the pied-piped phrase to initiate the large-scale pied-piping.   This shows that there are two movements involved in the case of overt pied-piping in Basque.   Here I argue that the overt pied-piping corresponds to WH movement and the internal movement, the focus movement.   It should be noted that Basque shows focus movement (cf. Echepare (1996)).   Similarly, Imbabura Quechua exhibits a large-scale pied-piping and this needs internal movement of *wh*-phrases, too.   Examine the following sentences:

   (31)   (from Cole (1982: 24))

[**ima-ta**ⱼ tⱼ randi-shka   runa-ta]-**taj**ᵢ   riku-rka-ngui tᵢ

what-ACC buy-nominalizer man-ACC-TAJ see-PAST-2

'(Lit.) [the man who bought what]ᵢ did you see tᵢ ?'

'*What did you see the man who bought?'

(32)   (from Cole (1982: 17))

  ima-ta-**taj**ᵢ   tᵢ muna-ngui?

  what-ACC-TAJ   want-2

  'What do you want?'

As (31) shows, the internal movement of the *wh*-phrase is necessary to initiate the pied-piping. One difference between Imbabura Quechua and Basque is that there is a particle, "taj", base-generated at the edges of islands in Imbabura Quechua as in (31).   But this particle directly attaches to *wh*-phrases if the *wh*-phrases are not within islands as in (32). Judging from these facts, we conclude that *wh*-phrases cause the internal movement and the particle initiates the pied-piping in Imbabura Quechua.   In addition, the fact that the particle and a *wh*-phrase stay together if the *wh*-phrase is not employed in an island suggests that the two have $+WH_{LF}$ and $+WH_{PF}$ respectively.   As predicted, Imbabura Quechua has focus movement.   Thus we can regard the internal movement as focus movement.[5] If the analysis here is correct, this is an explicit example of split WH features.   Going back to the Basque example, we conclude that there is an invisible particle which is base-generated at the edge of (the most outward) islands. $+WH_{LF}$ of this particle triggers pied-piping, which is equivalent to WH movement whereas $+WH_{PF}$ of *wh*-phrases causes the internal movement, which corresponds to focus movement.   It makes sense that the invisible particle cannot have $+WH_{PF}$ because it is impossible for phonologically null elements to have stress.   Below I will provide evidence for the

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5) What is more, Imbabura Quechua has multiple-*wh* movement like Bulgarian and Serbo-Croatian.   This independently supports that multiple-*wh* movement is due to focus movement as Bkov (1998, 99) argues.   I do not have information on multiple-*wh* questions in Basque, but I expect either it allows multiple-*wh* movement or it does not allow multiple-*wh* questions like Italian.

proposal that $+WH_{LF}$ cannot remain inside a *wh*-phrase if the *wh*-phrase is within an island.

   In the literature, however, the analysis of pied-piping and internal movement has received a different treatment.   For example, Ortiz de Urbina (1989, 90) claims that the internal movement enables the *wh*-phrase to reach the edge of the island and the WH feature of the *wh*-phrase is percolated into "ondoren" (after).   Consequently, the island itself goes through WH movement as if it is a large single *wh*-phrase in (30), which is repeated below:

   (30)   ? [$_{island}$ **Zer**$_i$ t$_i$ ikusi ondoren]$_j$ joan ziren hemen-dik t$_j$?
              what   see   after   go AUX here-from
         '(Lit.) [After seeing what]j did they leave tj?'
         '* What did they leave after seeing t?

However, as the following example shows, nothing can move out of islands in Basque (as well as in Imbabura Quechua):

   (33) (from Ortiz de Urbina (1989: 249-252))
            ***Zer**$_i$ joan ziren hemendik [ikusi t$_i$ ondoren]
            what go   AUX here-from see   after

This fact seems to cast doubt on the claim that the internal movement raises a *wh*-phrase to the edge of island.   This is because it is generally assumed that if one phrase can reach the edge of island (or *phase* in Chomsky's (2000)), it can escape the Subjacency condition (e.g. successive-cyclic movement).   If the internal movement allows this kind of movement, (33) should be grammatical.   But it is not.   Another problem is that it is not clear how his analysis of Basque accounts for the Imbabura Quechua data above, which show a slightly different phenomena.   The Quechua examples are repeated below:

   (31) (from Cole (1982: 24))

[ima-ta_j t_j randi-shka   runa-ta]-taj_i   riku-rka-ngui t_i
what-ACC buy-nominalizer man-ACC-TAJ   see-PAST-2
'(Lit.) [the man who bought what]_i did you see t_i ?'
'*What did you see the man who bought?'

(32) (from Cole (1982: 17))

ima-ta-taj_i   t_i muna-ngui?
what-ACC-TAJ   want-2
'What do you want?'

As (31) shows, "taj" is attached to a phrase which is to be pied-piped. This implies that the whole phrase dominated by "taj" behaves like a large single *wh*-phrase and will go through WH movement. In addition, "taj" is base-generated next to a *wh*-phrase unless the *wh*-phrase is within an island as in (32). On the basis of this fact, it seems reasonable to consider that "taj" has to do with WH movement as I have argued above. If this is so, the internal movement of *wh*-phrases within islands seems to have nothing to do with WH movement. Thus, Ortiz de Urbina's claim, which regards the internal movement as (part of) WH movement, seems untenable.

What is more, there is a language which does not need the internal movement of *wh*-phrases to initiate the large-scale overt pied-piping. Consider the following Marathi example:

(34) (from Simpson and Bhattacharya (1999: 79))

Minila [_{CP} Lilini Ravila **kay** dila asa]_i vatta t_i ?
Mini   Lili to.Ravi what gave Comp believes
'What does Mini believe Lili gave to Ravi?'

Like Basque, the overt pied-piping takes place in Marathi as in (34). However, unlike Basque, the internal movement of "kay" (what) is not necessary. This indicates that the internal movement is not necessary to cause the pied-piping, which is equivalent to WH movement. This suggests that the internal movement is not WH movement. The fact that the internal movement is unnecessary in Marathi tells us that focus

movement either does not exist or is optional in the language.[6] The arguments here suggest that *wh*-phrases can potentially experience two different kinds of overt movement in some languages: focus and WH movement.   This instead supports the present claim in that the same WH features can be split into two sub-features, WH_{LF} and WH_{PF}, and these two sub-features can be base-generated in a different position.

Japanese, which is thought to initiate covert pied-piping according to Nishigauchi (1990), also supports the split WH hypothesis.   As Hoji (1985) notes, a sentence becomes ungrammatical if a quantifier is base-generated higher than a *wh*-phrase as in (35):

(35)   *Dareka-ga   nani-o   kaimasita ka?
          someone-NOM what-ACC   bought   Q
          'What did somebody buy?'

This is called the Intervention effect (see Beck (1996), Beck and Kim (1997), and Pesetsky (2000) for details).   However, Hagstrom (1998) discovers that this effect is lifted if both the quantifier and the *wh*-phrase are within islands as in (36):

(36)   [island Dareka-ga nani-o katte   kara] Mary-ga   kimasita ka?
          someone-NOM what-ACC bought after   -NOM came Q
          '(Lit.) Mary came after someone bought what?'

Hagstrom (1998) attributes the ungrammaticality of (35) to the violation of the economy principle.   In (35), he considers that checking features between C and the *wh*-phrase is necessary to initiate movement,[7] but the quantifier between them interrupts this checking.   If this analysis

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6) I have not confirmed this yet.

7) Here there are a few possibilities on movement.   For example, Hagstrom (1998) argues that the question particle,k, is base-generated at *wh*-phrases and it goes through head-movement to C checking WH features. By contrast, Nishigauchi (1990) considers that covert movement of *wh*-phrases takes place.   However, the choice does not affect the current discussion as long as there is a checking relationship between C and *wh*-phrases.

and the split WH hypothesis are correct, we can account for why (36) becomes grammatical. Schematically, (35) and (36) are represented as in (37) and (38) respectively:

(37) *C   ...   quantifier ...   OP-wh ... ?

(38) C   ...   OP-[$_{island}$ quantifier ... wh ...] ... ?

<div align="right">The word orders are irrelevant.</div>

I assume that Japanese has an invisible operator like Basque. Suppose checking arises between the operator and C and this operator can be base-generated independently of *wh*-phrases. Then, we can account for the contrast above: (37) is bad because the quantifier intervenes the checking, whereas (38) is fine because the quantifier does not interrupt the checking. Since the operator is phonologically null in Japanese, it should not have +WH$_{PF}$. Then the remaining possibility is that the operator has +WH$_{LF}$. What is more, the *wh*-phrase in the island in (36) receives phonological stress, so we conclude that +WH$_{PF}$ remains within the *wh*-phrase and +WH$_{LF}$ is base-generated outside the island. Thus, this is another instance of split WH phenomena.

   The last evidence comes from a semantic aspect. As I have argued above, +WH$_{LF}$ contributes to LF. It is a standard assumption that *wh*-phrases are a kind of existential quantifier (cf. Karttunen (1977)). If this is so, it is reasonable to assume that +WH$_{LF}$ is translated into an existential quantifier at LF. However, if the feature remains within islands, a proper semantic representation is not available as Stechow (1996) points out. In other words, if +WH$_{LF}$ is within the *wh*-phrase of the island, a proper LF will not be created, for example, in (36). For the sake of exposition, I assume that covert pied-piping of the whole island takes place following Nishigauchi (1990). If this takes place, we will have the following illegitimate LF:

(39) $^*\lambda$p[$\exists$**x**[someone bought thing(x)] & p= ^Mary came after

someone bought thing(x)]

Here I follow the copy theory of Chomsky (1995), so that two copies of "after someone bought what" appear at the top of the tree and in situ. After pied-piping the whole island and deleting unnecessary portions such as "after" in the restriction, we have a representation such as (39) at LF.   However, this representation crashes the derivation because the variable, "x", in the nuclear (or absolute) scope remains unbound.   This is due to the fact that $+WH_{LF}$ is inside the *wh*-phrase, which is translated into an existential quantifier.   Since QR (quantifier raising) never crosses clauses, the existential quantifier can take scope only within the island.   Hence, the variable in the nuclear scope remains unbound.   To avoid this problem, we need to suppose that $+WH_{LF}$ is base-generated at the edge of island, that is, within the invisible operator in (38).   This solves the problem because $+WH_{PF}$ in the operator can c- (or m-) command the whole nuclear scope, hence, the variable "x" within.   Then we will have the following legitimate representation:

(40) $\lambda p \exists (\mathbf{x}$ [someone bought thing(x) & p= ^Mary came after
   someone bought thing(x)]

In (40), no variable is unbound, so it is a correct semantic representation.   If this account is correct, this is another evidence for the split WH hypothesis.
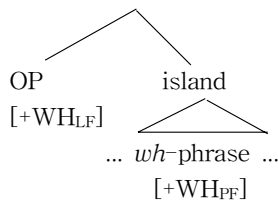
5. Problems

Above we have shown that contrastive-focus features, $WH_{<LF, \ PF>}$, which have phonological and semantic effects, can be split into two features: WH_{LF} and WH_{PF}.   Nevertheless, there is a theoretical problem with this approach.   We do not like to complicate the mechanism by inventing a sub-feature, which is a feature of feature.   In fact, the Imbabura Quechua examples seem to suggest that $+WH_{LF}$ and $+WH_{PF}$

are separately base-generated: "taj" has $+WH_{LF}$ and a *wh*-phrase $+WH_{PF}$. Therefore it is more plausible to argue that there is no feature such as $WH_{<LF,\ PF>}$, and that WH_{LF} and WH_{PF} are not sub-features but ordinary features like Case. Since the two features are together when a *wh*-phrase is not within an island, we have falsely regarded them as one feature. But as the pied-piping data suggest, they are separable, hence, are independent of each other. Schematically, *wh*-phrases are represented as follows:

(41) a *wh*-phrase not within an island

$$OP \qquad wh\text{-phrase}$$
$$[+WH_{LF}] \quad [+WH_{PF}]$$
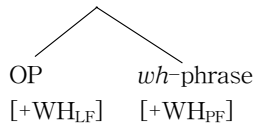
(42) a *wh*-phrase within an island

$$OP \qquad\qquad island$$
$$[+WH_{LF}]$$
$$\dots\ wh\text{-phrase}\ \dots$$
$$[+WH_{PF}]$$

The word orders are irrelevant.

(41) and (42) shows that a *wh*-phrase itself has just $+WH_{PF}$ and this contributes to PF. In fact, the semantically meaningful feature, $+WH_{LF}$, is base-generated not in a *wh*-phrase but in the operator. (Note that the operator is not invisible and is "taj" in Imbabura Quechua, but it is invisible in most languages) As in (41), when a *wh*-phrase is generated outside an island, the *wh*-phrase and the operator stay together. This is why we made a mistake of considering that the same feature is made of two sub-features. But as in (42), $+WH_{LF}$ and $+WH_{PF}$ are separately base-generated if a *wh*-phrase is within an island. Thus, these two features are quite independent of each other.

Despite this fact, they must form a pair as far as *wh*-question constructions are concerned. That is, if one of them is employed, the other must be used, too. I do not know why this is the case. But empirically speaking, this is the case with the contrastive-focus phenomenon, which always has both phonological and semantic effects. To support this fact further, we have seen above that when a *wh*-phrase is D-linked, +WH$_{\text{LF}}$ can be omitted because its alternatives can be supplied from a discourse. Since +WH$_{\text{LF}}$ and +WH$_{\text{PF}}$ always form a pair, +WH$_{\text{PF}}$ must be deleted when +WH$_{\text{LF}}$ is omitted. Accordingly, D-linked *wh*-phrases in Bulgarian can avoid not only WH movement but also focus movement.

  If this is a right approach, we have to dispense with *u*WH$_{<\text{LF, PF}>}$(EPP), too. They should be always separated as in *u*WH$_{\text{PF}}$(EPP) and *u*WH$_{\text{LF}}$(EPP). This is a good result. Above we have seen that multiple movement of *wh*-phrases is observed in languages which show overt focus movement (e.g. Bulgarian, Serbo-Croatian, Imbabura Quechua and so on). Now we can account for this fact. The languages which show overt focus movement must have *u*WH$_{\text{PF}}$(EPP) additionally, so that phrases with phonological stress must move overtly to check the uninterpretable feature. Thus, in the case of multiple-*wh* questions, not only *u*WH$_{\text{LF}}$(EPP) but also *u*WH$_{\text{PF}}$(EPP) is generated in C, so that multiple movements of *wh*-phrases follow in those languages. By contrast, we expect that *u*WH$_{\text{PF}}$(EPP) is not existent in languages which do not show the overt focus movement (e.g. English, French and so on). Thus, in the case of multiple-*wh* questions in these languages, only some instances of *u*WH$_{\text{LF}}$(EPP) are generated in C and these go through the WH-absorption. Hence there is only one overt movement of *wh*-phrase in these languages.

  Another remaining question is why focus movement is insensitive to the Superiority effect. Here I only present a speculative answer for Bulgarian cases. One could claim that Bulgarian has scrambling within VP. Thus, word orders below subjects are quite flexible, so that as long as subject *wh*-phrases are at the highest, word orders of *wh*-phrases in CP are free. However, there are counterexamples for

this claim:

(43) (from Bošković (1999: 165))
      (a) kogo kak e tselunal Ivan.
         whom how is kissed Ivan
         'How has Ivan kissed whom?'
      (b) (*)?[8] Kak kogo e tselunal Ivan.

(44) (from Bošković (1999: 165))
      (a) kogo kakvo e pital Ivan
         whom what is asked Ivan
         'Whom has Ivan asked what?'
      (b) (*)? kakvo kogo e pital Ivan

These examples are problematic. If scrambling within VP is available, the word order between object *wh*-phrases and adjunct ones or between indirect and direct object *wh*-phrases should be free, which should have made the (b) examples grammatical. Thus, the scrambling idea seems not to be true. Nevertheless, according to my informant, comparing to the word order between subject and non-subject *wh*-phrases as in (45), the (b) examples in (43) and (44) are not so bad and almost grammatical.

(45) (from Bošković (1999: 163))
      (a) Koj kogo e vidjal
         who whom is seen
         'Who has seen whom?'
      (b) *Kogo koj e vidjal

If this is correct, the scrambling idea still holds. But I leave this for future research.

  In this paper I have considered why and how multiple movement

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8) The brackets of this and the next examples are added by me.

takes place.   I have introduced two accounts to explain this phenomenon: Pesetsky (2000) and Bošković (1998).   Pesetsky (2000) attributes multiple movement of *wh*-phrases to the choice of complementisers and considers that every movement of *wh*-phrases should be regarded as WH movement.   In contrast, Bošković (1998) argues that Bulgarian has just one WH movement as is the case with any WH movement language, and the rest of movements are focus movements.   Furthermore, to capture the generalisation that the more non-D-linked *wh*-phrases are in situ, the more deviant the sentence becomes, Bošković considers that it is, in fact, *wh*-phrases, not complementisers, that cause multiple movement of *wh*-phrases unlike Pesetsky (2000).   I have shown both of these two proposals have theoretical and empirical problems.   The theoretical problems which both Pesetsky (2000) and Bošković (1998) have is that there are two conflicting factors involved: (i) it is not *attractees* but *attracters* that cause overt movement of phrases (cf. Chomsky (2000)) and (ii) it is *wh*-phrases, not complementisers, that seem to cause multiple movement of *wh*-phrases.   To account for this theoretical problem, I have introduced Pesetsky and Torrego (2001), who argue that uninterpretable features of only *attracters* can have EPP and that both *attracters* and *attractees* must have complementary uninterpretable features in order to initiate movements.   However, even if we assume this framework, we still cannot explain the empirical problem which both Pesetsky (2000) and Bošković (1998) face.   The problem is that D-linked *wh*-phrases can avoid overt movement.   In order to solve this problem, I have argued that the same feature, +WH, causes two kinds of movement, WH movement and focus movement, and that the feature can be optionally omitted when D-linked.   Due to this condition, multiple movement of non-D-linked *wh*-phrases is necessary, but D-linked *wh*-phrases can cancel both WH movement and focus movement in Bulgarian because the two movements are caused by the same kind of feature.   Thus, D-linked *wh*-phrases can remain in situ.

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