What is special about multiple wh-fronting?

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It is standardly assumed that there are 4 types of languages with respect to possibilities for wh-movement in multiple questions: (a) English, where only one wh-phrase moves:

(1)   What did John give to whom?

(b) Chinese, where all wh-phrases stay in situ:[2]

(2)   John gei shei shenme?
        John give who what
        'What did John give to whom?'

(c) French, where both of these options are available:

(3)   a.   Qu' a-t-il   donné à qui?
                what has-he given to whom

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[2] Malay might actually be a better example of a wh-in-situ language since, like Japanese, Chinese has been argued to involve overt null operator movement to SpecCP in questions (see Cole and Hermon 1995 for Chinese). Cole and Hermon show that the null operator analysis is inapplicable to Malay wh-in-situ.

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  b.   Il a   donné quoi à qui?
          he has given what to whom
          'What did he give to whom?'

French is often assumed to be a simple mixture of the first two types. This view is
clearly mistaken. If French were really a simple mixture of the two types rather than a
separate type we would expect both the English-type wh-movement constructions and
Chinese-type wh-in-situ constructions to be always possible in French, i.e. the set of
possibilities for multiple questions in French should be a union of the set of possibilities for
multiple questions in English and Chinese. This is not the actual state of affairs. As shown
in Bošković (1998a, in press c) (see also Bošković and Lasnik in press), the in-situ strategy
has a very limited distribution in French, which indicates that French wh-in-situ is of very
different nature from Chinese wh-in-situ. Based on this, I will assume that French is a
separate type, not a simple mixture of the English and the Chinese type. In (4) I give the
possibilities for wh-in-situ in French noted in Bošković (1998a, in press c). The wh-in-situ
strategy is allowed in short distance null C matrix questions, but not in embedded questions,
long-distance matrix questions, and overt C questions. (The judgments are given only for the
true question, non-echo reading. Note that overt C questions are possible only in some
dialects of French.)

(4)   a.   *Pierre a   demandé tu   as   embrassé qui.
                 Peter   has asked   you have kissed   who
        b.   cf. Pierre a demandé qui tu as embrassé.
        c.   *Jean et Marie croient que Pierre a   embrassé qui?
                 John and Mary believe that Peter has kissed   who
        d.   cf. Qui Jean et Marie croient-ils que Pierre a embrassé?
        e.   *Que tu as   vu   qui?
                 C   you have seen who
        f.   Qui que tu as   vu?

(d) multiple wh-fronting (MWF) languages, where all wh-phrases move. This paper deals
with this type of language. All Slavic languages belong to this type (see Rudin 1988 and
Bošković 1998c). A sample MWF sentence from Bulgarian is given in (5).

(5)   Na kogo kakvo dade Ivan?
        whom   what gave Ivan
        'What did Ivan give to whom?'

In this paper I argue that (d) should be eliminated from the above typology and that
MWF languages are scattered across the first three language types. I also examine certain
exceptions to the obligatoriness of fronting of wh-phrases in MWF languages.

1.   Superiority effects in MWF languages

My central argument that MWF languages are scattered across the English, French, and Chinese type languages with respect to when they have overt wh-movement concerns the distribution of Superiority effects, which are reflected in the order of fronted wh-phrases.[3] There are three types of MWF languages with respect to Superiority, represented here by Serbo-Croatian (SC), Bulgarian, and Russian. SC exhibits Superiority effects in some, but not all contexts. Bulgarian exhibits Superiority effects in all contexts. Finally, Russian never exhibits Superiority effects. Consider first SC. SC displays a mixed behavior with respect to Superiority effects. It exhibits Superiority effects in embedded, long-distance, and overt C questions, but not in short-distance null C matrix questions:[4]

(6)   a.   Ko koga voli?
                who whom loves
                'Who loves whom?'
                b. Koga ko voli?

(7)   a.   [Ko koga voli], taj   o   njemu i   govori.
                who whom loves that-one about him   even talks
                'Everyone talks about the person they love.'
                b.   ?*[Koga ko voli], taj o njemu/o njemu taj i govori.

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[3] See Rudin (1988), Bošković (1997b, 1998b, in press a), Richards (1997), Pesetsky (1998), among others. One argument that the fixed order of wh-phrases in Bulgarian (i) is a result of Superiority concerns the fact that (ib) improves with D-linked and echo wh-phrases. (*Koj* in (id) is an echo wh-phrase.) The same happens with Superiority violations in English. Notice that all authors cited above argue that the wh-phrase that comes first in the linear order in Bulgarian MWF constructions is the one that moves first. The second wh-phrase either right-adjoins to the first wh-phrase, located in SpecCP, as in Rudin (1988), or moves to a lower SpecCP (the first wh-phrase is located in the higher SpecCP), as in Richards (1997) and Pesetsky (1998). The multiple specifiers analysis was originally proposed by Koizumi (1994). (For a different approach to Bulgarian MWF, see Grewendorf 1998 and Kim 1997.)

(i)   a.   Koj kakvo e kupil?
              who what is bought
              'Who bought what?'
           b.   *Kakvo koj e kupil?
           c.   ?Koja kniga koj   čovek e kupil?
               which book which man is bought
               'Which man bought which book?'
           d.   ?Kakvo KOJ e kupil

(ii)   a.   Who bought what?
           b.   *What did who buy?
           c.   Which book did which man buy?
           d.   What did WHO buy?

[4] In (6)-(10) I ignore the irrelevant echo-question reading of the wh-phrases. Note that I do not give indirect questions as examples of embedded questions because such questions involve an interfering factor. Indirect questions formally do not differ at all from matrix questions in SC. As a result, there is always a danger that they could be analyzed as matrix questions, with the superficial matrix clause treated as an adsentential. The problem does not arise with correlative and existential constructions in (7)-(8), which also contain embedded questions (see Izvorski 1996, 1998). (I show in Bošković 1997c that when the interfering factor noted above is controlled for, true indirect questions in SC also exhibit Superiority effects.)

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(8)   a.   ?Ko   koga   tvrdiš da   je istukao?
              who   whom   claim   that is beaten
             'Who do you claim beat whom?'
       b.   *Koga ko tvrdiš da je istukao?
(9)   a.   (?)Ima ko šta   da ti   proda.
              has who what that to-you sells
             'There is someone who can sell you something.'
       b.   *Ima šta ko da ti proda.
(10)   a.   Ko li koga voli?
             who C whom loves
             'Who on earth loves whom?'
       b.   *Koga li ko voli?

Notice that SC exhibits Superiority effects exactly in those contexts in which French must have wh-movement. Where French does not have to have wh-movement, SC does not exhibit Superiority effects.

Bulgarian, on the other hand, exhibits Superiority effects (i.e. has fixed order of fronted wh-phrases) in all contexts, including all the contexts in (6)-(10).

(11)   a.   Koj kogo   običa?
             who whom loves
       b.   *Kogo koj običa?
       c.   Koj kogoto običa, toj za   nego i   govori.
             who whom   loves he about him even talks
             'Everyone talks about the person they love.'
       d.   *Kogoto koj običa, toj za nego/za nego toj i govori.
       e.   Koj kogo kazvaš če e nabil
             who whom say   that is beaten
             'Who do you say beat whom?'
       f.   *Kogo koj kazvaš če e nabil?
       g.   (?)Ima koj kakvo da ti   prodade.
              has who what   that to-you sells
             'There is someone who can sell you something.'
       h.   *Ima kakvo koj da ti prodade.
       i.   Koj li kogo običa?
             who C whom loves
             'Who on earth loves whom?'
       j.   *Kogo li koj običa?

Finally, as shown in Stepanov (1998), Russian has free order of fronted wh-phrases in all contexts, i.e., Russian never exhibits Superiority effects.[5]

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[5] Some of the tests run for SC and Bulgarian cannot be run for Russian for independent reasons.

(12) a.   Kto   kogo   ljubit?
            Who whom loves

      b.   Kogo kto ljubit?

      c.   Kto kogo uznaet, tot   togo   i   poljubit.
            who whom knows that-one[nom] that-one[acc] and will-love
            'Everyone will love the person they will know.'

      d.   Kogo kto uznaet, togo tot i poljubit.

      e.   Kto   kogo ty   xočeš, čtoby   pobil?
            who whom you want   that-subj. beat
            'Who do you want to beat whom?'

      f.   Kogo kto ty xočeš, čtoby pobil?

There is a very interesting parallelism between the behavior of English, French, and Chinese with respect to wh-movement and MWF languages with respect to Superiority: SC exhibits Superiority effects in the contexts in which French must have wh-movement, Bulgarian in the contexts in which English must have wh-movement (all contexts), and Russian in the contexts in which Chinese must have wh-movement, namely never.[6] This state of affairs can be accounted for if SC, Bulgarian, and Russian behave like French, English, and Chinese respectively with respect to when they must have wh-movement, which I take to be movement motivated by checking the strong +wh-feature of C: SC must have it in long-distance, embedded, and overt C questions, but not in short-distance null C matrix questions; Bulgarian must have it in all contexts, and Russian does not have to have it in any context.[7] Wh-movement in MWF languages is then well-behaved with respect to Superiority: SC, Bulgarian, and Russian exhibit Superiority effects whenever they have wh-movement. The only difference between SC/Bulgarian/Russian and French/English/Chinese is that even wh-phrases that do not undergo wh-movement in SC/Bulgarian/Russian still must be fronted overtly for independent reasons discussed below. That this movement is not driven by the strong +wh-feature of C is indicated by the fact that all wh-phrases must move in these languages, although movement of one wh-phrase should suffice to check the strong +wh-feature of C. (I will refer to obligatory movement of wh-phrases that is independent of the strong +wh-feature of C as non-wh fronting.)

(13) a.   Ko   šta   kupuje?   (SC)
            who what buys
            'Who buys what?'

      b.   ?*Ko kupuje šta?

(14) a.   *Koj kupuva kakvo?   (Bulg)
            who buys   what

      b.   Koj kakvo kupuva?

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[6] The parallelism is what is important for us here. The analysis to be proposed would not be falsified if, e.g., there turn out to be speakers of SC with a different mixed pattern of Superiority effects, as long as some non-MWF-language, e.g. a dialect of French, exhibits the same pattern with respect to wh-movement.

[7] This conclusion is reached for Russian by Stepanov (1998).

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(15) a.   *Kto kupil čto?   (Rus)
            who bought what
      b.   Kto čto kupil?

Even echo wh-phrases must move in these languages. Thus, (13)b, (14)a, and (15)a are unacceptable even as echo-questions. The same holds for (16), which confirms that wh-phrases in MWF languages must front independently of the strong +wh feature of C.

(16) a.   ?*Jovan kupuje šta?   (SC)
            John buys   what
      b.   ?*Ivan kupuva kakvo?   (Bulg)
            Ivan buys   what
      c.   ?*Ivan kupil   čto?   (Rus)
            Ivan bought what

Stjepanović (1998) argues that the driving force for non-wh-fronting in SC is focus. She claims that SC wh-phrases are inherently focused and hence must undergo overt focus movement. The analysis can be extended to Bulgarian (see Bošković 1998b, in press a and Izvorski 1993) and Russian (see Stepanov 1998).[1] An advantage of the focus analysis is that it explains one of the exceptions to the obligatoriness of non-wh-fronting discussed below.

2.   A semantic exception to the obligatoriness of wh-fronting in MWF languages

There are several exceptions to the obligatoriness of fronting of wh-phrases in MWF languages which can be classified into three groups: semantic, phonological, and syntactic. The semantic exception involves D-linked wh-phrases, which can remain in situ.[9]

(17) a.   Ko je kupio koju knjigu?   (SC)
            who is bought which book
      b.   Koj e kupil   koja kniga?   (Bulg)
            who is bought which book
            'Who bought which book?'
      c.   (?)Kakoj student pročital kakuju knigu? (Rus)
            which student read   which book

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[8] Non-wh-fronting, i.e. focus movement, of wh-phrases appears to be insensitive to Superiority. (Bošković 1998b, in press a shows that this holds for Bulgarian as well as SC and Russian.) For a principled economy-based explanation why this is so, see Bošković (1998b, in press a).
    Notice that wh-phrases have been argued to undergo focus movement in a number of languages, e.g. Aghem, Basque, Hungarian, and Quechua (see, e.g., Horvath 1986, Rochemont 1986, and Kiss 1995).
    [9] This has already been noted in Wachowicz (1974) and Pesetsky (1987, 1989) for several MWF languages. Notice that in (13)-(16) I have used wh-phrases that are more difficult to D-link (i.e. the D-linked interpretation is not favored for them.) Pesetsky (1989) observes that such wh-phrases can also remain in situ when used in an appropriate context forcing a D-linked interpretation. Throughout the paper I assume non-D-linked contexts for wh-phrases that are not inherently D-linked.

The exceptional behavior of D-linked wh-phrases is explainable under the focus analysis. As discussed in Pesetsky (1987), with D-linked wh-phrases the range of felicitous answers is limited by a set of objects familiar to both the speaker and the hearer as a result of it already being referred to in the discourse or salient in the context of the utterance. The range of reference of D-linked wh-phrases is thus discourse given. As a result, such wh-phrases do not seem to be inherently focused in Stjepanović's sense and therefore should not be subject to focus movement.[10] Notice also that at least some speakers prefer to leave the D-linked wh-phrases under consideration in situ. Wachowicz (1974) reports this for Polish, Pesetsky (1987) for Romanian, and Pesetsky (1989) for Russian. Some speakers, on the other hand, can optionally front them. Thus, SC (18) is only slightly degraded. ((17)a is still a bit better. Some Polish, Russian, and Romanian speakers also allow constructions like (18).)[11]

(18)   ?Ko je koju knjigu kupio?
          who is which book bought

It seems plausible that the D-linked wh-phrase in (18) is undergoing scrambling rather than focus-movement. If the latter were the case we would expect the movement to be obligatory, which is not the case under the scrambling analysis, scrambling being an optional phenomenon. This means that at least marginally, wh-phrases can be scrambled in SC. Notice that there is a cross-linguistic variation in this respect. Thus, Japanese allows wh-phrases to scramble, whereas German does not (see Müller and Sternefeld 1996).The scrambling analysis thus might make it possible to account for the variation among the speakers of MWF languages with respect to constructions such as (18).

An interesting confirmation of this analysis is provided by Bulgarian, where most speakers allow optional fronting of D-linked wh-phrases under consideration:

(19)   Koj koja   kniga e kupil?
          who which book is bought
          'Who bought which book?'

Rudin (1988) argues that in Bulgarian (20), all wh-phrases are located in SpecCP, which means that the focus licenser for Bulgarian wh-phrases is interrogative C.

(20)   Koj kakvo e kupil?
          who what is bought

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[10] See also Reinhart (1997:158), who says that "D-linked constituents are not particularly good foci." In this respect, notice also that Pollock, Munaro, and Poletto (1998) discuss data from the Northern Veneto dialect Bellunese which appear to indicate that in this language, D-linked and non-D-linked wh-phrases appear in different positions. This can be accounted for if non-D-linked wh-phrases are focalized in this language and if D-linked wh-phrases cannot occur in focus positions.

[11] The element that intervenes between the fronted wh-phrases, *je*, is a second position clitic. SC second position cliticization is a murky phenomenon that involves both phonology and syntax and might involve PF word re-ordering (see Bošković in press b and references therein). Throughout the paper I ignore second position clitics. I discuss their placement in multiple questions in Bošković (in preparation).

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'Who bought what?'

One argument for Rudin's analysis concerns the fact that the wh-phrases in (20) cannot be broken by a parenthetical. (Rudin interprets this as indicating that the wh-phrases form a constituent. This is true under the rightward adjunction to SpecCP analysis, but not under the multiple specifiers analysis. However, under this analysis (21) could be ruled out due to a feature clash: a -wh-element is located in an interrogative (+wh) CP projection.)

(21) ?*Koj, spored   tebe, kakvo e kupil?
       who according to-you what is bought
      'Who, according to you, bought what?'

Significantly, it is easier to break fronted wh-phrases with a parenthetical when the second wh-phrase is D-linked. (22) contrasts with (21).

(22) ?Koj, spored   tebe, koja kniga e kupil?
       who according to-you which book is bought

This provides evidence that *kakvo* in (20) and *koja kniga* in (19) do not land in the same position. In contrast to *kakvo* in (20), *koja kniga* in (19) does not undergo focus-movement and remains below CP. I conclude, therefore, that D-linked wh-phrases not only do not have to, but cannot undergo non-wh-fronting, which is explained under the focus analysis of non-wh-fronting.

Notice that if, as is often assumed, English does covertly what Slavic languages do overtly with respect to wh-phrases, only non-D-linked wh-phrases would be undergoing LF movement in English, as argued in Pesetsky (1987) (see also Bošković and Franks in press). However, they would be undergoing focus movement, not wh-movement.

A question now arises as to whether a D-linked wh-phrase can remain in situ in single questions. This is not completely clear in SC. Thus, (23) is degraded on the true question reading, though not fully unacceptable. (It is fully acceptable on the echo question reading.)

(23) ??On je kupio koju knjigu?
        he is bought which book
      'He bought which book?'

I assume that the degraded status of (23) on the true question reading is a result of a failure to type the clause as a question in the sense of Cheng (1997), who argues that each clause must be typed, i.e., identified as declarative or interrogative, in overt syntax.[12] Interrogative identification is done either by means of question particles or by fronting of wh-phrases. Since, according to Cheng, SC does not have a pure question particle (at least

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[12] Cheng leaves open how the typing is carried out in French wh-in-situ constructions. I have nothing new to add concerning French.

not in the relevant constructions), one wh-phrase must be fronted in true questions in SC for clausal typing purposes, which I assume is carried out by simply fronting a wh-phrase within the highest projection in overt syntax. (I am slightly departing here from Cheng 1997.) I leave open how this fronting is instantiated in D-linking questions. It could be instantiated as either scrambling or wh-movement. (Given that SC patterns with French with respect to when it has overt wh-movement, wh-movement should be an option even in short-distance matrix questions such as (6)a since in French wh-movement takes place optionally in such questions. Recall that overt wh-movement cannot take place in (6)b for reasons discussed above.) I assume that in non-D-linked questions such as (6) clausal typing can be carried out within the focus-licensing projection, which actually can be the highest projection within the clause given that, as argued in Bošković (1997a,c, 1998b, in press a), the interrogative CP projection does not have to be inserted until LF in SC questions like (6). I argue that the interrogative C in short distance questions like (6)a can be inserted either overtly or covertly. If it is inserted covertly, no overt wh-movement takes place. If it is inserted overtly, wh-movement takes place overtly. (I show that in constructions in which wh-movement option is forced LF C-insertion is blocked.) One argument for this analysis not noted in the works cited above concerns left dislocation (LD) constructions. (For another argument to this effect based on sluicing, see Stjepanović in press a.) With LD, SC exhibits Superiority effects even in short distance null C questions.

(24)   a.   Tom čoveku, ko je šta poklonio?
           that man   who is what given
           'To that man, who gave what?'
      b.   ??Tom čoveku, šta je ko poklonio?

Rudin (1993) discusses Bulgarian LD and argues that LD phrases are adjoined to CP. If this is correct LD phrases can be present in the structure only when CP is present overtly. Overt insertion of the interrogative C induces a Superiority effect, which means that it obligatorily triggers wh-movement. It follows then that in questions such as (6)b, which do not display Superiority effects and hence do not involve overt wh-movement, the interrogative CP projection is not inserted overtly. Notice also that Russian does not exhibit Superiority effects even in LD constructions (see Stepanov 1998). This is expected given that Russian is a Chinese-type language with respect to when it must have wh-movement. Russian never has wh-movement regardless of whether C is inserted overtly or covertly.

(25)   a.   A etomu čeloveku kto kogo predstavil?
           and that.dat man.dat who whom introduced
           'And to that man, who introduced whom?'
      b.   A etomu čeloveku kogo kto predstavil?

3.   Phonological exceptions to the obligatoriness of wh-fronting in MWF languages

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I turn to phonological exceptions to the obligatoriness of fronting of wh-phrases in MWF languages. SC (26), which contrasts with (13)b and (16)a, illustrates one such exception.[13]

(26)   Šta   uslovljava šta?
    what conditions what

   What is at stake here is the actual phonological form of the wh-phrases. The second wh-phrase does not move if it is homophonous with the first fronted wh-phrase.[14] Apparently, SC does not allow sequences of homophonous wh-words. To avoid forming such a sequence a wh-phrase can remain in situ. Notice that in (27) the second wh-phrase must front. As a result of the presence of the adverb, fronting the second wh-phrase does not create a sequence of homophonous wh-words.

(27)   a.   Šta   neprestano šta   uslovljava?
       what constantly what conditions
       'What constantly conditions what?'
    b.   ?*Šta neprestano uslovljava šta?

   Leaving a wh-phrase in situ thus can be done only as a last resort when this is necessary to avoid forming a sequence of homophonous wh-words. The same holds for Bulgarian, Russian, and Romanian, another MWF language, where the second wh-phrase also does not move if the movement would result in a sequence of homophonous wh-words.

(28)   a.   Kakvo obuslavlja kakvo?   (Bulg)
       what   conditions what
    b.   *Kakvo kakvo obuslavlja?
    c.   Čto   obuslovilo   čto?   (Rus)
       what conditioned what
    d.   *Čto čto obuslovilo?
    e.   Ce   precede ce?   (Rom)
       what precedes what
    f.   *Ce ce precede?

   We seem to be dealing here with a low level PF effect, since the information concerning the pronunciation of wh-phrases should not be accessible to the syntax. It appears that we need a PF constraint against consecutive sequences of homophonous wh-phrases in the languages under consideration. Billings and Rudin (1996) in fact propose such a constraint for Bulgarian to account for the following Bulgarian constructions:[15]

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[13] The exception was pointed out to me by Wayles Browne (personal communication).

[14] The second wh-phrase can be marginally fronted if very heavily stressed. With neutral stress, it must remain in situ, *šta šta uslovljava* being unacceptable.

[15] One of my Bulgarian and one of my Romanian informants do not have the constraint in question. All others in all four languages do.

Billings and Rudin(1996) and Golston (1995) observe similar effects in a number of languages. (They

(29) a. *Koj na kogo kogo e pokazal?
          who to whom whom is pointed-out
          'Who pointed out whom to whom?'
      b.   Koj kogo na kogo e pokazal?

    The constraint straightforwardly accounts for (29). Notice that we cannot be dealing here with a Superiority effect. In Bošković (1997b, 1998b, in press a) I show that only the highest wh-phrase is sensitive to Superiority in Bulgarian, i.e. the highest wh-phrase moves first (and is located first in the linear order), the order of movement of other wh-phrases (and their linear order) is in principle free. This is illustrated in (30)-(33).[16] [17]

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cite examples from English, Italian, Turkish, Russian, Polish, Ancient Greek, and Japanese.) SC has this kind of effect in other constructions as well. As shown in (i), the accusative feminine clitic *je* is replaced by *ju* when adjacent to the 3.p.sg. auxiliary *je* 'is'. (In contrast to other auxiliary clitics, *je* follows pronominal clitics. For an explanation, see Bošković (in preparation). This effect is similar to what we find in Italian, where two clitics that are normally both pronounced as [*si*] are pronounced as [*či si*] when adjacent.)

(i) a.   Oni su je/*ju zaboravili.
          they are her   forgotten
          'They forgot her.'
     b.   On ju/*je je zaboravio.
          he her   is forgotten
          'He forgot her.'

    Howard Lasnik (personal communication) observes an example from English. Possessive of *boys* must be *boys'* and not *boys's* even though the relevant phonetic sequence is possible, as in *the Boys's* (a family name). This indicates that we are dealing here with a morphological rather than a phonetic effect.

    Golston (1995) gives another relevant example from English. He observes that whereas both *the video of Macbeth* and *the video of The Dead* are possible, *the The Dead video*, involving the sequence *the the*, is impossible, in contrast to *the Macbeth video*.

[16] As argued in Bošković (1997b), the accusative wh-phrase checks the strong +wh-feature of C in (30) rather than the adjunct wh-phrase because the accusative wh-phrase must move to its Case-checking position prior to wh-movement, thus ending up higher than the adjunct wh-phrase prior to wh-movement. The reader is referred to Bošković (1998b, in press a) for a unified economy account of the lack of Superiority effects in SC (6) and Bulgarian (31) and (33). The account also extends to Russian (12). I establish the descriptive generalization that only the wh-phrase that checks the strong +wh-feature of C (which means only one wh-phrase) is subject to Superiority, wh-phrases undergoing "pure" focus movement being insensitive to Superiority, and show that the generalization follows from principles of economy of derivation.

[17] (ia-b) show that we cannot be dealing here with the same type of phenomenon as in English (iia-b), noted in Kayne (1984), where addition of a lower wh-phrase saves the derivation from a Superiority violation.

(i) a.   *Kogo koj kak e tselunal?
           whom who how is kissed
     b.   *Kogo koj kakvo e pital?
            whom who what is asked
(ii) a.   *What did who buy?
     b.   (?)What did who buy where?

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(30)   a.   Kogo kak e   tselunal Ivan?
               whom how is kissed   Ivan
               'How did Ivan kiss whom?'
       b.   ?*Kak kogo e tselunal Ivan?
(31)   a.   Koj kogo kak e tselunal?
               who whom how is kissed
               'Who kissed whom how?'
       b.   Koj kak kogo e tselunal?
(32)   a.   Kogo kakvo e pital Ivan?
               whom what is asked Ivan
               'Whom did Ivan ask what?'
       b.   ?*Kakvo kogo e pital Ivan?
(33)   a.   Koj kogo kakvo e pital?
               who whom   what is asked
               'Who asked whom what?'
       b.   Koj kakvo kogo e pital?

        Given this, Superiority cannot account for the Billings and Rudin data in (29). Notice
also that (29)a improves when the third wh-phrase remains in situ (this is not noted by
Billings and Rudin), which is not unexpected if the unacceptability of (29)a is indeed due to
a PF constraint against homophonous sequences of wh-phrases. The third wh-phrase cannot
remain in situ in (29)b, which confirms that leaving a wh-phrase in situ is a last resort device
for saving a multiple wh-question from violating the PF constraint in question. (Recall that
the linear order of wh-phrases corresponds to the order of their movement to SpecCP.)

(34)   a.   Koj na kogo e pokazal kogo?
               who to whom is shown   whom
               'Who showed whom to whom?'
       b.   ??Koj kogo e pokazal na kogo?

        How can we account for this state of affairs? We are dealing here with a rather
intricate interplay of phonology (the PF constraint in question) and syntax (the usual
obligatoriness of fronting of wh-phrases in the languages in question, which I assume is a
syntactic effect.) A way of capturing the interplay is provided by Franks's (1998) approach
to pronunciation of non-trivial chains, based on the copy theory of movement.

        It is standardly assumed that in LF we have a choice in deciding which copy of a non-
trivial chain to leave active in the interface. Thus, Chomsky (1993) argues that on the reading
on which *himself* in (35) refers to *Jim*, the tail of the chain created by wh-movement of *which
picture of himself* is deleted so that *himself* remains in SpecCP, where it is c-commanded by
Jim, but not by *Bill*. On the other hand, on the reading on which *himself* refers to *Bill*, *himself*

is deleted in the head of the chain and remains in the structure in the tail of the chain, where it is c-commanded by, and sufficiently local to, *Bill*.[18]

(35)   Jim wonders [_{CP}[which picture of himself][_{IP} Bill bought [which picture of himself]]]

In LF we thus have a choice in deciding which copy to delete. It is often assumed that such a choice is not available in PF, the head of a non-trivial chain always being the sole survivor. (36a-f) provide empirical justification for the standard assumption:

(36)   a.   The woman was arrested ~~the woman~~.
         b.   *~~The woman~~ was arrested the woman.
         c.   *The woman was arrested the woman.
         d.   *~~The woman~~ was arrested ~~the woman~~.
         e.   *The ~~woman~~ was arrested ~~the~~ woman.
         f.   *~~The~~ woman was arrested the ~~woman~~.

However, a number of authors have recently argued that in PF we also have a choice concerning which member of a non-trivial chain survives deletion (see Groat and O'Neil 1996, Bobaljik 1995, Runner 1995, Pesetsky 1997, Richards 1997, Roberts 1997, Franks 1998, Hiramatsu 1997, and Nunes in press). Of particular interest to us is Franks (1998). Franks proposes that, just as in LF there is a preference for deletion in the head position of non-trivial chains (at least with operator-variable chains), in PF deletion in the tail of non-trivial chains (or, more precisely, deletion of lower copies of non-trivial chains) is just a preference. It is not the only option. More precisely, Franks argues that a chain is pronounced in the head position, with lower members deleted in PF, unless pronunciation in the head position would lead to a PF violation.[19] If the violation can be avoided by pronouncing a lower member of the chain, the lower member is pronounced and the head of the chain is deleted. (By the head of a chain I mean here the highest member of a sequence of copies created by movement of the same element. I disregard the fact that in some cases two different chains (an A and an A'-chain) are created by movement of the same element, as in *Who₁ t₁ seems t₁ to t₁ know it.*)

Let us see what this approach can do for us in analyzing SC construction in (26). Consider first what happens in the syntax. The ungrammaticality of (13)b and (16)a indicates that there is a syntactic requirement, namely focus, that forces all wh-phrases in SC to move in overt syntax. This should also hold for the second wh-phrase in (26), which then also must undergo focus movement in overt syntax. As a result, (26) must have the following structure in the output of the syntax. (I am ignoring the lower copy of the first *šta*.)

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[18] Chomsky's analysis is slightly more complicated. He also argues that there is a preference for minimizing operator restriction in LF, which normally leads to deletion in the head of A'-chains. The preference for the deletion in the operator position is motivated by *She asked which picture of Tom₁ he₁ liked.*

[19] See also Hiramatsu (1997) and Pesetsky (1997), who antecedes the other two authors. However, he is not quite as explicit as Franks concerning some of the issues we will be concerned with below.

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(37)   [FP Šta štaj [uslovljava štaj]]
          what what conditions what

Suppose that, as argued in Billings and Rudin (1996) for Bulgarian, there is a PF constraint against consecutive homophonous wh-words in SC. Given the constraint and given that a lower copy of a non-trivial chain can be pronounced if this is necessary to avoid a PF violation, we can pronounce the lower copy of the second *šta* in the PF of (37).[20]

(38)   [FP Šta šta̶i̶ [uslovljava štaj]]

This allows us to avoid violating the PF constraint in question. Franks's proposal thus enables us to derive (26) and account for the contrast between (26) and (13)b/(16)a without violating the syntactic requirement that forces all wh-phrases to move overtly in SC (the second *šta* in (26) does undergo focus-movement), without look-ahead from the syntax to the phonology, and without any PF movement. Notice also that the analysis provides evidence for the copy theory of movement.

Consider how Bulgarian (34) can be accounted for under this analysis. It appears that in order to determine which wh-phrases to pronounce in situ we need to scan the structure from left to right. The necessity of left-to-right scanning can be naturally captured under the above analysis, which treats the phenomenon under consideration as a PF phenomenon. (34)a-b have the following structures in the syntax, with relevant copies indicated: (The order of two objects in their base-generated position as well as the precise position of the subject prior to wh-movement are irrelevant. Recall also that the order of fronted wh-phrases reflects their order of movement to SpecCP. As discussed above, the highest wh-phrase must move first, the order of movement of other wh-phrases is free. The participle is undergoing short V-movement, as discussed in Bošković 1997d. The auxiliary might be moving to C.)

(39)   a.   Koj̦i na kogoj kogok e koji pokazal na kogoj kogok?
        b.   Koj̦i kogoj na kogok e koji pokazal na kogoj kogok?

In PF we need to determine which copies of the non-trivial wh-chains to pronounce. Consider first (39)a. Since we are dealing with a PF operation, it seems plausible that this should be done left-to-right. We then first examine the chain *koj koj*. Since nothing goes wrong if this chain is pronounced in the head position, we pronounce initial *koj*. Next, consider the chain *na kogo na kogo*. Again, no PF violation takes place if we pronounce the head of the chain. (Nothing rules out the *koj na kogo* sequence.)[21] At this point we have the following sequence: *koj na kogo*. Now we consider the chain *kogo kogo*: If we pronounce

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[20] Notice that although SC is a free word order language, when the subject and object cannot be disambiguated through case inflection there is a strong tendency to interpret the first NP as the subject and the second NP as the object. The same tendency exists in (37).

[21] Notice that look-ahead is not allowed here. The decision whether to pronounce the head or the tail of the *na kogo* chain is determined locally without look-ahead. It cannot be affected by *later* decisions concerning pronunciation of other chains.

kogo in the head of the chain we violate the PF constraint against sequences of homophonous wh-words. In order not to do that we pronounce the tail of the chain. We thus derive (34)a. Consider now (39)b. It is easy to verify that if we scan the structure from left to right when determining which copies to pronounce, no PF violation takes place if we pronounce the heads of all three wh-chains. We then must pronounce the initial wh-phrases, which gives us (29)b. Notice that (34)b is underivable. The data in (29) and (34) are thus accounted for.

Romanian, a MWF language of the Bulgarian type (see Rudin 1988), provides another phonological exception to the obligatoriness of fronting wh-phrases in MWF languages. An example MWF construction from Romanian is given in (40).

(40)　Cine unde ce　a adus?
　　　who where what has brought
　　　'Who brought what where?'

Like SC, Bulgarian, and Russian, Romanian obligatorily fronts all wh-phrases, including wh-phrases in echo-questions. Thus, according to Comorovski (1996), (41) is ungrammatical even as an echo question.[22]

(41)　*Ion a adus　ce?
　　　Ion has brought what

Comorovski (1996) observes that there are some exceptions to the obligatoriness of fronting of echo wh-phrases in Romanian. Echo wh-phrases have to stay in situ in questions that require a question as an answer. (The answers in (42) are unacceptable as true, non-echo questions. In non-echo questions, the second wh-phrase also must move.)

(42)　a.　Q: Cine a　uitat　să deschidă parașuta?
　　　　　who has forgotten to open　parachute-the
　　　　　Echo Q: Cine a　uitat　să deschidă ce　(anume)?
　　　　　　　　　who has forgotten to open　what　exactly
　　　b.　Q: Cînd　ai　fost ultima oară în Madagascar?
　　　　　when you-have been last　time in Madagascar
　　　　　Echo Q: Cînd am　fost　ultima oară unde?
　　　　　　　　　when have-I been last　time where

Comorovski argues that we are dealing here with a phonological effect. She observes that true questions in Romanian have a melodic peak on the stressed syllable of the question word, which is followed by a falling contour. Echo wh-questions have a rising pattern with two tonal contour peaks: the first one on the stressed syllable of the question word and the second, much higher one, on the last stressed syllable of the sentence. As a result, if both the echo and the non-echo wh-phrase were fronted it would be impossible to assign a consistent

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[22] Some of my informants do not share Comorovski's judgment. I am focusing here on the dialect in which (41) is unacceptable as an echo question.

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melodic contour to the string that results from the fronting. If the echo wh-phrase does not move another type of intonation is possible: up to the wh-in-situ the question has a falling contour, similar to true wh-questions. The in situ echo wh-phrase is then pronounced with a sharply raised pitch. The intonation of the echo question under consideration thus combines the melodic contours of true questions and echo questions: the fronted non-echo wh-phrase receives secondary and the in situ echo wh-phrase receives primary stress.

How can this phonological effect on the form of echo wh-questions be instantiated formally?(41) indicates that, as in SC, in Romanian echo wh-phrases must be fronted in the syntax. The same then holds for the echo wh-phrases in (42). Ignoring copies of the first wh-phrase, (42) abstractly have the following structure in the output of the syntax:

(43)   true-wh   echo-wh₁ ....verb echo-wh₁

If the head of the chain created by the movement of the echo wh-phrase is pronounced the constructions cannot be assigned proper melodic contour, resulting in a PF violation. The violation can be avoided if, instead of the head of the chain, the tail of the chain is pronounced. The construction can then be assigned a proper intonation pattern.

(44)   true-wh   ~~echo-wh₁~~ ....verb echo-wh₁

We also explain why the second wh-phrase in (42) has to be fronted on the non-echo reading. Since on this reading the second wh-phrase is not pronounced with a sharply raised pitch the PF problem that arises on the echo question reading does not arise on the non-echo reading. PF then does not license a lower pronunciation of the second wh-phrase on the non-echo reading, as it does on the echo reading. Lower pronunciation is then disallowed.

Under the most natural interpretation of the pronounce a copy analysis we would expect successive cyclic movement to have a reflex in pronunciation in constructions under consideration. Franks (1998) suggests that if the highest member of a non-trivial chain cannot be pronounced for PF reasons then the next highest copy is pronounced. It is not clear why we should have this restriction. At any rate, unless we specifically stipulate that only the head or the very tail of a chain can be pronounced it appears that the second *šta* in the SC construction under consideration and the echo wh-phrase in the Romanian construction would not have to be pronounced in their base-generated position. The test in question cannot be run in SC due to interfering factors. As discussed in Bošković (1997a), SC has more than one position for focus licensing of wh-phrases, as a result of which it is difficult to determine in more complicated *what what* constructions whether we are dealing with pronunciation of a copy of the second *what*, or the head of the chain created by focus movement of the second *what*. The same problem arises with Romanian echo wh-constructions since Romanian appears to have more than one position in which moving echo wh-phrases can be licensed. The problem, however, does not arise in Bulgarian and Romanian *what what* constructions since in these languages only interrogative C can license

non-wh-fronting of non-echo wh-phrases.[23] Unfortunately, the relevant facts are not clear. (Only one copy of the second wh-phrase can be, and must be, pronounced. Notice that Bulgarian (45)a and Romanian (46)a differ from (45)b and (46)b, where the indicated pronunciation is the only possibility. % indicates variation in judgments.)[24]

(45) a. Kakvo (*kakvo) misli (*kakvo) Ivan (%kakvo) če (kakvo) obuslavlja (kakvo)?
          what   what thinks   Ivan   that   conditions
          'What does Ivan think conditions what?'
      b. Koj kakvo misli Ivan če   obuslavlja?
          who what   thinks Ivan that conditions
          'Who does Ivan think conditions what?'
(46) a. Ce (*ce)   crede (*ce) Ion (*ce) că (%ce) a (*ce) determinat (ce)?
          what what thinks   Ion   that   has   determined
          'What does Ion think determined what?'
      b. Cine ce   crede Ion că   a   determinat?
          who what thinks Ion that has determined
          'Who does Ivan think determined what?'

   The embedded SpecCP is the most plausible candidate for an intermediate landing site of wh-movement. The pre-verbal copy in at least the Bulgarian construction could be located in the Case-checking position of *what*, given that, as argued in Bošković (1997b), accusative wh-phrases pass through their Case-checking position on their way to SpecCP.[25] So, the only unambiguous intermediate copy of wh-movement itself is the one immediately preceding C. The judgments of my informants differ with respect to the possibility of pronouncing the second wh-phrase in that position, most of them rejecting it. However, several interfering factors prevent us from drawing any strong conclusions from this state of affairs. First, something like a doubly filled Comp filter could be an interfering factor here. Notice also that at least in some cases, Bulgarian and Romanian are not sensitive to the wh-

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[23] This is not the case with echo wh-phrases. I do not believe this necessarily provides evidence that non-wh-fronting of non-echo and echo wh-phrases in these languages are different phenomena. It is possible that though there is more than one potential licensor for non-wh-fronting in these languages, interrogative C must be the licensor whenever it is present. In Bošković (1998c) I suggest that, in contrast to SC, in Bulgarian interrogative C is always inserted overtly. The reason for this is that, in contrast to SC interrogative C, Bulgarian interrogative C is lexically specified as a PF verbal affix. The PF affix requirement cannot be satisfied if C is not inserted overtly. Evidence for the different status of Bulgarian and SC interrogative C with respect to PF affixhood is provided by the fact that in Bulgarian, but not in SC, interrogative C must be adjacent to a verbal element. Romanian behaves like Bulgarian in this respect. Since in true questions interrogative C must be inserted overtly, all non-echo wh-phrases must move to the interrogative CP projection in Romanian and Bulgarian. In pure echo-questions interrogative C might not have to be inserted at all. Therefore, echo wh-phrases could be licensed in other positions.

[24] Among my informants who have the *what what* constraint, both Bulgarian informants can realize second *what* just before the verb and one can realize it before the complementizer. Among my Romanian informants, only one allows the indicated intermediate pronunciation.

[25] There is an interfering factor with the attempt to place the wh-phrase before the main verb in the Romanian construction. Only certain clitic-like adverbs can intervene between the auxiliary and the participle, which suggests that the auxiliary in this construction is a verbal clitic (see Dobrovie-Sorin 1994:10-11).

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island constraint, which could be interpreted as indicating that Bulgarian and Romanian wh-phrases do not have to stop in SpecCP, another interfering factor.[26] Furthermore, Richards (1997) claims that movement of the second wh-phrase is not sensitive to subjacency. According to Richards, the first wh-phrase satisfies Subjacency with respect to the matrix Comp in the constructions under consideration. Given his Minimal Compliance Principle, the gist of which is that every requirement needs to be satisfied only once, the second wh-phrase does not have to satisfy Subjacency. Its movement could then plausibly proceed in one fell swoop. In fact, if we assume that successive cyclic movement takes place in order to satisfy subjacency the second wh-phrase in the above constructions could not undergo successive cyclic movement; it would actually have to move in one fell swoop.

Before closing this section I note another argument for the current analysis. Under the analysis of wh-in-situ constructions discussed in this section, the wh-phrase in situ undergoes full phrasal movement in overt syntax. As a result, we might expect it to license other elements from the putative raised position, given an appropriate licensing relation. One relevant phenomenon is parasitic gap (PG) licensing. Since Bulgarian and SC do not have the PG construction I focus here on Romanian.[27] The relevant constructions are given in (47) and (48), which contrast with (49).[28]

(47)   Cine a   citit CE   fără   să   claseze?
        who has read what   without subj.particle file.3p.sg
        'Who read what without filing?'

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[26] Under some analyses (see Rudin 1988, Koizumi 1994, and Richards 1997, among others), Bulgarian wh-phrases actually move through SpecCP even in wh-island configurations, which would eliminate the interfering factor. The analyses relate the resistance of Bulgarian to the wh-island constraint to the possibility of MWF. See, however, Bošković (1998c) for a criticism of such analyses.

[27] Russian has the PG construction, but its distribution is very limited. Certain interfering factors prevents us from running the test in question in Russian. Bulgarian and SC have the counterparts of (50), but I believe that in these languages such constructions should be analyzed as involving Across-the-Board (ATB) movement. (Other standard PG constructions from English are unacceptable in these languages.) For what it is worth, the relevant judgment from Bulgarian is given in (i).

(i)   a.   ?(?)Kakvo opredelja kakvo bez   da očakva?
                  what   determines what without that anticipates
             'What determines what without anticipating?'
       b.   *Koj opredelja kakvo bez   da očakva?
             who determines what without that anticipates

[28] All of my informants accept (47). The judgments are divided for (48) with the majority accepting the sentence. Notice that there are potentially interfering factors in the test run here. It is possible that phonological information is involved in PG licensing. (For an indication that this might be the case, see Franks 1993). This might help us account for the judgment of the speakers who do not accept (48), given that under the pronounce a copy analysis the licensor is not phonologically realized in its raised position. (Notice also that there are analyses, e.g., Nunes's (1998) sideward movement analysis, on which we would not expect PGs to be licensed in the constructions under consideration under the current analysis of these constructions. A Nunes style analysis might be appropriate for the speakers who do not accept (48) as well as for the ATB construction from footnote 27. (Nunes extends his analysis of PGs to ATB movement.)

(48)   Ce   precede   ce   fără   să   influenţeze?
        what precedes what without subj.particle influence.3p.sg
        'What precedes what without influencing?'

(49)   cf. *Cine a   citit cartea   fără   să   claseze?
        who has read the-book without subj.particle file.3p.sg
        'Who read the book without filing?'

The fact that a wh-in-situ can license a PG provides strong evidence for the current approach, on which the wh-in-situ in the constructions under consideration undergoes movement in overt syntax in spite of being pronounced in situ and is therefore high enough in the tree to license the PG in (47)-(48).Notice that (47)-(48) contrast with English (50):

(50)   a.   *Who read WHAT without filing?
        b.   *What precedes what without influencing?

This is not surprising under the current analysis, since the Romanian and English constructions are treated very differently in spite of the superficial similarity. The wh-phrases in-situ in the Romanian constructions undergo full phrasal wh-movement in overt syntax, which does not differ syntactically in any relevant respect from, e.g, movement of *what* in (51). It is then no surprise that (47)-(48) pattern with (51) rather than (50).

(51)   What did John file without reading?

4.   A syntactic exception to the obligatoriness of wh-fronting in MWF languages

Comorovski (1996) observes an exception to the obligatoriness of wh-fronting in Romanian concerning islandhood. She observes that echo wh-phrases can remain in situ in Romanian within non-Relativized Minimality islands (more precisely, non-wh-islands). According to Comorovski, (52) contrasts with (41) on the echo question reading. Notice that overt wh-movement out of the island in question is disallowed regardless of the reading.[29]

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[29] I am again focusing on the dialect in which even echo-wh-phrases must move. In this dialect, (i) contrasts with (52).

(i)   *Ion crede   că Petru a   cumpărat CE?
        Ion believes that Peter has bought   what

Recall that there is more than one possibility for the landing site of echo-wh-phrases.E.g., the echo wh-phrase in (i) can either stay within the embedded clause or move to the matrix clause. (See (ii). (*Ion* in (iia) can be a topic located outside CP.)I assume that the same options are in principle available for the echo wh-phrase in (52). As will become clear during the discussion below, only the derivation on which the echo wh-phrase moves overtly into the matrix clause can yield (52), where the echo wh-phrase is pronounced in situ.

(ii)   a.   Ion CE crede că Petru a cumpărat?
        b,   Ion crede că CE a cumpărat Petru?

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(52)   Ion a   auzit zvonul   că Petru a   cumpărat CE?
       Ion has heard rumor-the that Peter has bought   what
       'Ion heard the rumor that Peter bought what?'
(53)   *Ce a auzit Ion zvonul că Petru a cumpărat?

Assuming that islandhood is a syntactic phenomenon we are dealing here with a
syntactic exception to the obligatoriness of wh-fronting in Romanian.

Given that Romanian wh-phrases always move overtly even on the echo question
reading, (52) has to involve movement of the echo wh-phrase in overt syntax, as illustrated
in the simplified structure in (54). I suggest that the head of the chain created by the
movement is deleted in PF and a lower copy is pronounced. (Deletion of the head of the
chain has to be sanctioned by PF reasons. I return to what this PF reasons might be below.)[10]

(54)   Ce ... [_NP ...ce]

Under the pronounce a copy analysis (53) and (52) have the same derivation in overt
syntax, which makes accounting for the contrast between them difficult. The only way to
preserve the analysis is to assume that islandhood is at least to some extent a PF property.
Some older approaches to islandhood in fact do assume this, e.g., Perlmutter (1972), revived
recently in a slightly different form in Pesetsky (1997) (see also Lasnik in press for a recent
analysis along these lines). According to Perlmutter, syntactic movement is not constrained
by islands. What is constrained by islands is the obligatory deletion of the trace, "shadow
pronoun" for Perlmutter, copy in current terms, left by movement. Deletion fails when an
island intervenes between the head of a chain and its copy. Interpreting this as a PF violation
leads us to pronounce a copy instead of the head of the chain under the current analysis.

At first sight, the pronounce a copy analysis of (52) appears to be based on a rather
unorthodox view of locality restrictions on movement and licensing of traces. This is actually
not true. The analysis is based on the more or less standard view of the saving effect of
resumptive pronouns on locality of movement, which implies that at least to some extent,
locality is a PF phenomenon. It is well-known (see Shlonsky 1992 and Pesetsky 1997 and

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[10] Notice that Romanian questions display a V-2 effect. Normally, in both subject and non-subject
questions verbal elements occur in the second position on both the echo and the non-echo reading of the
fronted wh-phrase. As a result, they precede the subject in non-subject questions.

(i)   Ce a spus Mădălina?
       what has said Madalina
       'What did Madalina say?'

Under the pronounce a copy analysis, in (52) we are dealing with a non-subject question with the
verbal elements following the subject. This is not a problem if the V-2 effect is phonological in nature, as
suggested in Chomsky (1995), Boeckx (1998), Rice and Svenonius (1998), and Bošković (in preparation) for
various languages. Alternatively, we could assume that the subject in (52) is located in a pre-SpecCP topic
position.

references therein) that in a number of languages (e.g. Hebrew, Arabic, Irish, and English) a locality violation can be saved by realizing a copy within the island as a resumptive pronoun in PF. As discussed in Shlonsky (1992) and Pesetsky (1997), resumptivization in the languages in question is a last resort strategy used only when movement would otherwise result in a violation of locality restrictions on movement and/or licensing of traces.

(55)   a.   *What do you wonder whether was broken?
        b.   What do you wonder whether it was broken?
        c.   *Which employee did you hear the rumor that they had fired?
        d.   Which employee did you hear the rumor that they had fired him?
        e.   *What did you like it?
        f.   *Which employee did they fire him?

Apparently, phonologically realizing a copy within an island can rescue a construction from a locality violation.[31] This, I propose, is what happens in (52). Movement out of the island takes place. The construction is saved from a locality violation by phonologically realizing a copy within the island. The only difference is that in (55)b,d the copy is realized as a resumptive pronoun and in (52) the full copy is pronounced. Pesetsky (1997) proposes that in constructions like (55)b,d the tail of the chain is pronounced as a pronoun due to a constraint that requires copies that are not heads of chains to be as close to unpronounced as possible.[32] Pronunciation of Φ-features, i.e pronominal pronunciation, is the minimal pronunciation. The resumptive pronoun strategy cannot be employed in (52) because quite generally, echo wh-phrases cannot be associated with resumptive pronouns.[33] The relevant judgments are delicate, but (55)b,d seem degraded on the echo reading of the fronted wh-phrases, although echo wh-phrases in principle can be fronted in English. (Notice that the constructions improve if the echo wh-phrases remain in situ, as illustrated by *You wonder whether WHAT was broken and you heard the rumor that they had fired WHICH employee.*) Since a resumptive pronoun is not an option, the full copy of the wh-phrase is pronounced. Why is it that we cannot pronounce both the head and the tail of the wh-movement chain in (52)? Nunes (in press) argues that quite generally, it is not possible to pronounce both the head and the tail of a non-trivial chain. According to Nunes, pronunciation of both the head and the tail results in a violation of Kayne's (1994) Linear Correspondence Axiom (LCA). As a result, the chain cannot be linearized. Nunes considers the head and the tail of a chain non-distinct for the purposes of the LCA. As a result, realizing both phonologically would result in a conflicting ordering. Suppose we decide to

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[31] We can technically implement the effect by assuming that phonological realization removes the star assigned to copies/traces due to violations of locality (see Chomsky and Lasnik 1993). Notice that resumptive pronouns in English cannot occur in intermediate positions of wh-movement, as illustrated by **Which employee did you hear the rumor him that they had fired.* It seems plausible that this is a result of more general constraints on pronoun placement in English-resumptive pronouns can occur only in (or, more precisely, the subset of) positions in which pronouns in general can occur in the language.

[32] The proposal is in the same spirit as Franks (1998). Forcing a copy that is not the head of a chain to be as close to unpronounced as possible entails that if there is no reason to pronounce such a copy, the copy will not be pronounced.

[33] Some Romanian speakers actually disallow the resumptive pronoun strategy altogether.

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delete neither the head nor the tail of the chain created by movement of *what* in (52). Given the LCA, the wh-phrase will then have to both precede (because of *what* in SpecCP) and follow (because of *what* in the base-generated position) other words in the sentence. Linearization therefore fails. What about the resumptive pronoun examples? Why are they not violating the LCA? It seems plausible that the wh-phrase and the resumptive pronoun are not considered to be non-distinct for the purposes of the LCA since they do not receive the same phonological realization. No violation of the LCA then takes place in (55)b,d.[14]

5.   Conclusion

I showed in this paper that MWF languages do not display uniform behavior with respect to wh-movement, thus eliminating this type of language from the cross-linguistic typology concerning the behavior of wh-phrases with respect to wh-movement in multiple questions. This leaves us with three types of languages, represented by English, French, and Chinese. MWF languages are scattered across these three types: Bulgarian is a MWF counterpart of English, SC is a MWF counterpart of French, and Russian is a MWF counterpart of Chinese. The behavior of MWF languages with respect to wh-movement is camouflaged by the focus requirement on wh-phrases, which forces all wh-phrases to move overtly independently of wh-movement. We have seen that there are some exceptions to the obligatoriness of fronting of wh-phrases in MWF languages which can be classified into three groups: semantic, phonological, and syntactic. The semantic exception is explained away by the focus nature of the additional movement of wh-phrases in MWF languages. I showed that both phonological and syntactic exceptions can be accounted for if we allow for the possibility of pronunciation of lower copies of non-trivial chains motivated by PF considerations. The analysis provides evidence for the copy theory of movement.

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[14] Notice also that given that the wh-phrase and the resumptive pronoun are non-distinct, deletion of the wh-phrase would violate Recoverability of Deletion. Recall also that the head of a chain is always pronounced unless its pronunciation would cause a PF violation.

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