On the Operator Freezing Effect

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The goal of this paper is to establish the validity of the generalization in (1) based on crosslinguistic evidence regarding interaction of a number of movement operations creating operator-variable relations, namely, wh-movement, focalization, topicalization, quantifier raising, and the NPI-licensing movement.

(1) Operator in operator-variable chains cannot undergo further operator movement.

(1) prevents an instance of operator movement, such as those mentioned above, from feeding another operator movement, including its own reapplication. I will also show that there is no need to elevate (1) to the status of a principle of Universal Grammar. More precisely, I will show that (1) can be deduced from independently motivated mechanisms. In other words, it is a theorem.¹

¹In my previous work (Bošković 1997b; see also Bošković and Takahashi 1998 and Bošković 2003), I have suggested a generalization that is similar, but not identical, to (1). (For example, the one case discussed in Bošković and Takahashi 1998:359 would not be covered by (1). After the current work was originally written, I became aware of Rizzi’s 2004 manuscript, which suggests pretty much the same generalization as Bošković 1997b, 2003, and Bošković and Takahashi 1998, apparently unaware of these works. Anyway, Rizzi 2004 is theoretically quite different from the current work, and does not consider any of the data (apart from (8)) I give below to argue for (1). The data he does consider are not covered by (1), and in fact seem more relevant to the issue of how pied-piping works than to (1) hence they will not be considered here.) Note also that in Bošković (1997b, 2003) and Bošković and Takahashi (1998) I did not make a comprehensive empirical argument that the operator freezing effect as stated in (1) indeed holds, which is necessary before the generalization in (1) can be adopted. Providing such an argument based on the failure of interaction of a number of different operator-variable creating movement relations is the goal of this paper. I also failed to show in the earlier work that (1) is deducible from independently needed assumptions, which will be done in this paper.

Epstein (1992) (partly based on Lasnik and Uriagereka 1988) and Müller and Sternefeld (1993) have also proposed generalizations that are quite similar to (1) but still clearly only partially overlap with it. (To mention just a couple of differences, as far as I can tell, Epstein 1992 would not account for the wh-island data from sections 1.4. and 1.6. and the topicalization data from section 1.5. and Müller and Sternefeld 1993 would not account for the scope data from section 1.1., the NPI data from section 1.2., and the wh-island data from sections 1.4. and 1.6.) Given that, as can be easily verified by examining the arguments for (1) from section 1 and the deduction of (1) from section 2, the current work differs in important respects from these two works both empirically and theoretically, and given rather serious problems with these two works already noted in the literature (see, e.g., Müller and Sternefeld 1996 and Epstein 1992:246, fn. 12 for problems with Epstein 1992, and Culicover 1996 for problems with Müller and Sternefeld 1993), I will not discuss these two works here. However, the reader should bear in mind that they (as well as Lasnik and Uriagereka 1988) are important predecessors of the current work.
The goal of section 1 of the paper is to make a case for the generalization in (1). In section 2 I show that (1) is deductible from independently needed assumptions. Section 3 offers a brief conclusion.

1. **Empirical arguments for the operator freezing effect**

1.1. *Quantifier raising*

The well-known ban on Quantifier Raising (QR) of topicalized quantifiers illustrates the effect of (1). Lasnik and Uriagereka (1988) (see also Epstein 1992) observe that although it is standardly assumed that QR is clause bounded, there is actually variation regarding the possibility of having *every problem* scope over *someone* in (2a). Many speakers apparently do allow *every problem* to have wide scope in (2a). Significantly, Lasnik and Uriagereka (1988) point out that *every problem* cannot have scope over *someone* in (2b) even for the speakers for whom it can scope over *someone* in (2a).

(2) a. Someone thinks that Mary solved every problem.

   b. Someone thinks that every problem, Mary solved.

(2a) and (2b) differ in that the relevant NP in (2b) undergoes topicalization, movement that establishes an operator-variable relation (see Saito 1989). Assuming that quantifier interpretation is achieved via QR, *every problem* would scope over *someone* in (2a) as a result of QR into the matrix clause. Given this, (2b) indicates that topicalization has a freezing effect on QR (i.e., a topicalized element cannot undergo QR), which follows from (1) given that *every problem* is located in an operator position prior to QR.

The following Spanish data noted in Uribe-Echevarria (1992) illustrate the same point as (2).

(3) a. Qué dices que ha comprado todo dios?

During the discussion in section 1, it is also important to bear in mind that by *operator in operator-variable chains* in (1) I don’t mean an element located in any A’-position, but only in an A’-position in which the element in question is semantically interpretable as an operator. To illustrate this, consider (i):

(i) [CP What, do you think [CP t, that Mary bought t,]]

The operator position in (i) is the Spec of the matrix CP, not the Spec of the embedded CP, since the wh-phrase is interpreted/interpretable as an operator only in the former position. Successive cyclic wh-movement in (i) is then not ruled out by (1). It is important to bear in mind during the discussion below that not every A’-position is an operator position. (Regarding the work within Rizzi’s 1997 Split-CP Hypothesis, which sometimes assumes movement of the same element within split CP, such analyses are inconsistent with (1) iff the movements in question relate two semantically contentful operator positions.) Note finally that examples like ?*Which athletes, do you wonder [which picture of t,], Mary bought t,* are also irrelevant to the generalization in (1) since we are dealing here with movement out of an operator, not of an operator.
In this respect, it is worth noting that the preverbal subject in Spanish patterns with English topics regarding the data in (5) and (4b) (though the latter is somewhat controversial; see Ordóñez 1997 for relevant data and original references).

Strictly speaking, being a descriptive generalization (1) does not really account for anything. However, it will be shown below that (1) is actually a theorem deducible from independent assumptions, which means that accounting for a sentence by appealing to (1) is actually explanatory. In light of this, I will continue to use the term “account” when discussing the effect of (1) on particular examples.

Uribe-Echevarria also points out that the quantified NP in English (i) can take wide scope, which she interprets as indicating that, as standardly assumed, the preverbal subject position in English is an A-position, which means that the subject is allowed to QR into the matrix clause in English (i).

(i) Who do you think everyone saw at the rally?

Another interesting scope difference between Spanish and English that follows from the claim that preverbal subjects in Spanish are basically topics while they are “regular” subjects located in an A-position in English, concerns the relative scope of objects and subjects. Thus, Hornstein (1999) points out that, in contrast to English, it is difficult for an object to take wide scope with respect to a preverbal subject in Spanish and shows that this follows from the topicalization analysis of Spanish preverbal subjects.

The quantified NP can take wide scope with respect to the wh-phrase in (3a), but not in (3b). Uribe-Echevarria argues that wide scope of the quantified NP in (3a) is achieved via QR of the NP into the matrix clause. What about (3b)? A number of authors, including Uribe-Echevarria (see also Barbosa 1995, Ordóñez 1997, and Hornstein 1999, among others), have argued that, in contrast to English subjects, which are located in an A-position, preverbal subjects in Spanish are located in an A'-position. Under this analysis, the preverbal subject in Spanish (3b) is essentially treated in the same way as the topicalized NP in English (2b) (the "real" subject in the Spanish example would be a pro coindexed with the topicalized "subject").² The account of (2b) adopted above can then be straightforwardly extended to (3b): the subject NP in (3b) cannot take wide scope because the QR of the NP into the matrix clause, a prerequisite for the wide scope reading, is blocked by (1).³ The problem in question does not arise in (3a), where the quantified NP is located in an A-position, hence it is allowed to undergo QR into the matrix clause.⁴

As discussed in Epstein (1992), scope freezing languages like Hungarian are also relevant here. Hungarian NPs, including quantificational NPs, are typically moved in overt syntax to various pre-IP positions, which, according to Szabolcsi (1995), include topic position, focus position, and positions where only quantificational NPs can move. Most importantly, the scope of quantificational NPs moved to any of these positions is fixed (see, for example, Kiss 1987, 1991 and Szabolcsi 1995). Significantly, as pointed out by Szabolcsi, the scope of quantificational NPs that do not undergo the movements in question is not

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fixed (they behave similarly to English QNPs). Given the natural assumption that the movements in question involve operator, A’-movements (Szabolcsi in fact argues that we are dealing here with semantically active A’-movements), the scope freezing effect of the movements in question may be another illustration of (1): QNPs undergoing overt operator movement are prevented by (1) from undergoing QR, which would create scope ambiguities. On the other hand, QNPs that do not undergo overt operator movement can undergo QR, hence they exhibit the same scope ambiguities as, for example, English QNPs.

1.2. Negative polarity items

The data in (4) regarding negative polarity item (NPI) licensing, noted by Lasnik and Uriagereka (1998) (see also Epstein 1992), provide additional evidence for (1).

(4) a. I don’t think that Mary solved any problems.
   b. *I don’t think that any problems, Mary solved.

It is often assumed that NPIs like any must move to the licensing negation in LF. Given this, the contrast in (4) can be accounted for in the same way as the contrast in (2). Since the NPI in (4b) is located in an operator position, it is not allowed to undergo LF movement to the matrix negation, given (1). The problem does not arise in (4a), where LF movement of the NPI into the matrix clause is not blocked by (1).

1.3. LF wh-movement


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5 See den Dikken and Giannakidou (2002) and Giannakidou (1998) for a different perspective on (4b).

6 I am intentionally using a D-linked wh-phrase here. It is possible that non-D-linked wh-phrases are banned from undergoing topicalization due to an information conflict: they stand for purely new information, while topicalization typically affects elements denoting old information. The problem in question should not arise with D-linked wh-phrases, given that with D-linked wh-phrases, the range of felicitous answers is limited by a set of objects familiar to the speaker and the hearer as a result of it being referred to in the discourse or salient in the context. The range of reference of D-linked wh-phrases is thus discourse given. Bošković (2002a) in fact shows that due to their “discourse givenness”, D-linked wh-phrases are banned from undergoing focus movement in languages that have focus movement of wh-phrases. (See also den Dikken and Giannakidou 2002, Grohmann 1998, Regelro 2003, 2004, and Wu 1999, among others, for claims that D-linked wh-phrases can in principle undergo topicalization.) It is worth noting here that, given the reasoning employed above, if there are languages where wh-phrases undergo topicalization the wh-phrases in question would not undergo LF wh-movement. One possibility is that they could be associated with the interrogative C via unselective binding. In this respect, see Bošković (2002a), who provides evidence against a uniform crosslinguistic treatment of wh-phrases in-situ (i.e. he provides evidence that we should not treat
(5) *Who thinks that which problem, Mary hates.

The ungrammaticality of (5) can be straightforwardly accounted for if we assume that English wh-phrases that remain in situ overtly undergo LF wh-movement (see, for example, Huang 1982). More precisely, the ungrammaticality of the construction follows from (1).

Another argument involving LF wh-movement concerns the impossibility of scrambling of wh-phrases in German. It is well-known that languages differ with respect to the ability of wh-phrases to undergo scrambling. Thus, Japanese wh-phrases can undergo scrambling, whereas German wh-phrases cannot (see Grewendorf and Sabel 1999 and Müller and Sternefeld 1993, 1996, among others). The impossibility of scrambling wh-phrases in German is illustrated in (6b), where was undergoes scrambling, which contrasts with (6a) in the relevant respect. On the other hand, (7) shows that Japanese wh-phrases can undergo scrambling. ((6a-b) are taken from Müller and Sternefeld 1993.)

(6) a. Ich weiß nicht [\text{CP} \text{wem}_j [\text{IP} \text{der Fritz} t_j \text{was gesagt hat}]].
   I know not whom\text{DAT} ART\text{nom} Fritz what\text{ACC} said has
   ‘I don’t know what Fritz said to whom.’

b. *Ich weiß nicht [\text{CP} \text{wem}_j [\text{IP} \text{was}_i [\text{IP} \text{der Fritz} t_j t_i \text{gesagt hat}]]].
   I know not whom\text{DAT} what\text{ACC} ART\text{nom} Fritz said has

(7) [\text{IP} \text{Taro-ga} [\text{VP} \text{dono hon-o}] \text{Hanako-ni} [\text{CP} \text{PRO}_j \text{t} \text{yom-u} yooni] it-ta no]?
   Taro-nom which book-acc Hanako-dat read-nonpast C tell-past Q
   ‘Which book did Taro tell Hanako to read?’

The status of German scrambling with respect to the A/A’ distinction is somewhat controversial. Most authors assume that German scrambling of the kind illustrated in (6b) involves A’-movement, strong evidence for which is provided by the fact that NPs scrambled to the pre-subject position in German cannot bind an anaphor within the subject. It is also standardly assumed that German scrambling always has semantic effects (see, e.g., Diesing 1992, Lenerz 1977, Moltmann 1991, Sauerland 1999, and Grewendorf in press; in fact, according to Grewendorf, German scrambling involves either topicalization or focalization). German scrambling is thus a semantically contentful A’-movement. In other words, German scrambling seems to be the kind of movement that should be affected by (1). The ungrammaticality of (6b) can then be accounted for in the same way as the ungrammaticality of (5). More generally, we now have a uniform account of the impossibility of scrambling wh-phrases in German and topicalizing wh-phrases
in English. They both run afoul of (1). What about Japanese (7), where the wh-phrase undergoes scrambling? Saito (1989, 1992) convincingly demonstrates that Japanese scrambling does not involve semantically contentful operator movement—in fact, he shows that Japanese A’-scrambling is completely semantically vacuous (for relevant discussion, see also Tada 1993 and Bošković and Takahashi 1998, among others). This makes (1) irrelevant to Japanese scrambling. I conclude, therefore, that (1) accounts for the different behavior of German and Japanese with respect to the possibility of scrambling wh-phrases, given the independently motivated difference in the semantic properties of German and Japanese scrambling.

To summarize the discussion so far, we have seen that (1) provides a uniform account of the impossibility of topicalizing wh-phrases, NPIs, and quantifiers that need to undergo QR.

1.4. Wh-islands in English

So far we have discussed cases where the movement that moves the relevant element X to an operator position is overt, while the movement that attempts to move it out of this operator position is covert. I now turn to cases where all relevant movements are overt. It turns out that (1) is needed to account for the ungrammaticality of constructions like *What do you wonder John bought (when). Chomsky (1995) argues that features that have semantic import (interpretable features) are ‘unaffected’ by checking. They can undergo checking both more than once and less then once. According to Chomsky, the +wh-feature of wh-phrases is an interpretable feature. Therefore, it can enter multiple checking. Given this, consider the derivation in (8). *What first moves to the lower SpecCP, checking the strong +wh-feature of the embedded C. It then moves to the matrix SpecCP, checking the strong +wh-feature of its head.

(8) *What_1 do you wonder [_{CP} _t_1 C [_{IP} John bought _t_1 (when)]]

It is not clear how (8) can be ruled out (note that when can be interpreted in the embedded SpecCP, either
through unselective binding or after LF wh-movement, so that the embedded clause can still be interpreted as a question). In fact, it seems to be well-formed syntactically. Its ungrammaticality can then be taken to indicate that a wh-phrase cannot pass through an interrogative SpecCP even when that SpecCP is empty, which follows from (1). (What in (8) undergoes A’-movement after moving to a position where it can establish an operator-variable relation.)

1.5. Topicalization

Another relevant case is provided by Grohmann (2003). Grohmann argues that wh-movement cannot feed topicalization on the basis of constructions like (9), where the wh-phrase undergoes topicalization after wh-movement to SpecCP, with the comma intonation indicating a pause typically associated with topicalization structures.

(9) *Who, does Mary detest?

Since the wh-phrase in (9) undergoes an operator-variable creating movement (topicalization) after another operator-variable creating movement (wh-movement to SpecCP), (9) is straightforwardly ruled out by (1).

1.6. Multiple wh-fronting

A particularly strong argument for (1) is provided by multiple wh-fronting languages. It is often assumed that Bulgarian, a multiple wh-fronting language that places all fronted wh-phrases in SpecCP, does not display wh-island effects. The standard explanation for this (cf. Rudin 1988) is that, since Bulgarian allows more than one wh-phrase to be located in an interrogative SpecCP overtly, a wh-phrase can pass through an already filled interrogative SpecCP. This is in contrast to English, which disallows multiply-filled interrogative SpecCPs in overt syntax. As a result, a wh-phrase moving out of a wh-island in English is forced to skip the interrogative SpecCP, which results in a violation. Under the standard analysis, Bulgarian raises a problem for (1). Since interrogative SpecCP is an operator position, once a wh-phrase

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8 I am focusing here on Chomsky’s (1995) system; see section 2 for discussion of wh-islands in Chomsky’s (2000) system.

9 The reader should assume a D-linked reading for who, see fn. 6. Note that the grammaticality of (i) indicates that the landing site of topicalization precedes SpecCP in matrix clauses.

(i) ?To Peter, what should Mary give?

10 See Grohmann (2003) for an alternative account of (9) in terms of anti-locality.
moves to an interrogative SpecCP, (1) should prevent it from undergoing wh-movement. In this section I will show that Bulgarian, and multiple wh-fronting languages more generally, not only do not pose a problem for (1), they in fact provide a very strong confirmation of it.

1.6.1. Multiple wh-fronting and wh-islands

Rudin (1988) argues that there are two types of multiple wh-fronting (MWF) languages: in one type, represented by Bulgarian, all fronted wh-phrases are located in SpecCP, while in the other type, represented by Serbo-Croatian (SC), only the first fronted wh-phrase is located in SpecCP. She thus argues that, in spite of the superficial similarity, Bulgarian and SC MWF constructions in (10)-(11) have very different structures.

(10) Koj kakvo kupuva?
   who what buys
   ‘Who is buying what?’

(11) Ko šta kupuje?
   who what buys

The structures Rudin assigns to the Bulgarian and SC examples in question are given in (12). On Rudin’s analysis, only in Bulgarian fronted wh-phrases form a constituent and only Bulgarian allows more than one wh-phrase to be located in SpecCP. (According to Rudin, koj moves first to SpecCP in (12), and kakvo then right-adojins to it.)

(12) a. [CP [SpecCP SpecCP Koj] kakvo] [C kupuva]]?
   b. [CP Ko [C [IP šta [IP kupuje]]]]?

Rudin gives a number of arguments for the structural distinction between Bulgarian and SC multiple questions. The ones that we will be concerned with involve the possibility of splitting fronted wh-phrases with a parenthetical, sensitivity to wh-islands, and Superiority effects. Rudin (1988) claims that SC allows parentheticals to intervene between fronted wh-phrases, which is not possible in Bulgarian.

(13) Ko, po tebi, šta kupuje?
   who according-to you what buys
   ‘Who, according to you, is buying what?’
Rudin argues that the impenetrability of fronted wh-phrases in Bulgarian indicates that they form a constituent in SpecCP. She interprets the possibility of lexical material occurring between fronted wh-phrases in SC as indicating that fronted wh-phrases in SC are not all located in SpecCP.11

Rudin also observes that Bulgarian and SC differ with respect to Superiority effects, i.e. the ordering of fronted wh-phrases. Whereas the fronted wh-phrases in SC (11) are freely ordered (see (15)), in Bulgarian the nominative wh-phrase has to precede the accusative wh-phrase (compare (16) with (10)), which has been successfully analyzed in the literature in terms of Superiority.12

(15) Šta ko kupuje? (SC)
(16) *Kakvo koj kupuva? (Bulgarian)

11Rudin uses the parenthetical test as a constituency test: fronted wh-phrases in Bulgarian cannot be split by a parenthetical because they form a constituent. Notice, however, that (14) could also be accounted for under the multiple-specifiers analysis of Bulgarian MWF, proposed in Koizumi (1994) and further developed in Richards (1997, 2001) and Pesetsky (2000). On this analysis, fronted wh-phrases in Bulgarian are all located in SpecCP, as in Rudin’s analysis. However, they do not form a constituent in that position, contra Rudin (1988). Rather, each wh-phrase is located in a distinct Spec. Under this analysis, (14) can be ruled out due to a feature clash: a [-wh] element is located in an interrogative ( [+wh]) projection. From this perspective, (14) would be interpreted as evidence that all Bulgarian wh-phrases are located in interrogative SpecCP, not necessarily that they form a constituent in that position. What is important for our purposes is that the impossibility of a parenthetical splitting wh-phrases provides evidence that the fronted wh-phrases are located in SpecCP; the exact structure of a multiply-filled SpecCP does not affect the point made here.

12See Rudin (1988), Bošković (1997a, 1999, 2002a), Richards (1997, 2001), and Pesetsky (2000), among others. One argument that the fixed order of the wh-phrases in (10)/(16) is a result of Superiority concerns the fact that (16) improves with D-linked (ia) and echo wh-phrases (ib). (KOJ in (ib) is an echo wh-phrase.) The same happens with Superiority violations in English (ii). Notice that all the above-mentioned authors argue that the wh-phrase that is first in the linear order in Bulgarian multiple questions is the one that moves first, in accordance with Superiority. The second wh-phrase either right-joins 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, 1998, 2001) and Pesetsky (2000). For another approach to Bulgarian MWF, see Grewendorf (2001) and Kim (1997).

(i) a. ?Koja kniga čovek kupuva?
   which book which man buys
   ‘Which book is which man buying?’
b. ?Kakvo KOJ kupuva?
(ii) a. Who bought what?
   b. *What did who buy?
   c. Which book did which man buy?
   d. What did WHO buy?
Rudin provides an account of these data on which Superiority effects arise only when all wh-phrases move to SpecCP. (I will return below to an analysis of the Superiority effect.)

I now turn to an argument for Rudin’s structure for Bulgarian and SC questions which directly concerns the generalization in (1). The argument involves extraction out of wh-islands. Rudin claims that Bulgarian allows, and SC disallows, extraction out of wh-islands based on constructions like (17).

(17) a. Vidjah edna kniga, kojato, se čudja koj znae koj prodava ti.
  saw-1s a book which refl wonder-1s who knows who sells
  ‘I saw a book which I wonder who knows who sells.’ (Bulgarian)

  b. *Vido sam knjigu koju, se pita ko zna ko prodaje ti.
      seen am book which refl wonder-1s who knows who sells
      ‘I saw a book which I wonder who knows who sells.’ (SC)

Rudin interprets the data in (17) as providing evidence that, in contrast to SC, Bulgarian allows more than one wh-phrase to be located in SpecCP in overt syntax. As a result, kojato in the Bulgarian example can escape the Wh-Island Constraint by moving through the embedded SpecCPs, occupied by koj. Since SC does not allow more than one wh-phrase in SpecCP overtly, the escape hatch from the Wh-Island Constraint is not available in SC.13

Under Rudin’s analysis, the data in question, in particular Bulgarian (17a), raises a problem for the generalization in (1). Since interrogative SpecCP is an operator position, once a wh-phrase moves to an interrogative SpecCP, (1) should prevent it from undergoing wh-movement. I conclude, therefore, that if Rudin’s analysis is correct, the insensitivity of Bulgarian to the Wh-Island Constraint raises a problem for (1).

It is worth noting here that Rudin’s way of voiding the wh-island effect in Bulgarian is abstractly very similar to (8), the only difference between (8) and the Bulgarian case being that in the Bulgarian case, the SpecCP through which the wh-phrase passes is already filled, which is irrelevant given that by hypothesis Bulgarian allows more than one wh-phrase in SpecCP in overt syntax. Given that the derivation in (8) clearly needs to be ruled out, it seems natural to conclude that Rudin’s derivation for Bulgarian should also be ruled out. I will demonstrate now that the derivation in question indeed needs to be ruled out.

13Rudin claims that Bulgarian and SC also differ with respect to the possibility of multiple extraction of wh-phrases out of declarative clauses. However, all the speakers I have consulted find SC (i) acceptable.

(i) Ko šta želite da vam kupi?
  who what want-2p that you buys
  ‘Who do you want to buy you what?’
The relevant facts regarding MWF and wh-islands are actually more complex than (17) indicates. In particular, it turns out that Bulgarian is not truly insensitive to the Wh-Island Constraint. Rudin herself notes that, in contrast to relativization, Bulgarian exhibits wh-island effects in questions. Rudin’s example in (18) illustrates this. Rudin also observes that (19), containing a D-linked wh-phrase, contrasts with (18). Based on this, Rudin concludes that questioning out of a wh-island in Bulgarian is allowed with D-linked, but not with non-D-linked wh-phrases. Notice, however, that for most speakers even extraction of a D-linked wh-phrase out of a wh-island is degraded if it involves extraction across another D-linked wh-phrase, as in (20).14

(18) *Kakvo, se čudiš koji znazi koji prodava t1?
   what refl wonder-2s who knows who sells
   ‘What do you wonder who knows who sells?’

(19) ?Koja ot tezi knigi, se čudiš koji znazi koji prodava t1?
   which of these books refl wonder-2s who knows who sells
   ‘Which of these books do you wonder who knows who sells?’

(20) ?*Koja ot tezi knigi, se čudiš koji čovek znazi koji učitelj prodava t1?
   which of these books refl wonder-2s which man knows which teacher sells
   ‘Which of these books do you wonder which man knows which teacher sells?’

The literature on wh-islands in Bulgarian generally focuses on argument extraction and ignores adjunct extraction.15 Data concerning adjunct extraction flatly contradict the claim that Bulgarian is not sensitive to the Wh-Island Constraint. As shown in (21), extraction of adjuncts out of wh-islands leads to full unacceptability regardless of whether we are dealing with relativization or questioning. D-linking is also irrelevant.

(21) a. *pričinata, poradi kojoto, [Ivan znazi dali Boris e zaminal t1]
   reason-the for which Ivan knows whether Boris is left
   ‘the reason for which Ivan knows whether Boris left’

b. *Zašto/poradi kakva pričina znazi [dali Boris e zaminal t1]?
   why for which reason knows whether Boris is left
   ‘Why/for which reason does he know whether Boris left?’

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14 Thanks are due to Cedric Boeckx for suggesting checking extraction out of D-linked wh-islands.

15 Note that in the current theoretical system, traditional Subjacency and ECP violations (the former arising with extraction of arguments and the latter with extraction of adjuncts out of islands) are treated in essentially the same way (see Chomsky and Lasnik 1993, Takahashi 1994, Bošković and Lasnik 1999, among others).
These facts indicate that wh-islands are islands in Bulgarian. Consequently, any analysis that completely voids Bulgarian of the wh-island effect must be on the wrong track. Rudin’s analysis, which ties the grammaticality of (17a) to the availability of MWF with multiply filled SpecCPs in Bulgarian and on which the wh-phrase in (17a) passes through the filled interrogative SpecCPs, seems to incorrectly predict that Bulgarian should never exhibit wh-island effects, since a wh-phrase moving out of a wh-island should always be able to move through the filled SpecCP.

Note also that Swedish, a language that does not allow MWF, behaves in exactly the same way as Bulgarian with respect to wh-islands. Thus, on a par with Bulgarian, argument extraction out of wh-islands in Swedish is possible with relativization and D-linked questions, but not with non-D-linked questions, as observed in Comorovski (1996). Furthermore, as in Bulgarian, D-linked questions do exhibit wh-island effects if the wh-island itself contains a D-linked wh-phrase in SpecCP. Again as in Bulgarian, extraction out of wh-islands is never possible with adjuncts, which is generally ignored in the literature. ((22a-b) are taken from Maling (1978) and (22c) from Engdahl 1986.)

(22) a. *Vad frågade Jan vem som skrev?
   ‘What did John ask who wrote?’

b. Det är melodin, som Jan frågade vem som skrev.
   ‘This is the song that John asked who wrote.’

c. Vilken film var det gu gärna ville veta vem som hade regisserat?
   ‘Which film did you want to know who had directed?’

d. ?*Vilken film var det gu gärna ville veta vilken skådespelare som hade regisserat?
   ‘Which film did you want to know which actor had directed?’

e. *Varför/av vilket skäl undrar han [vem som lagade bilen t]?
   ‘Why/for which reason does he wonder who fixed the car?’

f. *orsaken varför han undrar [vem som lagade bilen t]
   ‘the reason why he wonders who fixed the car’

The fact that Bulgarian, a MWF language, and Swedish, a non-MWF language, exhibit exactly the same behavior with respect to wh-islands indicates that an analysis that crucially relates the possibility of

16As in Bulgarian, where extraction out of a wh-island is possible in Swedish, it can take place out of more than one wh-island. Notice also that adjuncts can be extracted long-distance out of declarative complements in Swedish.
extraction out of wh-islands in certain contexts in Bulgarian to the availability of MWF is on the wrong track.

SC confirms this conclusion. Recall that, according to Rudin, while Bulgarian is a MWF language that places all fronted wh-phrases in SpecCP, SC cannot place more than one fronted wh-phrase in SpecCP. Two of the tests Rudin uses to support her analysis involve the parenthetical splitting effect and the Superiority effect. Notice, however, that Rudin runs her tests only with respect to matrix questions. As discussed in Bošković (2003), in embedded and long-distance questions SC behaves just like Bulgarian: fronted wh-phrases cannot be split by a parenthetical and Superiority effects emerge. This is illustrated for embedded questions in (23)-(25).\(^{17}\) ((23)/(24) should be compared with (11)/(15) and (25) with (13)).\(^{18}\)

(23) 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.

(24) a. (?)Ima ko šta da ti proda.
    has who what part you sells
    ‘There is someone who can sell you something.’
    b. *Ima šta ko da ti proda.

    who according-to you what part him sells
    ‘There is someone who, according to you, can sell him something.’
    b. *Ko, po tebi, koga voli, taj o njemu i govori.
    who according-to you whom loves that-one about him even talks
    ‘According to you, everyone talks about the person they love.’

Based on these facts, Bošković (2003) concludes that in embedded questions, SC switches to the Bulgarian MWF pattern, where all fronted wh-phrases are located in SpecCP (see below for an explanation why).

\(^{17}\)The irrelevant echo-question reading is ignored. Note that Bošković does 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 constructions like (23) and existential constructions like (24), which also contain embedded questions (see Izvorski 1996, 1998). However, Bošković (1997a) shows that when the interfering factor noted above is controlled for, indirect questions also exhibit Superiority effects.

\(^{18}\)The correlative example (25d) may be irrelevant since the wh-clause of the correlative does not tolerate the parenthetical in question regardless of its position. However, as noted in Bošković (2003), other material cannot intervene between the wh--phrases of the wh-clause of a correlative either.
Recall now that SC always exhibits wh-islands effects. This is illustrated by (17b) and the examples in (26). (Given the above discussion, all the wh-phrases in (17b) and (26), which involve embedded and long-distance questions, move to SpecCP. Furthermore, as discussed above, embedded interrogative SpecCPs in (26) and (17b) can be multiply filled.) Notice also that, like (17b), (26a-b) are acceptable in Bulgarian:

\[(26)\]

a. *Koje knjige ima ko da ti prodaje ti?
   which books has who part you sells
   ‘Which books is there someone who can sell to you?’

b. *Koju od tih knjiga se pitaš ko prodaje ti?
   which of these books refl wonder-2s who sells
   ‘Which of these books do you wonder who sells?’

\[(27)\]

a. Koja kniga ima koja ti prodaje ti?
   which book has who part you sells
   ‘Which book is there someone who can sell to you?’

b. Koja ot tezi knigi, se čudiš koj prodava ti?
   which of these books refl wonder-2s who sells
   ‘Which of these books do you wonder who sells.’

The SC data raise a serious problem for Rudin’s analysis. Recall that it is crucial for Rudin’s account of the contrast in (17) and (26)/(27) that Bulgarian allows more than one wh-phrase in interrogative SpecCP overtly, but SC does not. However, we have just seen that SC actually does allow more than one wh-phrase to be located in an embedded interrogative SpecCP in overt syntax. Under Rudin’s analysis, SC (17b) and (26) are then incorrectly expected to be grammatical. What we see here is that although SC allows more than one wh-phrase to be located in an embedded interrogative SpecCP in overt syntax, it cannot use this to escape a wh-island effect. In other words, contrary to what is standardly assumed (see Comorovski 1986, Rudin 1988, Koizumi 1995, and Richards 1997), the possibility of having more than one wh-phrase in SpecCP at S-Structure does not make possible derivations in which a wh-phrase moves through a filled SpecCP to escape a wh-island effect.

We are then faced with the following state of affairs: Both SC and Bulgarian place all fronted wh-phrases in SpecCP in embedded questions; i.e. they allow more than one wh-phrase to be located in an embedded, +wh SpecCP in overt syntax. Still, they exhibit wh-islands effects. SC exhibits wh-island effects in all contexts, and Bulgarian exhibits them selectively: it allows extraction out of wh-islands only in the contexts where Swedish allows such extraction. Given that Swedish is not a MWF language, I have
concluded above that the selective insensitivity of Bulgarian to the wh-island constraint should not be tied to the possibility of MWF. I will therefore ignore the contexts in question in the discussion below.

The important question that we need to address now is the following: Why is it that SC and Bulgarian display wh-islands effects although they allow more than one wh-phrase to be located in embedded interrogative SpecCPs? Given Rudin’s reasoning, if SC and Bulgarian wh-phrases were allowed to pass through filled SpecCPs, the wh-island constraint would be voided in the languages in question. Apparently, we need to block the derivation on which wh-phrases in languages in question move through filled interrogative SpecCPs. Let us see what could be responsible for the illegitimacy of this derivation. There are three candidates here:

(a) Something goes wrong at the point when a wh-phrase moves into the Spec of a CP that already contains a wh-phrase in it in SC/Bulgarian

(b) Something goes wrong because at some point there are two wh-phrases located in an interrogative SpecCP in SC/Bulgarian

(c) Something goes wrong when a wh-phrase attempts to move out of an interrogative SpecCP in SC/Bulgarian

The options in (a) and (b) are non-starters. If we were to appeal to either (a) or (b) we would not be able to account for grammatical constructions like (23a), (24a) and (10), where, as discussed above, all fronted wh-phrases are located in SpecCP in overt syntax (cf. (25) and (14)). Apparently, SC and Bulgarian can move a wh-phrase into an already filled interrogative SpecCP, and can have more than one wh-phrase in an interrogative SpecCP. We are therefore left with the possibility (c). Notice now that the possibility (c) is in fact blocked by (1). Moreover, blocking the derivation in question by appealing to (1) does not have any undesirable consequences for (23a)/(24a)/(10): wh-phrases are still allowed to move to an already filled interrogative SpecCP, and multiply filled SpecCPs are still allowed in the languages in question. The only thing that (1) does is prevent a wh-phrase from undergoing wh-movement from an interrogative SpecCP, i.e. moving out of an interrogative SpecCP. By doing so, it closes a loophole that the availability of MWF in the languages in question created with respect to the Wh-Island Constraint, which would have incorrectly voided the wh-island effect in these languages. Appealing to (1) thus enables us to account for the sensitivity of SC and Bulgarian, MWF languages that allow multiply-filled embedded interrogative SpecCPs, to the Wh-Island Constraint. I conclude therefore that MWF languages not only do not raise a problem for (1), they in fact provide a strong empirical argument for it.

Recall also that Rudin’s way of voiding the wh-island effect in Bulgarian is abstractly very similar to (8), the only difference between (8) and the Bulgarian case being that in the Bulgarian case, the SpecCP through which the wh-phrase passes is already filled, which is irrelevant given that by hypothesis Bulgarian allows more than one wh-phrase in SpecCP. Given that (8) clearly needs to be ruled out, I
suggested above that the same should hold for Rudin’s derivation of the Bulgarian case. I have also provided additional empirical evidence to this effect. We have seen that (1) in fact provides a uniform account of (8) and the Bulgarian case under consideration, i.e. it rules out the derivations in question in the same way, a unification that seems desirable.\(^{19}\)

To summarize the discussion in this section, like the English data discussed in section 1.4., the data regarding wh-movement out of wh-islands in MWF languages indicate that the possibility of an interrogative wh-phrase passing through an interrogative SpecCP needs to be ruled out. The desired result is straightforwardly accomplished by (1).

1.6.2. Superiority effects with multiple wh-fronting

I now turn to Superiority effects in MWF languages.\(^{20}\) Recall that Rudin argues that all fronted wh-phrases are located in interrogative SpecCPs in Bulgarian (see (12a)). According to Rudin, in contrast to Bulgarian, only the first fronted wh-phrase is located in an interrogative SpecCP in SC, other fronted wh-phrases being located in a lower position (see (12b)). Bošković (1997a, 1999, 2002a) argues that there is even a deeper difference between Bulgarian and SC MWF constructions. In particular, Bošković argues that SC questions like (2) do not have to involve wh-movement at all, i.e. both wh-phrases can be located lower than the CP projection. This claim can be easily incorporated into Rudin’s analysis by pushing the first wh-phrase in (12b) a notch lower, i.e. by adjoining it to IP instead of moving it to SpecCP.\(^{21}\)

\[
(28) [\text{IP Ko } [\text{IP } Šta [\text{IP kupuje}]]]?
\]

Bošković (1997a, 1999, 2002a) shows that assuming that Bulgarian must, and SC does not have to, involve overt wh-movement to SpecCP can help us account for the fact, noted by Rudin and discussed above, that Bulgarian and SC MWF constructions like (10) and (11) differ with respect to possibilities for ordering

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\(^{19}\)We now need a new analysis of the selective lack of wh-island effects in Bulgarian which will not rely on passing through a filled SpecCP, i.e. on the possibility of multiply-filled SpecCPs at S-Structure. As noted above, the fact that Swedish, a non-MWF language, behaves like Bulgarian with respect to wh-islands leads to the same conclusion. The fact that SC exhibits wh-island effects even in the contexts in which it allows multiply-filled SpecCPs in overt syntax confirms that the possibility of MWF itself (more precisely, multiply-filled SpecCPs) cannot provide an escape hatch from the Wh-Island Constraint. I leave for future research investigating what is responsible for the selectivity of wh-island effects in Bulgarian and Swedish.

\(^{20}\)For relevant discussion of Superiority, see also Müller and Sternefeld (1993).

\(^{21}\)Bošković actually leaves open the exact landing site of wh-phrases that do not undergo overt wh-movement in SC (for some relevant discussion, see Bošković 1997b and Stjepanović 1999, 2003). The precise landing site is also not important for our purposes--what is important is that it is lower than CP. (Given the discussion of the role of focus in MWF below, we can assume that the landing site is in a focus projection below CP, i.e. the Spec of this projection. The reader therefore should not take IP adjunction in (28) seriously.)
of fronted wh-phrases (see Bošković 2002a for additional evidence for different behavior of SC and Bulgarian with respect to wh-movement). While in SC (11) and (15) the fronted wh-phrases are freely ordered, in Bulgarian the nominative wh-phrase has to precede the accusative wh-phrase (compare (10) with (16), which has been successfully analyzed in the literature in terms of Superiority (see fn. 12). Bošković observes that given the claim that Bulgarian (10) and (16) but not SC (11) and (15) must involve wh-movement, which Bošković takes to be movement motivated by checking the +wh-feature of C, the seemingly different behavior of wh-movement in the two languages with respect to Superiority can be easily explained. Since the SC questions in (11)/(15) do not have to involve wh-movement, they do not exhibit Superiority effects. Since the Bulgarian questions in (10)/(16) must involve wh-movement they exhibit Superiority effects. Under this analysis, wh-movement in Bulgarian and SC is well behaved with respect to Superiority—whenever wh-movement takes place we get Superiority effects. Bošković (2002a) argues that wh-fronting in MWF languages that does not involve wh-movement involves focalization, i.e. it is an instance of focus movement.22 According to Bošković (1999), focus movement is not sensitive to Superiority. Bošković argues that the different behavior of focus movement and wh-movement with respect to Superiority can be captured under the economy account of Superiority, on which superiority effects follow from the requirement that every feature be checked through the shortest movement possible. As discussed by Bošković, an important difference between focus movement and wh-movement in the languages under consideration is that only one wh-phrase undergoes wh-movement (in constructions where wh-movement does takes place; recall that in some SC constructions it does not take place at all), while all wh-phrases undergo focus movement in the languages in question. When it comes to wh-movement (i.e. movement motivated by checking the +wh-feature of C), only one wh-phrase needs to move, checking the strong +wh-feature of C. In order to check the feature in the most economical way, i.e. through the shortest movement possible, it is always the highest wh-phrase that moves to check the +wh-feature C. (The underlying assumption here is that movement to SpecCP triggers Spec-head agreement with C, checking its +wh-feature. This means that with respect to wh-movement, the highest wh-phrase always must move first; otherwise, the +wh-feature would not be checked in the most economical way.) With focus movement, we are dealing with multiple movement to the same position since all wh-phrases undergo this movement in the languages in question. Regardless of the order of movements, the same number of nodes is always crossed, hence no order is preferred by Economy.23 To illustrate this with actual

22In this respect, Bošković (2003) observes that examples like (14) improve when the intervening parenthetical is contrastively focused, the relevance of which is clear under the focus movement analysis of MWF. (For relevant discussion, see also Lambova 2002. Regarding the focus movement analysis, see also fn. 27.)

23Bošković (1998) states the focus requirement as an inadequacy of wh-phrases, i.e. he assumes that wh-phrases have a strong focus feature, which needs to be checked overtly. Bošković (1999), on the other hand, states the focus requirement as an inadequacy of the target of movement, giving the target head the specification Attract-all for focus, which is satisfied by attracting all focalized elements. Under both of these analyses, all orders of movement of wh-phrases are equally economical
examples, English examples in (29) involve only wh-movement, hence the highest wh-phrase moves to check the +wh-feature of C.

(29) a. Who did John tell t_i that Mary bought what
    b. *What did John tell who that Mary bought t_i?

SC (11) and (15) involve pure focus movement. Since both wh-phrases have to undergo it, the focus requirement is checked in the same way in terms of nodes crossed regardless of the order of movement of the wh-phrases. In Bulgarian (10)/(16), one wh-phrase undergoes wh-motion. Moreover, both wh-phrases are licensed for focus by the interrogative C. When it comes to the focus requirement, the order of movement is irrelevant, as discussed above. However, to check the wh-feature of C in the most economical way, the highest wh-phrase must move first. (Recall that the first wh-phrase in the linear order is the one that moves first). Note that since, in contrast to wh-motion, pure focus movement is not subject to Superiority for reasons discussed above, if there are three wh-phrases in a multiple question in Bulgarian, the order of the second and the third wh-phrase is expected to be free. Bošković shows that, as expected, the second and the third wh-phrase, which undergo pure focus movement, are indeed freely ordered. The data illustrating this are given in (30)-(31). The examples show that the indirect object must move before the direct object when it is the highest wh-phrase before wh-fronting, as in (30), but not when it is not, as in (31), where the highest wh-phrase is koj.24

(30) a. Kogo kakvo e pital Ivan?
    whom what is asked Ivan
    ‘Who did Ivan ask what?’
    b. *Kakvo kogo e pital Ivan?

(31) a. Koj kogo kakvo e pital?
    who whom what is asked
    ‘Who asked who what?’

when it comes to satisfying the focus requirement. The details of the analysis are not important for our purposes.

24Notice the parallelism between the wh-phrases in SC (11) and (15) and non-initial fronted wh-phrases in Bulgarian with respect to Superiority, more precisely, the lack of Superiority effects. The parallelism confirms Bošković’s analysis, where movement of the first wh-phrase in Bulgarian differs from the movement of the second and the third wh-phrase, which are in turn the same as the movement of all the wh-phrases in SC (11)/(15). Recall that, according to Bošković, only the first Bulgarian wh-phrase undergoes wh-movement, other fronted wh-phrases in the Bulgarian and SC examples in question undergoing focus movement.(The reader is referred to Richards 1997, 2001 for an alternative analysis of Superiority effects in SC and Bulgarian. As noted in Bošković (xxxx), the analysis works for Bulgarian, but fails to account for the behavior of SC with respect to Superiority–delete now but add later in the final version).
b. Koj kakvo kogo e pital?

Consider now SC constructions that involve overt wh-movement. It turns out that these constructions provide more evidence for the necessity of (1). Recall that, as in Bulgarian, in the contexts in which SC must have wh-movement, all SC wh-phrases move to SpecCP. That is, SC behaves just like Bulgarian in such constructions. This means that one wh-phrase undergoes wh-movement, checking the strong +wh-feature of C, and other wh-phrases undergo focus movement. Since all wh-phrases are located in SpecCP, this means that C can license wh-phrases for focus in SC, just as in Bulgarian. As discussed above, wh-movement is sensitive to Superiority, while focus movement is not. As a result, the highest wh-phrase must move first to SpecCP, the order of movement of other wh-phrases being free.\(^{25}\) Recall, however, that SC also has the possibility of licensing wh-phrases for focus in a lower position. This possibility is, for example, realized in (11) and (15), which do not have to involve overt wh-movement at all. The question now arises why SC wh-phrases in wh-questions that must involve overt wh-movement cannot undergo focus movement to the focus position below C, which would be followed by wh-movement of one wh-phrase to SpecCP. We want to rule out this derivation for two reasons. First, given that focus movement is not sensitive to Superiority, the wh-phrases could be freely ordered in the focus projection. It appears then that we would have no way of ensuring the existence of Superiority effects in the contexts in question. In other words, in the derivation in question, focus movement would provide an escape hatch from Superiority effects even in the contexts where wh-movement must take place in SC, which, as shown above, do display Superiority effects. Second, under this derivation it would be difficult to account for the fact that it is more difficult to separate SC wh-phrases by a parenthetical in the contexts that involve wh-movement than in those that do not (cf. the contrast between (13) and (25)). I conclude, therefore, that the derivation in which focus movement feeds wh-movement needs to be blocked. (1) in fact straightforwardly blocks the derivation in question. Under this derivation, a wh-phrase first undergoes focus movement, which I assume is A’-movement that creates an operator-variable chain. The wh-phrase then undergoes wh-movement, in violation of (1).\(^{26}\) By ruling out the possibility of focus movement feeding wh-movement, (1) ensures the desired result: although in principle SC wh-phrases can be checked for focus either in SpecCP or in a position lower than C, the latter option is blocked in constructions involving wh-movement. The upshot of the analysis is that whenever a question involves true wh-movement in SC, i.e. whenever a wh-phrase must move to the interrogative SpecCP to check the wh-feature of C, the C also

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\(^{25}\)Bošković (2003) observes that, as expected, SC exhibits selective Superiority effects in the contexts in question, just like Bulgarian: the highest wh-phrase must move first, while the order of movement of other wh-phrases is free.

\(^{26}\)Grohmann’s (2003) approach to anti-locality, which bans movement that is too local (see Grohmann 2003 for precise definitions), would also rule out the derivation in question in some cases. (As far as I can tell, it would not rule it out in the cases where the landing sites of focus and wh-movement are in different clauses.)
must be the focus licenser. Licensing wh-phrases for focus in a lower position in such constructions, which is otherwise an option in SC, would violate (1). We thus account for the switch to the Bulgarian paradigm in constructions in which SC must have wh-movement. We also explain why SC and Bulgarian appear to differ with respect to which elements license wh-phrases for focus. Using a focus licenser lower than C in Bulgarian questions would never give a legitimate result, since it would result in a violation of (1). (It would involve movement of a wh-phrase from the focus position to the interrogative SpecCP.) In SC, this is a possibility in questions that do not involve overt wh-movement. In fact, there is evidence that SC and Bulgarian do not differ in this respect. Bošković (2002a) shows that even echo wh-phrases must undergo focus movement in the languages under consideration, (32a-b) being unacceptable even on the echo reading of what.27

(32) a. ?*Ivan kupuje ŠTA? (SC)
    Ivan buys what

       b. ?*Ivan e kupil KAKVO? (Bulgarian)
            Ivan is bought what

As is well-known, echo questions do not have to involve overt wh-movement even in obligatory wh-movement languages such as English. Given this, if Bulgarian in principle had the possibility of licensing wh-phrases for focus in a position lower than CP we would expect the possibility to be taken advantage of in echo questions. Since wh-movement does not have to take place in such constructions, licensing of a wh-phrase for focus in a lower position would not lead to a violation of (1). The possibility is indeed realized, as shown in (33), where the fronted echo wh-phrase is clearly located lower than SpecCP.

(33) Ti misliš će KAKVO e kupil Ivan?
    you think that what is bought Ivan
    ‘You think that Ivan bought what?’

I conclude therefore that, like SC, Bulgarian has the option of licensing wh-phrases for focus in a position lower than SpecCP. In other words, Bulgarian has the same possibilities for licensing wh-phrases for focus as SC. This means that Bulgarian raises the same issue as SC: we need to block the derivation on which

27I am considering only the reading on which the echo question asks for repetition of what the questioner has not heard. Echo questions in situ are acceptable on the reading on which they express surprise. As discussed in Bošković (2002a), this can be straightforwardly accounted for under the focus movement analysis of wh-fronting in Slavic since the value of the echo wh-phrase is fully known to the speaker, as well as the hearer, on the surprise reading, but not on the request for repetition reading. Hence, the wh-phrase has to undergo focus movement only on the latter reading. (Note that focus represents new information.)
movement to the lower focus position, which would void Superiority effects, feeds wh-movement.

To summarize, we have seen in this section that (1) is needed to account for the distribution of Superiority effects in MWF languages; more precisely, to block the derivation on which wh-phrases undergo focus movement prior to undergoing wh-movement, which would incorrectly void the Superiority effect in MWF constructions that involve true wh-movement.

2. Deducing the operator freezing effect

In section 1 we have seen a number of empirical arguments for (1). In light of these arguments, I take the validity of (1) to be well-established. As it stands, (1) is a principle. Although (1) helps us rule out a number of constructions, being a principle it does not really explain their ungrammaticality. The goal of this section is to show that (1) can be deduced from independently motivated assumptions. In other words, I will demonstrate that (1) is actually a theorem. This will enhance explanatory value of any account based on (1).

2.1. The Activation Condition

Chomsky’s (2000, 2001a) Activation Condition will play a central role in deducing (1). According to the Activation Condition, an element X can undergo movement only if it has an uninterpretable feature. In other words, X needs an uninterpretable feature to be visible/active for the operation Move. (Under Chomsky’s analysis, the same holds for Agree; see the discussion below.) As an empirical argument for the Activation Condition, Chomsky points out that the Activation Condition rules out movement from a Case to a non-Case A-position, as in (34). (The predecessor of this analysis is Lasnik 1995).

(34) a. *the belief John, to seem t₁ knows French.
   b. *the belief John, to seem to t₁, Peter knows French.

The relevant uninterpretable feature that makes an NP visible for A-movement, namely Case, is checked in the position of t₁ in (34) for the NP John. The Activation Condition then prevents John from moving to the infinitival SpecTP.

Consider now how the Activation Condition is satisfied in acceptable constructions like (35a) under Chomsky’s analysis of this construction (u. indicates an uninterpretable feature, and i. an interpretable

28Note that Bošković (2005) argues that the Activation Condition is itself deducible; if this is correct deducing (1) from the Activation Condition would mean deducing it from a theorem. The reader should bear this in mind.
Regarding quirky subject constructions in languages like Icelandic, Chomsky (2000:127) (see also Bejar and Massam 1999, Belletti 1988, Bošković 2002b, Cowper 1988, Frampton and Gutmann 1999, and Freidin and Sprouse 1991) assumes that quirky subjects have a structural Case, which is not morphologically realized, on top of their inherent Case (the inherent Case is checked before any relation with T is established). This structural Case makes them visible for movement to SpecTP.

(35) a. John was arrested t_i.
    b. T was arrested John
       u.φ i.φ
       EPP u.C

The uninterpretable unvalued (i.e. unchecked) Case feature of John in (35) makes the NP visible for movement to SpecTP, which satisfies the EPP. T has unvalued uninterpretable φ-features, which are checked/valued by the NP John. As a reflex of this process, the Case feature of John is checked off (i.e. valued and deleted–this occurs after John moves to SpecTP). Since the Case feature of John in (34) is checked off by the embedded finite T/preposition to, John cannot undergo A-movement outside of the embedded finite TP/to-headed PP without violating the Activation Condition.²⁹

Let us now turn to wh-movement. Chomsky suggests a uniform account of wh-movement and A-movement. Consider (36).

(36) a. I wonder what John bought.
    b. C John bought what
       u.Q i.Q
       EPP u.Wh

Chomsky proposes that the wh-phrase has an interpretable Q-feature and an uninterpretable wh-feature. The latter makes the wh-phrase visible for wh-movement to SpecCP, which checks the EPP feature of the interrogative C. The uninterpretable Q-feature of the C undergoes checking with the interpretable Q feature of what, and the uninterpretable wh-feature of what is checked off as a reflex of this checking relation. This system immediately accounts for one case that motivated postulation of (1), namely, it accounts for the impossibility of wh-movement out of an interrogative SpecCP. We have seen that the derivation on which a wh-phrase moves to an interrogative SpecCP and then undergoes wh-movement from this position needs to be blocked, otherwise, wh-movement out of wh-islands in MWF languages and movement out of interrogative CPs with unfilled Specs in English would be incorrectly allowed. The two cases in question are straightforwardly ruled out by the Activation Condition. In both cases in question a wh-phrase

²⁹Regarding quirky subject constructions in languages like Icelandic, Chomsky (2000:127) (see also Bejar and Massam 1999, Belletti 1988, Bošković 2002b, Cowper 1988, Frampton and Gutmann 1999, and Freidin and Sprouse 1991) assumes that quirky subjects have a structural Case, which is not morphologically realized, on top of their inherent Case (the inherent Case is checked before any relation with T is established). This structural Case makes them visible for movement to SpecTP.
moves to an interrogative SpecCP. In the English case, there is nothing in SpecCP before the wh-phrase moves to this position, while in the MWF case the SpecCP is already filled by a wh-phrase. However, this is irrelevant given that the MWF languages in question allow more than one wh-phrase in the relevant SpecCP. What makes the wh-phrase visible for movement to the interrogative SpecCP is the u.wh feature of the wh-phrase. However, the u.wh feature of the wh-phrase is checked off by the interrogative C. This means that the wh-phrase cannot undergo wh-movement from the interrogative SpecCP without violating the Activation Condition. Wh-movement from an interrogative SpecCP is then blocked by the Activation Condition. The Activation Condition thus accounts for one case that motivated postulation of (1), i.e. it partially deduces the generalization in (1). Can the Activation Condition account be extended to other cases that motivated the postulation of (1)? I believe that it can. I will demonstrate now that given a rather straightforward modification of Chomsky’s account of (36), the Activation Condition account can be extended to all the cases that motivated the postulation of (1), which means that (1) is fully deducible from the Activation Condition. This in turn means that there is no need to postulate (1) as an independent principle of the grammar, i.e. the generalization in (1) is a theorem.

30What about successive cyclic movement constructions like (ia), where what passes through the embedded clause SpecCP? Pushing the parallelism between wh- and A-movement, Chomsky treats successive cyclic wh-movement in the same way as successive cyclic A-movement, illustrated by (ib).

(i) a. What, do you think [CP t, that Mary bought t,]
    b. Mary, seems [IP t, to know t, French]

Regardless the latter, Chomsky proposes that, in contrast to finite T, nonfinite raising T is defective in that it cannot check off (i.e. value and delete) the Case feature of an NP, which means that the uninterpretable Case feature that makes an NP visible for A-movement survives movement to the Spec of a raising infinitival T. The NP can then move from this position to the Spec of a finite T without violating the Activation Condition. On a par with this treatment of successive cyclic A-movement, Chomsky suggests that, like the raising infinitival T, the intermediate declarative complementizer that is defective in that it cannot check off, i.e. value and delete, the uninterpretable wh-feature of a wh-phrase. Since the wh-phrase bears the u.wh even after movement to the embedded SpecCP in (ia), it can undergo wh-movement from this position without violating the Activation Condition.

It may actually not be necessary to assume that intermediate heads are defective in that they are unable to check off the relevant uninterpretable feature. Bošković (2002b) and Boeckx (2003) argue for a return to the Chomsky and Lasnik (1993)/Takahashi (1994) approach to successive cyclic movement, on which successive cyclic movement is driven by the need to minimize chain links–it has nothing to do with intermediate heads and does not involve any feature checking with intermediate heads. Under this approach, the basic syntactic operation on which syntactic conditions like Cycle and Last Resort are stated is Form Chain, creation of intermediate links of successive cyclic movement being licensed by the Chain-internal Minimize Chain Links requirement that is independent of feature checking. Under this approach it is natural to assume that the Activation Condition applies to the Form Chain operation, not to formation of particular chains. Regarding (i), this means that the Activation Condition would be relevant only to the final target of movement, matrix SpecCP in (ia) and matrix SpecIP in (ib), movement through the intermediate SpecCP/SpecIP being licensed by the Minimize Chain Links principle with no feature checking with the embedded C/I. Under this approach it is not necessary to stipulate defectiveness of the intermediate C/I with respect to feature checking since the heads in question are not involved in any feature checking in the first place.
2.2. *Deducing the operator freezing effect*

Let us now consider in more detail the wh and the Q feature involved in the wh-C/wh-phrase checking relation. The wh-feature was standardly taken before Chomsky (2000, 2001a) to be the specific feature involved in the checking relation between the wh-C and the wh-phrase, with both of these elements bearing this feature. Let us keep this assumption. What could Q then be? I take Q to be a more general, operator-type feature, shared by elements undergoing operator-style movements. Accordingly, I will refer to it as Op. In Chomsky’s (2000, 2001a) system, one feature should be shared by both elements involved in the checking relation, the feature in question being uninterpretable on the target (in the cases currently under consideration the target also has the EPP property), and interpretable on the lower element. In accordance with the Activation Condition, the lower element also has a different uninterpretable feature, which makes it visible for movement and which is checked off as a reflex of the primary checking relation between the target and the lower element.31 Focusing now on the wh-C/wh-phrase checking relation, it seems natural to assume that it is the more specific wh-feature that is involved in the primary checking relation rather than the more general Op-feature. Recall that the target is specified only for the feature involved in the primary checking relation. The way to specify the target as a wh-head is then to assume that the wh-feature is involved in the primary checking feature. (Taking the Op-feature to be involved in the primary feature checking would imply treating the target of wh-movement as a general operator head rather than a more specific wh-(i.e. question-) head.) The more general Op-feature will then be what makes the wh-phrase visible for movement (and the Agree relation). The feature is checked off as a reflex of the wh-checking relation between the C and the wh-phrase. The relevant properties of a wh-C and a wh-phrase involved in C/wh-phrase feature-checking/wh-movement in English are then illustrated in (37).

\[
\text{(37) } \begin{array}{ll}
C & \text{wh-phrase} \\
\text{u.Wh} & \text{i.Wh} \\
\text{EPP} & \text{u.Op}
\end{array}
\]

The wh-feature checking relation in (37) is pretty much preserved from Chomsky’s (1995) system. The more general Op-feature is the innovation of the Activation Condition-based Chomsky’s (2000, 2001a) system. When the wh-phrase in (37) undergoes wh-movement its Op-feature is checked off by the C. Given the Activation Condition, the wh-phrase then cannot undergo another wh-movement. As discussed above, this means that the possibility of a wh-phrase undergoing wh-movement from an interrogative SpecCP is blocked, as desired. The blocking effect can now be easily made more general. In the system

\[31\text{The uninterpretable feature in question does not disappear before the relevant movement takes place; see Chomsky (2000, 2001a) for details of the analysis.}\]
under consideration, it is natural to assume that it is the Op-feature that makes a phrase visible for an operator-style movement. This means that once a phrase undergoes an operator movement, its Op-feature will be deleted, as a result of which the phrase will not be able to undergo another operator movement, given the Activation Condition. The possibility of an operator-type movement feeding another operator-type movement is then blocked. But this is exactly what (1) was intended to do. As discussed in section 1, (1) prevents an instance of operator movement, for example, wh-movement, topicalization, or focalization, from feeding another operator movement (including its own reapplication). We have seen that this more general operator-movement blocking effect follows from the Activation Condition. To see this more clearly, consider again (37), together with the abstract representation of the elements involved in topicalization (38b) and focalization (38c).

(38) a. C wh-phrase
   u.Wh i.Wh
   EPP u.Op

b. Top topic-phrase
   u.Top i.Top
   EPP u.Op

c. Foc focus-phrase
   u.Foc i.Foc
   EPP u.Op

When a phrase undergoes a checking relation with a wh-C/Top/Foc head and moves to SpecCP/SpecTopP/SpecFocP, it’s Op-feature, which made it visible for movement to SpecCP/SpecTop/SpecFocP, is deleted. Given the Activation Condition, the phrase then cannot undergo either wh-movement, or topicalization, or focalization.

What about the cases where the second operator movement is an LF movement, such as, for example, the cases from section 1 that involved quantifier raising? A question that arises here is how LF movement dependencies should be treated. There are several options: One possibility is the traditional LF movement that follows overt movement. If this treatment of LF movement is adopted, the Activation Condition analysis can be easily extended to the LF movement cases. Another possibility for treatment of

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32The discussion below can be straightforwardly extended to other cases involving LF movement from section 1. Note that if quantifier raising is treated as a movement operation in Chomsky’s system (see below for an alternative), it would involve an X-feature agree relation between the target and the quantifier (I leave the precise nature of this feature open), and the presence of the uninterpretable Op-feature on the quantifier, which would make the quantifier visible for movement (and the agree relation, see the discussion below). The Op-feature would be checked off as a reflex of the X-checking relation.
LF movement is movement before spell-out followed by a pronunciation of a lower copy (i.e. the copy in situ–see Fox and Nissenbaum 1999 for such a treatment of quantifier raising). The current analysis of the operator freezing effect can again be easily extended to this treatment of LF movement. The same holds if LF movement takes place on the same cycle as overt movement, but differs from overt movement regarding the timing of spell-out (i.e. whether the structure is sent to spell-out before or after the movement in question), as in Chomsky (2001b) and Nissenbaum (2000). Finally, if LF movement dependencies are treated as pure Agree relations, i.e., if they do not involve actual movement, the Activation Condition account of (1) developed above can again be extended to the LF “movement” cases from section 1 given that, as argued in Chomsky (2000, 2001a), the Activation Condition constrains both movement and the Agree relation.\(^{33}\) I conclude therefore that the empirical effects of (1) follow from the Activation Condition.

3. Conclusion

I have argued for the generalization that an operator in an operator-variable chain cannot undergo further operator movement based on a failure of interaction between a number of operator-variable creating movement operations and shown that the operator freezing effect is deducible from the Activation Condition.

References


\(^{33}\)But see Bošković (2005).


Richards, Norvin. 1997. What moves where when in which language. Doctoral dissertation, MIT,
Cambridge, Mass.


Abstract: The paper makes a case for the generalization that an operator in an operator-variable chain cannot undergo further operator movement based on crosslinguistic evidence regarding failure of interaction between a number of operator-variable creating movement operations, namely, wh-movement, focalization, topicalization, quantifier raising, and the NPI-licensing movement. The paper also shows that the operator freezing effect can be deduced from Chomsky’s (2000, 2001) Activation Condition.