

## Phrasal movement: Wh-movement\*

The goal of this chapter is to discuss a number of issues pertaining to the typology of wh-movement and wh-questions more generally. The focus will be on multiple wh-questions since they are more conducive to revealing the options languages may employ in question formation. Additionally, given the nature of the volume, the focus will be on establishing language types, i.e. establishing the limits of crosslinguistic variation in this domain, rather than providing detailed analyses of this variation. Still, some analyses will be provided to facilitate the discussion, with references to relevant works for the interested reader.

### 1. Multiple-question typology

A superficial examination reveals three language types regarding multiple questions: the English-type, where only one wh-phrase moves, the Chinese-type, where they all stay in-situ, and the Bulgarian-type, where all wh-phrases move (multiple wh-fronting (MWF) languages).<sup>1</sup>

- (1) What did John give to who?
- (2) John gei-le shei shenme?  
John give perf. who what  
'What did John give to who?'
- (3) Na kogo kakvo dade Ivan?  
to who what gave Ivan  
'What did Ivan give to who?'

As is often the case, superficial examination does not reveal the true extent of crosslinguistic variation. In particular, it has been argued that French represents a separate wh-type and that there is no separate MWF-type regarding wh-movement itself, languages considered to belong to this type being scattered across the English, Chinese, and French-type.

#### 1.1. French

French appears to employ both the English and the Chinese option, as in (4). As a result, French was often assumed to be a simple mixture of these two types.

- (4) a. Qu' a-t-il donné à qui?  
what has he given to who
- b. Il a donné quoi à qui?  
he has given what to who

If this were correct both the English and the Chinese strategy should always be possible in French. However, the in-situ strategy has a very limited distribution in French, which indicates it is of different nature from Chinese wh-in-situ. Wh-in-situ is allowed in French short-distance

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<sup>1</sup>There are languages like Italian which for independent reasons disallow multiple questions, see e.g. Calabrese (1992) and Stoyanova (2008) (see also Grohmann 2006 for a potential extension to German).

null C matrix questions (3b), but not in embedded and overt C questions (4). (The judgments are given only for the true question reading. Overt C questions are possible only in some dialects.)

- (5) a. Tu as vu qui?  
you have seen whom  
b. Qui as-tu vu?
- (6) a. Pierre a demandé qui tu as vu.  
Pierre has asked whom you have seen  
b. \*Pierre a demandé tu as vu qui.
- (7) a. Qui que tu as vu?  
whom C you have seen  
'Who did you see?'  
b. \*Que tu as vu qui?

Bošković (1998) argues a simple lexical difference between English and French is responsible for this pattern.<sup>2</sup> Lexical insertion is standardly assumed to be disallowed in PF and LF. Chomsky (1995) deduces this from Full Interpretation, which requires what is present at the interface levels to be interpretable by the interfaces. A lexical item like *John* has formal, phonological, and semantic features. If *John* is inserted in LF the derivation crashes because LF cannot interpret the phonological features of *John*. If *John* is inserted in PF, PF cannot interpret the semantic features of *John*. The only way to derive legitimate PF and LF is for *John* to be inserted before SS. PF then strips off the phonological features, the semantic features of *John* proceeding into LF. This allows LF insertion of phonologically null elements (as long as it obeys the cycle, occurring at the top of the tree). Bošković (1998) argues this is what happens with French wh-in-situ, wh-C being inserted in LF. Wh-in-situ is in fact possible in French only where LF insertion is in principle possible, namely, when the C is phonologically null (compare (5a)/(7b)) and when it is located at the top of the tree (compare (5a)/(6b)). (5a) is then an IP in overt syntax, CP being inserted covertly.

What is then responsible for the contrast between (5a) and English (8)?

- (8) \*You have seen whom?

Bošković (1998) suggests matrix interrogative C in English is lexically specified as a PF verbal affix, which is not the case with French interrogative C. Independent evidence for this difference is provided by the fact that, like tense affix *-ed*, interrogative C in English must be adjacent to a verbal element, which is not the case with French.

- (9) Qui tu as vu?  
whom you have seen  
(10) \*Whom have you seen?

Since English +wh-C has phonological information in its lexical entry (PF affix specification), it cannot be inserted in LF. Under this view, both French and English have a +wh-C with a strong

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<sup>2</sup>For French, see also Boeckx (2000), Cheng and Rooryck (2000), Munaro, Poletto, and Pollock (2001), Zubizarreta (2003), Mathieu (2004), a.o.

wh-feature, which under the virus theory of strong features must be checked through wh-movement as soon as it is inserted. The difference between French and English is that French +wh-C has no phonological lexical specification, hence can be inserted in LF, which is not the case with English +wh-C. The simple lexical difference accounts for the contrast in (5a)/(8) (unifying it with (9)/(10)). However, since French +wh-C has a strong wh-feature, in contrast to Japanese +wh-C, which has a weak wh-feature (see below), it still triggers overt wh-movement when inserted overtly, which accounts for the contrast between (6b)/(7b) and Japanese (22).

French long-distance questions, however, exhibit rather interesting behavior.

- (11) a. \*Jean et Pierre croient que Marie a vu qui?  
       Jean and Pierre believe that Marie has seen whom  
       b. Qui Jean et Pierre croient-ils que Marie a vu?

- (12) Qui croit que Marie a vu qui?

      who believes that Marie has seen whom

(Bošković 1998)

While (11b), involving overt wh-movement, is acceptable, (11a), involving covert movement of the same element, is unacceptable. On the basis of this and similar facts (including the clause-boundedness of QR), Bošković (1998) argues LF movement is more local than overt movement, which can be captured under Chomsky's (1995) Move-F proposal. Chomsky observes a natural consequence of the assumption that movement is feature-checking driven is that, all else being equal, Move should apply to features, not to syntactic categories. Overt movement, which feeds PF, still must apply to whole categories, assuming lexical items with scattered features cannot be interpreted at PF. Since PF interpretability is irrelevant to LF, in LF Move applies only to features. Chomsky instantiates feature-movement as adjunction to  $X^0$ -elements. (11a) then must involve head-movement out of a finite clause, which, as is well-known, is disallowed. (To account for the contrast in (5)/(11a), Bošković uses the relativized version of the Head-Movement Constraint (Rivero 1991): feature-movement to interrogative C, which involves A'-head movement, crosses an A'-head in (11a) (*que*), but not (5).<sup>3</sup>) What about (12)? (12) contains another wh-phrase that is located overtly in SpecCP. This wh-phrase can check the strong +wh-feature of C, so that there is no need for the wh-phrase in-situ to move in LF. It must then be the case that the wh-in-situ in (12) does not move in LF, in contrast to the wh-phrase in (11a), given the clause-boundedness of such movement in French. Bošković (1998) then suggests that *qui* in (12) is associated with the wh-C without movement through unselective binding. In (11a), the wh-phrase in-situ is the only element that can check the strong +wh-feature of C and is, therefore, forced to undergo LF wh-movement. Unselective binding is not an option, since it would leave the strong +wh-feature of C unchecked.

Following Higginbotham (1983, 1985), where N has an index-argument that must be bound, Tsai (1994) and Reinhart (1995) argue wh-NPs have an open position hence can

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<sup>3</sup>See Bošković (2003c) for a reanalysis of the contrast in (5)/(11a) where *qui* undergoes Agree within Bošković's (2007a) system where the PIC doesn't hold for Agree and successive-cyclic movement is driven by the need for the moving element to avoid being sent to spell-out (see section 4). Assuming only feature labels, not the exact values (+/-), matter for intervention effects, Bošković argues (11a) is ruled out by Agree Closest, because *que*, which has a -wh-feature, intervenes in the Agree relation (for the wh-feature) between +wh-C and *qui*. The movement of *qui* to the embedded SpecCP in (11b) takes place for the reason noted above, voiding the intervention effect.

introduce variables in situ.<sup>4</sup> As a result, they can be unselectively bound by C. Not being nominal, wh-adverbs do not have an open position, hence cannot introduce variables in situ. From this perspective, German wh-ad adjuncts are rather interesting. In contrast to English, German allows wh-adverbs in-situ (for an account of the contrast, see Bošković 2000).

- (13) \*Who left why?  
 (14) Wer is warum gekommen?  
       who is why    come

Importantly, in contrast to wh-arguments, long-distance wh-adjunct in-situ questions are disallowed. Wh-adjuncts can, however, move long-distance overtly.

- (15) \*Wer hat gesagt daß Fritz warum ein Buch gelesen hat?  
       who has said that Fritz why a book read has  
       ‘Who has said that Fritz has read a book why?’ (Müller and Sternefeld 1996)  
 (16) Warum hat Hans gesagt daß Fritz t ein Buch gelesen hat?

Since wh-adverbs cannot be unselectively bound, wh-adverbs in-situ must undergo LF wh-movement even when another wh-phrase is present in +wh-SpecCP. The contrast in (15)-(16) then confirms that covert movement is more local than overt wh-movement, which can be captured under Move-F.

The superficial variation regarding locality discussed above, as in the contrast in (11a)/(12) regarding *qui*, doesn’t require positing any differences in the locality of LF wh-movement: while *qui* in (11a) undergoes LF wh-movement (i.e. Move-F), *qui* in (12) doesn’t move. However, there are cases that show there may be variation regarding the locality of LF movement itself. Thus, Brazilian Portuguese (BP) (Zocca 2011) and ASL (Wood 2009) behave like French regarding (5)-(7), which indicates they should also be treated in terms of LF insertion of the strong +wh-C. However, they allow (11a), as illustrated below for BP (as well as other unacceptable cases of wh-in-situ in French (involving quantificational interveners) that Bošković rules out by locality restrictions on Move-F).

- (17) (\*Que) você viu quem?  
       C    you saw who  
 (18) \*O Pedro perguntou você viu quem  
       the Pedro asked    you saw who  
 (19) O Pedro acredita que a Maria viu quem?  
       the Pedro believes that the Maria saw who

Assuming parallelism between (5)-(7) and (17)-(18) requires adopting the LF C-insertion analysis for BP wh-in-situ (i.e. not treating BP as Chinese), as Zocca (2011) argues, we may conclude that the locality of French and BP LF wh-movement is different. Wood (2009) pursues this account for ASL (see also section 1.3. for ASL): in contrast to French LF wh-movement, which involves Move-F, hence its clause-boundedness, ASL LF wh-movement involves Huang-

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<sup>4</sup>For Reinhart, wh-NPs are interpreted in situ via choice functions.

style phrasal movement to SpecCP, which makes intervening A'-heads irrelevant.<sup>5</sup> However, Zocca treats French wh-in-situ as involving LF movement of the Q-morpheme (see section 1.4) and argues the Q-morpheme can be generated separately from the wh-phrase in BP but not French: Q, generated in CP, then binds *quem* in (19).<sup>6</sup>

French and BP do not exhaust variation regarding Romance wh-in-situ. Thus, Spanish differs from French/BP in that its wh-in-situ must be sentence final.

(20) \*Tu invitaste a quién a tu fiesta?

you invited to who to your party

(21) Tu invitaste a tu fiesta a quién?

Reglero (2007) argues the reason for this is phonological. Assuming lower-copy pronunciation (LCP) is possible if higher-copy pronunciation would induce a PF violation (see section 1.4), she argues Spanish wh-in-situ involves overt movement+LCP: the Nuclear Stress Rule and the Focus Prominence Rule require stress assignment to the most deeply embedded copy, which then must be pronounced (note Spanish allows (11a)).<sup>7</sup>

## 1.2. Wh-in-situ languages

What about true wh-in-situ languages like Japanese? (22a) should not receive the same analysis as French (5b), since, in contrast to French, embedded in-situ questions are allowed in Japanese. The LF C-insertion analysis would predict (22b) to be ungrammatical. Also, Japanese +wh-C is lexically realized, hence cannot be inserted in LF.

(22) a. Anata-ga dare-o mita ka  
you-nom who-acc saw Q

b. Peter-wa [anata-ga dare-o mita ka] tazuneta  
Peter-top you-nom who-acc saw Q asked

Long-distance in-situ questions are also acceptable in Japanese.

(23) John to Mary-wa [Peter-ga dare-o mita to] sinziteiru ka  
John and Mary-top Peter-nom who-acc saw that believe Q

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<sup>5</sup>Pesetsky (2000) also argues, on different grounds, that languages may differ regarding whether LF wh-movement involves feature or phrasal movement (Pesetsky suggests a Move-F analysis for Japanese, and a phrasal-movement analysis for Chinese).

<sup>6</sup>Curiously, BP allows adjunct wh-in-situ even within islands, though, as in other languages, wh-adjuncts cannot overtly move out of islands (Zocca 2011).

<sup>7</sup>Uribe-Etxebarria (2002) gives an alternative account involving overt wh-movement followed by remnant IP-movement (see Reglero 2007 for arguments against this analysis).

There are also differences among French, Spanish, and BP regarding the pragmatic/semantic conditions on the appropriateness of wh-in-situ questions (under particular conditions even English allows them), see Zocca (2011) and Pires and Taylor (2007).

(22)-(23) indicate Japanese wh-questions cannot involve LF feature-movement/C-insertion. However, Japanese wh-phrases are not completely insensitive to locality constraints: adjunct wh-phrases are disallowed within islands.<sup>8</sup>

(24) \*John to Mary-wa [Peter-ga naze kuruma-o naosita kadooka] siritagatteiru ka  
 John and Mary-top Peter-nom why car-acc fixed whether want-to-know Q

Given (24), some kind of movement must occur in Japanese questions. As noted above, this cannot be Move-F. Also, wh-phrases themselves are clearly not moving overtly. There are several possibilities then. One is phrasal LF movement as in Huang (1982). Another option is not to have movement in (22)-(23), only unselective binding. Since wh-adjuncts cannot be unselectively bound, *naze* in (24) still needs to undergo LF movement, assuming some kind of wh-C/wh-phrase association is necessary. Another possibility is that a null wh-operator undergoes movement, as in Watanabe (1992) (see also Aoun and Li 1993), who argues the difference between English and Japanese regarding what moves is a result of the shape of wh-phrases and their quantificational force (i.e. their internal structure and semantic properties). Under this analysis, interrogative SpecCPs are filled overtly in Japanese, which implies the +wh-feature of C in Japanese is strong.

I now turn to MWF, which has been a fertile ground for testing a number of syntactic and semantic issues. I will discuss several issues that arise under the typology of wh-fronting established in Bošković (2002) regarding Superiority, single-pair/pair-list answers, and the driving force of MWF.

### 1.3. Multiple wh-fronting

Rudin (1988) argues that in spite of superficial similarity, MWF constructions display two different structures. For her, the initial wh-phrase always moves to SpecCP. However, she argues MWF languages differ regarding the location of non-initial wh-phrases, i.e. movement that Bošković (2002) calls non-wh-fronting. In Bulgarian, all wh-phrases move to SpecCP, which is not the case in Serbo-Croatian (SC). As a result, fronted wh-phrases cannot be split by non-wh-material in Bulgarian, but they can in SC.<sup>9</sup>

(25) ?\*Koj, spored tebe, kakvo e kupil?  
 who according to-you what is bought  
 ‘Who, according to you, bought what?’

(26) Ko, po tebi, šta kupuje?  
 who according to-you what is-buying

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<sup>8</sup>While argument wh-phrases are standardly assumed to be island-insensitive, Watanabe (1992) claims some degradation is found with wh-islands (but not in Chinese, see Aoun and Li 1993. See also Bruening and Tran 2006 for a Vietnamese wh-in-situ strategy that is island-sensitive even with wh-arguments.)

<sup>9</sup>For an alternative account of Bulgarian where fronted wh-phrases form a constituent prior to wh-movement see Grewendorf (2001). It appears that this account cannot capture the full range of Superiority effects discussed below (e.g. (45)-(46)), since it predicts that the order of fronted wh-phrases will always correspond to their height in the base-generated positions.

Bošković (2002) makes two modifications of Rudin’s analysis. First, following Stjepanović (1999a), Bošković argues non-wh-fronting involves focus fronting, SC wh-phrases being inherently focused. This follows the line of work originating with Horvath (1986), who makes a correlation between movement of wh-phrases and movement of contrastively focused non-wh-phrases whereby a number of languages that overtly move contrastively focused non-wh-phrases are analyzed as having focus-fronting of wh-phrases.

One argument for the focus-movement analysis from Bošković (2002) involves D-linked wh-phrases, which, due to their semantics, do not undergo focus-movement.<sup>10</sup> As a result, in contrast to non-D-linked wh-phrases, D-linked wh-phrases can stay in-situ (27). Furthermore, even when they move, they do not move to the same position as wh-phrases that undergo focus-movement, as the contrast in (25)/(28) indicates.

- (27) a. Koj e kupil koja kniga? (Bulgarian)  
 who is bought which book  
 b. \*Koj e kupil kakvo?  
 who is bought what
- (28) ?Koj, spored tebe, koja kniga e kupil?  
 who according you which book is bought  
 ‘Who, according to you, bought which book?’

Even echo wh-phrases must move in the languages in question, which confirms the movement is independent of the movement involved in true questions.

- (29) ?\*Ona će poljubiti KOGA? (SC)  
 she will kiss who

(29) is unacceptable on the request-for-repetition echo-question reading. However, Bošković notes it is acceptable on the reading on which it expresses surprise (on different types of echo-questions, see Pope 1976). This follows under the focus-movement analysis since the value of the echo wh-phrase is fully known to both the speaker and the hearer on the surprise reading, but not on the request-for-repetition reading.

Bošković (2002) also argues not all Slavic languages have true wh-movement—some only have focus fronting. He gives several tests for teasing the two apart. Thus, he argues Superiority effects (strict ordering of fronted wh-phrases) are present only with wh-movement (see below for an account). It then follows that Bulgarian (30) involves wh-movement, while SC (31) doesn’t.

- (30) a. Koj kogo obiĉa?  
 who whom loves  
 ‘Who loves whom?’  
 b. \*Kogo koj obiĉa?

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<sup>10</sup>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. Their range of reference is thus discourse-given. Due to their “discourse givenness”, they are not inherently focused hence not subject to focus-movement.

- (31) a. Ko koga voli?  
      who whom loves  
      b. Koga ko voli?

The Superiority test is confirmed by single-pair (SP)/pair-list (PL) answers. Bošković (2002, 2003a) shows languages with overt wh-movement require a PL answer for examples like (32).<sup>11</sup> (32) cannot be felicitously asked in the following situation: John is in a store and sees somebody buying an article of clothing, but does not see who it is and does not see exactly what the person is buying. He goes to the sales clerk and asks (32).

- (32) Who bought what?

Whereas German patterns with English, wh-in-situ languages Japanese, Hindi, and Chinese allow SP answers in such questions. Particularly interesting is French, which allows SP answers, but only with in-situ questions like (33a), not (33b).

- (33) a. Il a donné quoi à qui?  
      he has given what to who  
      b. Qu'a-t-il donné à qui?

Bošković thus establishes the generalization that the availability of SP answers depends on the possibility of not moving any wh-phrase to SpecCP overtly.

Turning to Slavic, Bošković (2002) observes that Bulgarian, where interrogative SpecCPs are obligatorily filled overtly, patterns with English: (34) requires a PL answer.

- (34) Koj kakvo e kupil?  
      who what is bought

SC patterns with wh-in-situ languages. (35) can have either a PL or an SP answer.

- (35) Ko je šta kupio?  
      who is what bought

Other MWF languages confirm this analysis. Russian, Polish, and Czech also do not exhibit Superiority effects and allow SP answers in regular wh-questions, while Romanian and Yiddish show Superiority effects and disallow SP answers (see Bošković 2007b and references therein).

So far, we have a division of MWF languages into two groups regarding wh-movement in examples like (3). However, Bošković (2002) argues there are three different types of MWF languages based on the fact that non-wh-movement MWF languages do not behave uniformly in other contexts. Thus, while Russian never shows Superiority effects and Bulgarian always shows them, SC actually shows Superiority effects in some contexts. In contrast to (31), SC shows

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<sup>11</sup>I ignore D-linking questions and assume non-D-linking readings for non-inherently D-linked wh-phrases.



Superiority effects in long-distance, embedded, and overt-C questions, which are exactly the contexts where French must have wh-movement.<sup>12</sup>

- (36) a. Ko koga kažeš da je istukao?  
who whom say that is beaten  
'Who do you say beat whom?'  
b. \*Koga ko kažeš da je istukao?
- (37) a. Pričali su o tome ko šta mrzi.  
talked are about that who what hates  
'They talked about who hates what.'  
b. \*Pričali su o tome šta ko mrzi.
- (38) a. Ko li koga voli?  
who C whom loves  
'Who on earth loves whom?'  
b. \*Koga li ko voli?

SC thus has superiority effects where French must have wh-movement, Bulgarian where English must have wh-movement (all contexts), and Russian where Chinese must have wh-movement (never). This can be captured if SC/Bulgarian/Russian pattern with French/English/Chinese regarding when they have wh-movement; the only difference between them being that the former have additional wh-fronting that involves focus-movement which obligatorily affects all (non-D-linked) wh-phrases. We then have a perfect correlation between Superiority and wh-movement; whenever a MWF language must have wh-movement, it shows Superiority effects. Furthermore, there is no separate MWF-type regarding wh-movement itself. MWF languages are scattered across the English, French, and Chinese-type regarding when they have wh-movement.

There is, however, an issue regarding PL/SP readings. Bošković's (2003a) account of the SP/PL answers generalization leaves room for not filling SpecCP overtly to be necessary but not sufficient for licensing SP answers. There could then be a MWF language without Superiority effects which still disallows SP answers. Grebenyova (2006) reports this is the case for some Russian speakers. Consider Bošković's (2003a) account of SP/PL answers, which is based on Hagstrom's (1998) semantics of questions, where a Q-morpheme, an existential quantifier over choice functions which is necessary for an interrogative interpretation, is merged below CP. For Hagstrom, an SP reading results if the Q-morpheme is merged right below CP, with both wh-phrases in its scope (both wh-phrases are then in the domain of the choice function; cf. (39)a, a representation of English questions). The Q-morpheme can also be merged with one of the wh-phrases, where it does not have both wh-phrases in its scope (39)b). In Hagstrom's system this leads to PL answers.<sup>13</sup> Bošković (2003a) shows this system captures the damaging effect of overt wh-movement on SP answers. For an SP answer, the Q-morpheme must be introduced above both wh-phrases. In English, the wh-phrase undergoing overt wh-movement then crosses the Q-morpheme, yielding a relativized-minimality effect (an element with a +wh-feature crosses an element with a +wh-feature; see (39)a). The problem doesn't arise in (39)b, a PL-answer

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<sup>12</sup>Note that Bošković (2012) establishes a correlation between superiority effects under MWF and articles, which can be generalized in such a way that languages with articles must have true wh-movement.

<sup>13</sup>The gist of the system is that when the choice function has both wh-phrases in its domain, we get a set of propositions; when this is not the case we get a set of sets of propositions.

configuration, where the Q-morpheme is merged with the lower wh-phrase, hence the wh-phrase undergoing wh-movement does not cross it.

- (39) a. WH<sub>i</sub> C Q [t<sub>i</sub> wh] SP answer  
 b. WH<sub>i</sub> C [t<sub>i</sub> wh+Q] PL answer

Wh-movement thus induces a relativized-minimality violation on the SP reading.<sup>14</sup> The problem doesn't arise in languages without overt wh-movement. Suppose, however, that due to its lexical properties (i.e. selectional requirements), the Q-morpheme requires merger with a wh-phrase. This would rule out the SP reading even in a language without overt wh-movement, the source of variation being lexical. Another more-structurally based possibility for Russian is to take advantage of focus-movement. Suppose that for the Russian speakers who disallow SP readings, the landing site of focus-movement is higher than the higher position in which the Q-morpheme is merged on the SP reading. A wh-phrase then crosses the Q-morpheme when undergoing focus-movement, yielding a relativized minimality effect since we are dealing here with A'-movement crossing an A'-element. The SP reading can then be blocked even in a language like Russian, which does not have overt wh-movement. The upshot of this is that an overt wh-movement language will never allow SP answers, while languages without overt wh-movement may, but don't have to, allow SP answers.

However, SP answers are the only option in SC when a lower wh-phrase moves across a higher wh-phrase as in (31b). The reason for this (see Bošković 2003a) is that if the Q-morpheme is merged with the lower wh-phrase, which is what normally happens with PL answers, the lower wh-phrase carries the Q-morpheme under focalization, so that after this movement the Q-morpheme c-commands both wh-phrases, an SP-answer configuration. (There is crosslinguistic variation regarding the strandability of the Q-morpheme, see Hagstrom 1998, Bošković 2003a). Interestingly, Stjepanović (2010) observes that, in contrast to (31b), a PL answer is allowed in (40) (SP answers are also possible).

- (40) Kakvu je ko dobio ocjenu?  
 what is who gotten grade  
 'Who got what grade?'

Only the left-branch moves here, stranding the rest of the object with the Q-morpheme below the subject, thus leaving the Q-morpheme in a PL-answer configuration.

There are two contexts where SC null-C matrix questions show Superiority effects, sluicing (Stjepanović 1999b) and constructions involving topicalization constituents (TCs, Bošković 2002).

- (41) Neko nekoga/nekoga neko ljubi. Ko koga/\*koga ko?  
 someone.nom someone.acc is-kissing who whom  
 (42) a. Tom čoveku, ko je šta poklonio?  
 that man.dat who is what bestowed  
 'To that man, who bestowed what?'

<sup>14</sup> If a single wh-fronting language allows SP answers the language is predicted not to have true wh-movement. Rather, it would be fronting wh-phrases to a lower projection (e.g. FocP or TopP).

b. ??Tom čoveku, šta je ko poklonio?

Recall that in French and SC, +wh-C in questions like (5a) can be inserted overtly or covertly. Overt C-insertion triggers overt wh-movement. Since Superiority indicates wh-movement, it must then be the case that (41)-(42) involve wh-movement to SpecCP. If sluicing involves deletion of the IP-complement of C, this is not surprising regarding (41). As for TCs, Rudin (1993) argues TCs are CP-adjoined (they precede wh-phrases in Bulgarian, which are located in SpecCP). TCs can then be present only when CP is present overtly. Overt C-insertion forces wh-movement, hence the Superiority effect in (42).

Russian doesn't exhibit Superiority effects even with TCs. This is expected: being a Chinese-type language regarding wh-movement, Russian doesn't have wh-movement regardless of the timing of C-insertion.

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

Furthermore, SC (42)a) can only have a PL answer. This is expected: TCs force overt wh-movement, which then forces a PL answer. Significantly, Stepanov (1998) notes Russian (43)a) allows an SP answer, as expected given that Russian questions need not involve overt movement to SpecCP.

Consider now the reason for the different behavior of focus/wh-movement regarding Superiority. Bošković (1999) shows this can be captured under the economy account where superiority follows from the requirement that features be checked through the shortest movement possible. In the languages under consideration, all wh-phrases undergo focus-movement but only one undergoes wh-movement (movement motivated by checking the +wh-feature of C). To check the +wh-feature through the shortest movement possible, the highest wh-phrase must undergo wh-movement. Assuming movement to SpecCP triggers Spec-head agreement, checking C's +wh-feature, the highest wh-phrase must move first; otherwise, the +wh-feature would not be checked in the most economical way. Focus-movement involves multiple movement to the same position since all wh-phrases undergo it. Regardless of the order of movements, the same number of nodes is always crossed, hence no order is preferred by Economy. Bošković (1999) explores two ways of stating the focus requirement: as an inadequacy of wh-phrases (where wh-phrases have a strong focus feature) or an inadequacy of the target, where the target head has the specification Attract-all for focus, which is satisfied by attracting all focalized elements.<sup>15</sup> I will adopt here the latter. To illustrate, (44) involves only wh-movement, with the attractor specified as Attract-1-wh, hence the highest wh-phrase moves to check its wh-feature.

- (44) a. What<sub>i</sub> did Mary give t<sub>i</sub> to who?  
b. \*Who<sub>i</sub> did Mary give what to t<sub>i</sub>?

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<sup>15</sup>Heads can differ in how many times they attract a given feature: there are Attract-1F and Attract-all-F heads, the latter attracting all elements with the F-feature (which are not located in F-checking positions).

SC (31) involves pure focus-movement. The attractor is specified as Attract-all-focus, which means both wh-phrases must undergo focus-movement. 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 (30), one wh-phrase undergoes wh-movement. Moreover, both wh-phrases are licensed for focus by the interrogative C. For the focus requirement, the order of movements is irrelevant. However, to check the +wh-feature of C in the most economical way, the highest wh-phrase must move first. (Following Rudin 1988, the first wh-phrase in the linear order is the one that moves first). Since, in contrast to wh-movement, focus-movement is not subject to Superiority, if there are three wh-phrases in Bulgarian questions, the order of the second and the third wh-phrase is expected to be free. This is indeed the case. Thus, *kogo* must move before *kakvo* when it is the highest wh-phrase before wh-fronting (45), but not when it is not, as in (46), where the highest wh-phrase is *koj*.<sup>16</sup>

- (45) a. Kogo kakvo e pital Ivan?  
 whom what is asked Ivan  
 ‘Who did Ivan ask what?’  
 b. ?\*Kakvo kogo e pital Ivan?
- (46) a. Koj kogo kakvo e pital?  
 who whom what is asked  
 ‘Who asked who what?’  
 b. Koj kakvo kogo e pital?

Bošković (2002) took the focus requirement to be the defining property of MWF. While an Attract-all-F head is needed to get MWF (this is the way to force all wh-phrases to move), does the relevant feature have to be the focus feature? Could it be the wh-feature? What would be the difference between an Attract-all-Focus and an Attract-all-wh language? Consider first SC Attract-all-Focus constructions.

- (47) [<sub>FocP</sub> [<sub>VP</sub> non-D-linked-wh... non-D-linked-wh]]

Since the wh-phrases are focused, they must move. Since there is no wh-movement, SP readings are available. Moreover, since Attract-all-F heads don’t induce Superiority effects, there are no Superiority effects here.

Consider now an Attract-all-wh MWF language, call it Y. Since Y has wh-movement, SP readings are disallowed. However, since the wh-movement-inducing head is an Attract-all head, there should be no superiority effects. So, Y should look like this: no superiority effects and no SP readings. There is a caveat though: since SP answers can be blocked even in languages without overt wh-movement, we are not ruling out the possibility of Y being an Attract-all-Focus language, like Russian (so far Y actually looks exactly like the variety of Russian that disallows SP answers). There is, however, another difference between Attract-all-Focus languages and Y. Recall D-linked wh-phrases do not undergo focus-movement. However, even D-linked wh-

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<sup>16</sup>Note the parallelism between the wh-phrases in SC (31) and non-initial fronted wh-phrases in Bulgarian regarding Superiority, which follows from the focus-movement analysis, where the movement of the first wh-phrase in Bulgarian differs from the movement of the second and the third wh-phrase, which is in turn the same as the movement of both wh-phrases in SC (31) (see Richards 2001 for an alternative analysis.)

phrases should move in Y since the Attract-all-wh head should not care about whether wh-phrases are D-linked or not. This is then the difference between Attract-all-wh and Attract-all-Focus MWF languages. Consider Hungarian (48) (see Bošković 2007b and É.Kiss 2002).

- (48) a. \*Ki irt mit?  
       who wrote what  
       b. Ki mit irt?  
       c. Mit ki irt?  
       d. \*Ki irta melyik levelet?  
       who wrote which letter  
       e. Ki melyik levelet irta?  
       f. Melyik levelet ki irta?

Both D-linked and non-D-linked wh-phrases must move here,<sup>17</sup> i.e. Hungarian doesn't show the D-linked/non-D-linked distinction regarding MWF. Slavic languages exhibit. This can be captured if Hungarian is an Attract-all-wh language, rather than an Attract-all-Focus language (see Bošković 2007b, Surányi 2005; see also Diesing 2003 for Yiddish). Hungarian MWF questions also disallow SP answers (see e.g. Surányi 2005) and do not show Superiority effects ((48)b-c), which is exactly the behavior expected of an Attract-all-wh language. However, the standard analysis of Hungarian (e.g. É.Kiss 2002, Horvath 1998, Puskás 2000, Lipták 2001) holds that the wh-phrase that is closest to the verb in MWF questions undergoes focus-movement, other wh-phrases undergoing movement that non-wh-quantifiers undergo (but see Surányi 2005 for arguments against this analysis). A question then arises whether Hungarian constructions under consideration can be reanalyzed as involving wh-movement.<sup>18 19</sup>

Note also that some languages, e.g. Iraqi Arabic and Hindi, don't allow any wh-phrases to remain in-situ within an embedded finite clause (ignoring dummy-scope-marker constructions). Both (11a) and (12) are unacceptable in these languages; no matter how many wh-phrases are located in the same clause as a +wh-C, if one wh-phrase is separated from it by a finite clause boundary the sentence is ungrammatical. This can be interpreted as indicating that in wh-in-situ constructions of such languages C Attracts all wh-phrases in LF, the same LF-strategy as in French being employed, hence the clause-boundedness effect.

Finally, I note the rather interesting case of ASL, where in-situ wh-phrases appear to behave differently in single and multiple questions.

- (49) a. WHO JOHN SEE?

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<sup>17</sup>Hungarian often allows both single wh-fronting and MWF. I focus here on a context where the latter is forced (see É.Kiss 2002).

<sup>18</sup>From the perspective of Bošković (2002), the fact that the verb-adjacent wh-phrase in (48)e) is D-linked is an argument that the wh-phrase doesn't undergo focus-movement. Note also that Hungarian passes Rudin's (1988) main test for locating all fronted wh-phrases in SpecCP: as in Bulgarian, nothing can intervene between fronted wh-phrases in Hungarian (Puskás 2000).

<sup>19</sup>Both D-linked and non-D-linked wh-phrases also must move in Basque. Reglero (2003), however, gives a slightly different account of Basque which is also stated in terms of Attract-all, but as a property of a discourse-related projection below CP which attracts both topicalized and focused elements (the underlying assumption being that D-linked wh-phrases are topics (cf. den Dikken and Giannakidou 2002, Grohmann 1998, 2006).

- ‘Who did John see?’
- b. ?JOHN GIVE-UP WHAT HAPPY?  
 ‘What did John happily give up?’
- c. \*WHO GIVE-UP WHAT HAPPY?
- d. WHO GIVE-UP HAPPY WHAT?
- e. \*WHO BUY LAST NIGHT WHICH COMPUTER?
- f. WHO BUY WHICH COMPUTER LAST NIGHT? (Wood 2009)

Wood (2009) analyzes ASL as a new type which to some extent combines Bulgarian and SC. At most one wh-phrase undergoes true wh-movement in ASL either overtly (49a) or covertly (49b) (C can be inserted overtly or covertly, see section 1.1), other non-D-linked wh-phrases must undergo rightward focus-movement overtly. (49c) is unacceptable since WHAT didn’t undergo focus-movement. The (non-)D-linking contrast between (49d) and (49e) provides evidence that rightward movement involves focus-movement. (49b) is acceptable since, in contrast to (49c), WHAT in (49b) can undergo wh-movement (covertly), hence it is not subject to obligatory focus-movement (see Wood 2009 for discussion of Superiority effects and the focus/wh-movement interaction in ASL).

#### 1.4.Back to wh-in-situ

MWF languages are also informative regarding the analysis of wh-in-situ. We have seen that various whs-in-situ shouldn’t be analyzed the same way; thus, unmoved wh-phrases in French, BP, Spanish, English, and Japanese exhibit very different behavior (varying even within a single language, compare (11) and (12)). The Minimalist Program (MP) actually has an abundance of proposals regarding how wh-phrases-in-situ can be treated, which may be useful given their varried behavior. MP also has several ways of treating the GB LF wh-movement: a. keeping phrasal covert movement; b. replacing it with Move-F; c. replacing it with Agree; d. replacing it with unselective binding. As discussed above, the freest option, which is however available only for wh-arguments, is unselective binding. Move-F has the locality of head-movement. As for Agree, which involves feature-checking at a distance, there is some controversy regarding its locality. It is subject to relativized minimality/intervention effects (like phrasal movement and Move-F): X can agree for feature F only with the closest F-bearing element. The issue is, however, whether it is also subject to the PIC and the Activation Condition. While the standard assumption is that it is, Bošković (2007a) argues that it isn’t. Notice, however, that if it is, unmoved wh-phrases cannot be treated in terms of Agree (the PIC would impose such heavy locality restrictions that wh-in-situ could never be found in long-distance questions. Furthermore, we would expect to find languages where subject wh-in-situ (in SpecTP) could be licensed but object wh-in-situ (within VP) could not be.

Even phrasal covert movement has several options in MP. In GB, there was a timing difference: covert movement occurs after SS hence follows overt movement. While such treatment can still be maintained, two additional treatments of covert movement arose as a result of elimination of the traditional LF component in MP, as in e.g. the multiple spell-out model. Covert and overt movement then cannot be distinguished by sequential ordering in the derivation: since there is only one cycle, they have to occur on the same cycle. One way to distinguish covert and overt movement is in terms of which copy is pronounced: the highest copy is pronounced in the latter and the lowest in the former (Bobaljik 1995, Groat and O’Neil 1996).

Another way is to assume that they differ regarding the timing of the transfer to the PF interface (Nissenbaum 2000): they take place on the same cycle, but the phrase hosting the movement can be transferred to the PF interface either after (overt movement) or before (covert movement) the relevant movement occurs.

MWF languages provide a clear case of lower-copy pronunciation (LCP), which can be used to test other *wh*-phrases in situ regarding this option. As illustrated below for Romanian, the second *wh*-phrase does not move in MWF languages if it is homophonous with the first fronted *wh*-phrase.

(50) a. Cine ce precede?  
       who what precedes

b. \*Cine precede ce?

(51) a. Ce precede ce?  
       what precedes what

b. \*Ce ce precede?

(Bošković 2002)

Bošković (2002) rules out (51b) by a PF constraint against consecutive homophonous *wh*-phrases (similar constraints on homophonous elements exist in many languages, see e.g. Golston 1995, Bošković 2001). (51a) involves an intricate phonology/syntax interaction where the need to satisfy a PF requirement apparently overrides the need to satisfy a syntactic requirement, which cannot be implemented in a derivational framework like MP. Bošković (2002), however, shows LCP straightforwardly resolves this phonology-syntax conflict, given Franks's (1998) proposal that lower-copy pronunciation is possible iff higher-copy pronunciation would induce a PF violation (see Nunes 2004 for a deduction of this). Since Romanian has a syntactic requirement that forces all *wh*-phrases to move overtly, the second *wh*-phrase must move in the syntax (irrelevant copies are ignored). If, as usual, the higher *ce*<sup>i</sup> is pronounced, a PF violation obtains (due to a sequence of homophonous *wh*-elements). This is precisely the situation where a lower copy can be pronounced under Franks's approach.

(52) [ce ee<sup>‡</sup> precede ce<sup>i</sup>]

LCP thus enables us to derive (51a) without violating the syntactic requirement that forces all *wh*-phrases to move overtly in Romanian, without look-ahead from the syntax to the phonology, without having phonology override syntax, and without any PF movement.

There is evidence that the second *ce* in (51a) indeed moves in overt syntax. In-situ *wh*-phrases in languages like English, “true” *wh*-in-situ languages like Malay, or mixed languages like French differ from their moved counterparts in being unable to license parasitic gaps.<sup>20</sup>

(53) a. What did John read without filing?

b. \*Who read what without filing?

(54) a. \*Kamu aturkan buku yang mana tanpa baca?

(Malay)

you filed book that which without reading

b. Buku yang mana kamu aturkan tanpa baca?

<sup>20</sup>I avoid null object *wh*-in-situ languages like Japanese due to the difficulty in teasing apart parasitic gaps and null objects.

- ‘Which book did you file without reading?’  
 (55) a. \*Il a lu quoi sans classer? (French)  
           he has read what without to-file  
       b. cf. Qu’a-t-il lu sans classer? (Bošković 2002)

However, the in-situ wh-phrase in (51a) licenses parasitic gaps (56), as expected under the LCP analysis, where the wh-in-situ in (56) undergoes phrasal movement in overt syntax that doesn’t differ syntactically in any respect from wh-movement of *what* in (53a). It’s then not surprising that (56) patterns with (53a), not (53b).

- (56) Ce precede ce fără să influențeze?  
       what precedes what without subj.particle influence.3p.sg  
       ‘What precedes what without influencing?’

This Romanian wh-in-situ differs from in-situ wh-phrases in non-MWF languages like English and wh-in-situ languages. The latter two then should not be analyzed in terms of LCP given the contrast between (51a)/(56) and (53b)/(54a)/(55a). (More generally, whatever analysis of (51a) is adopted it shouldn’t be applied to the latter, though see Nissenbaum 2000.)

Another line of work which was originally developed for wh-in-situ languages should be noted. Hagstrom (1998) argues Japanese questions involve overt movement. However, he argues that the traditional interrogative complementizer *-ka* is a Q-marker that is generated sentence-internally, and then moves overtly to C. He argues Sinhala has a similar Q-marker, which stays in its base position overtly and undergoes the same movement *-ka* does covertly. Bošković (2003a) extends this analysis to English, arguing English has a null counterpart of the Q-marker that is generated in the same position as in Japanese/Sinhala and then undergoes movement. As discussed above, the analysis accounts for the distribution of PL/SP answers. Under this view, the Q-syntax/semantics is invariant crosslinguistically, the only difference being whether the Q-morpheme is overt and whether it undergoes overt or covert movement. Wh-movement in languages like English is a result of a separate formal requirement which doesn’t feed semantics, the lower copy of the wh-phrase being interpreted in English. Cable (2010) modifies and extends this analysis more broadly (see also Kotek 2014 for a modification of Cable 2010), arguing that *wh*-dependencies are quite generally not established between  $C_{wh}$  and the *wh*-phrase but between  $C_{wh}$  and the Q-particle based on Tlinglit examples like (57), where he argues Q takes the wh-phrase as its complement. QP then undergoes Agree with C and moves to SpecCP. English has a null counterpart of Tlinglit’s Q-morpheme. As for Japanese, where the Q-morpheme is detached overtly from the wh-phrase, he argues that the Q-morpheme is generated adjoined to the wh-phrase, hence can move to C on its own, stranding the wh-phrase.

- (57) Daa sá i éesh al’óon?  
       what Q your father he.hunts.it

## 2. Wh-islands

Rizzi (1982) observes variation regarding wh-islands: while English exhibits wh-island effects, Italian doesn’t. Interestingly, even languages allowing extraction from wh-islands don’t behave uniformly regarding the phenomenon. Rizzi notes wh-island effects are not fully voided in



Italian: Italian disallows extraction from more than one wh-island and extraction from a finite clause embedded under a wh-island. Rudin (1988) shows that Bulgarian is much more permissive than Italian; thus, it allows extraction from more than one wh-island. Rudin also observes SC differs from Bulgarian in that it is wh-island sensitive.

- (58) Vidjah edna kniga, kojato<sub>i</sub> se čudja koj znae koj prodava t<sub>i</sub>.  
 saw-1s one book which-the refl wonder-1s who knows who sells  
 ‘I saw a book which I wonder who knows who sells.’ (Bulgarian)
- (59) \*Vidio sam knjigu koju<sub>i</sub> se pitam ko prodaje t<sub>i</sub>.  
 ‘I saw a book which I wonder who sells.’ (SC)

Rudin interprets this as providing evidence that, in contrast to SC, Bulgarian allows more than one wh-phrase in SpecCP in overt syntax. *Kojato* in (58) then escapes the Wh-Island Constraint by moving through the embedded SpecCPs, occupied by *koj*. Since SC disallows more than one wh-phrase in SpecCP overtly, this is not possible in SC. Rudin thus ties the insensitivity of Bulgarian to wh-islands to the availability of a particular type of MWF, where all wh-phrases are located in SpecCP. However, although SC disallows multiply-filled SpecCPs in matrix questions, it allows them in embedded questions. Recall that, in contrast to matrix questions, SC shows Superiority effects with embedded questions (37), which indicates that in that context SC has true wh-movement. Furthermore, there is evidence that when SC has wh-movement, it switches completely to the Bulgarian paradigm, with all fronted wh-phrases located in SpecCP.<sup>21</sup> While, in contrast to Bulgarian, SC allows non-wh-material to intervene between fronted wh-phrases in matrix questions, it disallows it in embedded questions, which indicates SC places all fronted wh-phrases in SpecCP in embedded questions.

- (60) \*Pričali su o tome ko, po tebi, šta mrzi.  
 talked are about that who according to-you what hates

However, SC still always exhibits wh-islands effects. Furthermore, Slovenian, a MWF language which disallows multiply-filled SpecCP MWF, doesn’t exhibit wh-island effects (see Golden 1997). This also indicates that the grammaticality of (58) should not be tied to the availability of a particular type of MFW.

Bulgarian is actually not truly wh-islands insensitive. In contrast to relativization, Bulgarian exhibits wh-island effects in questions, as Rudin’s (61) shows. Rudin also observes that (62), containing a D-linked wh-phrase, contrasts with (61). Furthermore, Bošković (2008a) shows extraction of adjuncts from wh-islands is always unacceptable (63).

- (61) \*Kakvo<sub>i</sub> se čudiš koj znae koj prodava t<sub>i</sub>?  
 ‘What do you wonder who knows who sells?’
- (62) ?Koja ot tezi knigi<sub>i</sub> se čudiš koj znae koj prodava t<sub>i</sub>?  
 ‘Which of these books do you wonder who knows who sells?’
- (63) \*\*pričinata, poradi kojato<sub>i</sub> [znae dali Boris e zainal t<sub>i</sub>]  
 ‘the reason for which he knows whether Boris left’

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<sup>21</sup>Bošković (2008a) argues that unless the Bulgarian option is taken in the SC constructions in question, focus-movement would feed wh-movement, which is quite generally disallowed.

This indicates wh-islands are islands in Bulgarian, hence the wh-island effect should not be completely voided, as in Rudin's analysis.

Furthermore, Bošković (2003b) notes Swedish, which disallows MWF, behaves like Bulgarian: Argument extraction from (in fact multiple) wh-islands is allowed with relativization and D-linked questions, but not with non-D-linked questions. It is also never possible with adjuncts.

- (64) a. \*Vad får gade 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.' (Maling 1978)  
c. Vilken film var det du gärna ville veta vem som hade regisserat?  
'Which film did you want to know who had directed?' (Engdahl 1986)  
d. \*\*orsaken varför han undrar [vem som lagade bilen t]?  
'the reason why he wonders who fixed the car' (Bošković 2003b)

That Bulgarian, a MWF language, and Swedish, a non-MWF language, exhibit the same behavior regarding wh-islands (referred to below as selective wh-island insensitivity) indicates that the possibility of extraction from wh-islands in certain contexts in Bulgarian shouldn't be tied to the availability of MWF.<sup>22</sup>

There is a broader pattern here. Bošković (2008a) shows selective wh-island insensitivity is displayed by Romanian, a Bulgarian-type MWF language (Rudin 1988), as well as Icelandic, Norwegian, Hebrew, and Albanian, all of which are non-MWF languages. What Bulgarian, Swedish, Romanian, Norwegian, Icelandic, Hebrew, and Albanian have in common that differentiates them from languages like SC and English, which do not display selective wh-island insensitivity, is affixal articles.

- (65) Selective wh-island insensitivity is a property of languages with affixal articles.  
(Bošković 2008a)

(65) confirms that selective wh-island insensitivity should not be tied to MWF. Bošković (2008a) gives a deduction of (65), the gist of which is the following. Phasal heads quite generally allow multiple Specifiers. This means a wh-phrase in SpecCP does not by itself prevent another wh-phrase from passing through SpecCP. However, Bošković (2008a) shows operator-variable creating movements like wh-movement, topicalization, focalization, NPI-movement, and QR cannot feed each other. To account for this, he argues all these movements are driven by an uninterpretable operator-feature of the moving element (in Chomsky 2001, this feature activates the moving element for these movements); once X undergoes one such movement, the feature is checked off, hence X cannot undergo another operator-variable creating movement. Focusing on

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<sup>22</sup>There are aspects of wh-islands where Bulgarian and Swedish do not pattern together. Richards (2001) shows Bulgarian often prefers crossing to nesting paths with extraction from wh-islands, while Swedish appears to prefer nesting paths (see, however, Engdahl 1986:128-129). At any rate, whether a language prefers crossing or nesting paths does not seem to pattern with (in)sensitivity to wh-islands. (English and Swedish prefer nested paths, and Bulgarian and SC crossing paths.)

wh-phrases, Bošković argues that due to a feature-sharing property of D in languages with affixal articles (see Lasnik 1995 on feature-sharing between affixes and their hosts), the operator-feature of the wh-phrase is shared by D (this means the wh-phrase is not located in D with relative and D-linking wh-phrases, which is clear in Albanian, where overt article co-occurs with relative and D-linked wh-phrases but crucially not with non-D-linked wh-phrases). As a result, even when the Op-feature of the wh-phrase is deactivated, the Op-feature of D still makes the wh-DP active for further wh-movement (see Bošković 2008a for details, including the reason why the Op-feature of D enables movement from multiple wh-islands (recall that in Italian, a non-affixal D languages, movement from multiple wh-islands is disallowed) and why this strategy is not available with adjuncts).

Under the most natural interpretation of this analysis, multiple CPSpecs are expected to be in principle available in all languages, not just Bulgarian-style MWF languages. This enables us to account for wh-island permissiveness of Swedish, Norwegian, Hebrew, Icelandic, and Albanian. Moreover, it is actually hard to prevent the multiple-Spec option in the bare-phrase-structure system. We would then expect it to be available everywhere as long as independent factors do not interfere with it. It is standardly assumed that  $\nu$ P allows multiple Specs. Since subjects are generated in Spec $\nu$ P, object shift (which also lands in Spec $\nu$ P), or any movement out of  $\nu$ P (including A'-movement, which must pass through Spec $\nu$ P given the PIC), requires multiple  $\nu$ PSpecs. The multiple Spec $\nu$ P option should then be universally allowed.<sup>23</sup> Regarding CP, Bošković (2007a) shows that multiple CPSpecs are available even in English by examining constructions where more than one phrase moves out of the same declarative CP, each of which must pass through SpecCP, given the PIC.

Wh-islands confirm the multiple-Spec option should always be in principle available. In principle, Swedish, Bulgarian, English, and SC all allow wh-movement through filled SpecCP, (i.e. creation of multiple CPSpecs). Bulgarian and Swedish can use this to void the wh-island effect in certain contexts. Where wh-island effects emerge, movement from a +wh-SpecCP is blocked because the feature that would make the movement possible is checked off. This is always the case with English and SC. The analysis divorces the wh-island effect from the availability of MWF with multiply-filled SpecCPs, which is desirable since such association would incorrectly void wh-islands in Bulgarian and SC, but not English and Swedish. However, we cannot allow multiple wh-phrases to surface in the same CP in English and Swedish. Since this option should in principle be available (we shouldn't simply assume the C disallows multiple Specs), it must then be blocked for independent reasons. For relevant discussion, the reader is referred to Pesetsky (2000) and Bošković (2007a); both works suggest that there is nothing wrong with true MWF in English syntactically; however, the presence of more than one wh-phrase in SpecCP in a final representation in English leads to a PF violation in Pesetsky (2000), and a semantic violation in Bošković (2007a) (see footnote 29).<sup>24</sup>

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<sup>23</sup>In Chomsky (2001), languages that disallow object shift do not disallow it because of the unavailability of the landing site for it (additional Spec $\nu$ P), but because object shift leads to other problems.

<sup>24</sup>Another option (from Bošković 2008a), where multiple Specs are not always in principle available, is to assume that heads are lexically specified via the EPP feature for merger with a Spec. However, EPP-features can always be freely given to a phase head to allow successive cyclic movement (Chomsky 2000). Under this approach, intermediate but not final heads in principle freely allow the multiple Spec option.

### 3. Successive-cyclic movement

A question that is related to the issue of *wh*-islands, which also has important theoretical consequences, is whether intermediate steps of *wh*-movement, like the one in (66), involve feature-checking/Agree/Spec-Head agreement (SHA) with C. There is evidence even from English for this intermediate step of movement. Thus, McCloskey (2000) shows quantifiers can be floated in this position in West Ulster English.

(66) What<sub>i</sub> do you think [<sub>CP</sub> t'<sub>i</sub> [<sub>C</sub> that Mary bought t<sub>i</sub>]]?

(67) What<sub>i</sub> did he say [<sub>CP</sub> [all t<sub>i</sub>]<sub>j</sub> that he wanted t<sub>j</sub>]?

Chomsky (2000) assumes *t'* and *that* undergo agreement in (66)a. He develops a probe-goal feature-checking system where the goal must have an uninterpretable feature to be visible for movement (the Activation Condition). Consider (68) (the exact feature-labels are not important): C and *what* undergo *wh*-feature checking; the uninterpretable Q-feature, which made the *wh*-phrase visible for the primary feature-checking relation and movement to SpecCP, is checked off as a reflex of the primary feature-checking relation/movement to C. The *wh*-phrase is then no longer active for further movement.

(68) I wonder what<sub>i</sub> C Mary bought t<sub>i</sub>.

iwh ~~uwh~~  
uQ ~~EPP~~

To accommodate successive-cyclic movement, Chomsky adopts the concept of defective heads, which are unable to check off the feature of the goal that has made the goal visible for agreement and movement to the head in question. *That* in (66) is a defective head; it cannot check off the Q-feature of *what*, so that *what* is still active for movement and agreement.

(69) You think [<sub>CP</sub> what<sub>i</sub> that Mary bought t<sub>i</sub>]

iwh ~~uwh~~  
uQ ~~EPP~~

Bošković (2007a) argues that intermediate steps of successive-cyclic movement are not driven by feature checking. Rather, they take place so that the *wh*-phrase, which has an uninterpretable feature (uK), avoids being sent to spell-out (assuming that CP is a phase and that the IP-complement of C is sent to spell-out after the CP is built). Under this non-feature checking approach to successive-cyclic movement, we need not assume that some heads are defective in that they are unable to check off the uK of their goal since such heads do not undergo feature checking in the first place. All probes can be assumed to delete the uK of the goal that has made the goal active for entering into a relation with the probe, the concept of defective heads being eliminable.

Putting aside theoretical issues, Bošković (2007a) argues *that* and *t* in (66) do not undergo SHA based on the Lobeck (1990)/Saito and Murasugi (1990) generalization that functional heads can license ellipsis of their complement only when they undergo Spec-Head agreement (SHA), i.e. feature-checking. Thus, (70) shows that *+wh*-C, which undergoes SHA, licenses ellipsis, whereas the non-agreeing complementizer *that* does not.

- (70) a. John met someone but I don't know [<sub>CP</sub> who<sub>i</sub> [<sub>C'</sub> C *John met t<sub>i</sub>*]].  
 b. \*John believes C/that Peter met someone but I don't think [<sub>CP</sub> [<sub>C'</sub> C/that *Peter met someone*]].

Intermediate C cannot license ellipsis, which can be captured if C/*that* and t do not undergo SHA.

- (71) \*John met someone but I don't know who<sub>i</sub> Peter said [<sub>CP</sub> t<sub>i</sub> [<sub>C'</sub> C/that *John met t<sub>i</sub>*]].

(71) then provides evidence against the feature-checking view of successive-cyclic movement.

What about languages that are assumed to have overt reflexes of agreement with intermediate heads under wh-movement? As Boeckx (2003) notes, it is not clear that there are languages with true intermediate wh-agreement, i.e. overt reflexes of agreement between intermediate heads and wh-phrases. In many languages that are traditionally considered to have such agreement, wh-agreement is only indirect (see Boeckx 2003, Chung and Georgopoulos 1988, Georgopoulos 1991, Chung 1998). Wh-movement triggers a morphological change on intermediate verbs and/or intermediate complementizers. However, the change does not reflect any direct relation between a wh-phrase and the verbs/complementizers but a distinct agreement relation holding between the verbs and the intermediate complementizers. Instead of a wh-phrase directly agreeing with an intermediate head, wh-movement affects agreement between intermediate verbs and intermediate complementizers. Consider (72)-(74) from Selayarese, a VOS language.

- (72) La-ʔalle-i    doeʔ-iñjo    i    Basoʔ  
 3- take-3    money-the    hum.    Baso  
 'Baso took the money.'
- (73) Ku-isseʔ-\*(i)    kuko    la-ʔalle-i    doeʔ-iñjo    i    Basoʔ  
 1s-know-3    C    3-take-3    money-the    hum.    Baso  
 'I know that Baso took the money.'
- (74) Apa    mu-isseʔ    la-ʔalle\_ i    Basoʔ  
 what    2FAM-know    3- take    hum.    Baso  
 'What do you know that Baso took?' (Finer 1997)

In (72), the verb displays subject (prefix) and object (suffix) agreement. (73) illustrates object agreement between the verb and a clausal object. (74) shows object agreement (and overt C) must be absent with wh-movement. The agreement with the wh-phrase is thus only indirect: wh-movement disrupts agreement between the verb and the C.<sup>25</sup> Building on Finer (1997), Bošković (2008b) analyzes (72)-(74) as follows: Overt object agreement in Selayarese is a reflex of object

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<sup>25</sup>In many languages that are traditionally assumed to have overt reflexes of agreement with intermediate Cs, the paradigm cannot be replicated due to the lack of overt object agreement; however, it is possible such languages behave like Selayarese, the only difference being that the verb does not show overt object agreement, see Bošković (2008b) for such an account of Irish; see also Noonan (1999) for an account of traditional wh-C agreement in Irish which does not involve such agreement at all. Noonan argues that what is traditionally considered to be a special wh-agreeing C in Irish is not a C. For another view, see McCloskey (2002:201).

shift (movement to SpecAgroP). This means the agreeing direct-object NP in (72) and the agreeing direct-object clause in (73) move overtly to SpecAgroP. Takahashi (1994) shows wh-movement out of moved elements is impossible. The wh-phrase then cannot move out of an object-shifted clause. This means wh-movement out of an agreeing clausal object is impossible, which explains why a clause from which a wh-phrase has been extracted cannot agree with the verb. Given the natural assumption that the lack of overt object agreement means the lack of overt movement to SpecAgroP, the reason why wh-movement is possible only when the clause fails to agree is straightforward: only in that case, the clause does not move to SpecAgroP, allowing wh-movement.<sup>26</sup>

The most plausible candidate for true intermediate wh-agreement seems to be Kinande, where the featural specification of the C covaries with the featural specification of the wh-phrase (numbers represent morphological classes).

- (75) IyondI y0/ABahI Bo Kambale alangIra  
 who1 that1who2 that2 Kambale saw  
 ‘Who did Kambale see?’ (Rizzi 1990)

This agreement occurs with displaced wh/focus-phrases and can be found in every clause on the path of wh-/focus-movement (all the Kinande data are from Schneider-Zioga 2005).<sup>27</sup>

- (76) [ekihi kyo Kambale a.si [nga.kyo Yosefu a.kalengekanaya  
 what wh-agr(eement) Kambale agr.know C.wh-agr Joseph agr.thinks  
 [nga.kyo Mary’ a.kahuka \_\_\_ ]]  
 C.wh-agr Mary agr.cooks  
 ‘What did Kambale know that Joseph thinks that Mary is cooking (for dinner)?’

Significantly, reconstruction effects indicate Kinande does not have true long-distance wh/focus-movement.

- (77) a. **ekitabu kiwe**<sub>j/k</sub> ky’ **obuli mukolo**<sub>j</sub> a.kasoma \_ kangikangi  
 book his wh-agr each student agr.reads regularly  
 ‘(It is) His<sub>j</sub> book that [every student<sub>j/k</sub>] reads regularly.’  
 b. **ekitabu kiwe**<sub>k/\*j</sub> kyo ngalengekanaya [<sub>CP</sub> nga.kyo [**obuli mukolo**]<sub>j</sub>  
 book his wh-agr I.think C.wh-agr every student  
 akasoma \_ kangikangi.  
 read regularly  
 ‘(It is) His<sub>k/\*j</sub> book that I think [every student]<sub>j</sub> reads regularly.’  
 c. **ekitabu kiwe**<sub>k/\*j</sub> kyo [**obuli mukolo**]<sub>j</sub> alengekanaya [<sub>CP</sub> nga.kyo  
 book his wh-agr every student agr.think C.wh-agr  
 nganasoma \_ kangikangi]  
 I.read regularly  
 ‘(It is) His<sub>k/\*j</sub> book that [every student]<sub>j</sub> thinks I read regularly.’

<sup>26</sup>For details of the analysis, including the question of why a clause can exceptionally remain in-situ to make wh-movement possible and why C cannot be overt in (73), see Bošković (2008b).

<sup>27</sup>*Nga* occurs because monosyllabic Cs are second-position clitics.

(77a) shows local A'-extraction allows reconstructed interpretation. However, reconstruction is impossible with long-distance dependencies. Under the standard view which ties reconstruction to movement, this means the focused element undergoes movement from its  $\theta$ -position to SpecCP in (77a), but not (77b-c).

Consider also (78)-(79). (78) is unacceptable due to extraction from an adjunct. Schneider-Zioga (2005) observes that if the extraction site is embedded within a clause headed by an agreeing complementizer, (78) improves (see (79)).

- (78) \*omukali ndi yo wasiga [<sub>island</sub> embere \_\_ wabuga]  
 woman who wh-agr you.left before spoke  
 'Which woman did you leave before (she) spoke?'
- (79) omukali ndi yo wasiga [<sub>island</sub> embere Kambale anasi [<sub>CP</sub> ko.yo \_ wabuga]]  
 woman who wh-agr you.left before Kambale knew C.wh-agr spoke  
 'Which woman did you leave before Kambale knew that (she) spoke?'

The obvious conclusion is that, in contrast to (78), the wh-phrase in (79) does not undergo wh-movement. These data show that there is no wh/focus-movement from clauses headed by agreeing Cs in Kinande: the standard wh-agreement analysis, where a wh-phrase moves to and agrees with an intermediate C, and then moves to and agrees with another C, cannot be correct. While Kinande has local wh/focus-movement, as indicated by (77a), it does not have long-distance wh-movement out of agreeing CPs. The most straightforward analysis here (see Bošković 2008b) is that the focused NP is base-generated in SpecCP, with null Operators, which are co-indexed with it, inserted in intermediate SpecCPs, agreeing with the intermediate Cs. Local A'-movement is possible only from the true  $\theta$ -position. (77) then has a structure like (80), where only the lowest Op undergoes movement (see also McCloskey 2002 for Op-insertion in "intermediate" SpecCPs).

- (80) [<sub>CP</sub> Op<sub>i</sub> [<sub>CP</sub> Op<sub>i</sub> [<sub>CP</sub> Op<sub>i</sub> t<sub>i</sub> ]]]

Kinande agreeing long-distance A'-movement examples thus do not involve a wh/focus-phrase moving clause-to-clause, with a single phrase undergoing agreement with more than one C.

Kinande shows it is not the case that intermediate Cs cannot undergo agreement; they can agree. What is disallowed is that after agreeing with an intermediate C, a wh-phrase moves and agrees with another C. Those intermediate Cs in Kinande are actually final Cs, since the phrase in their Spec doesn't move to another SpecCP. Apparently, once a wh-phrase moves to SpecCP undergoing agreement with the C (even if the C is -wh) it is frozen in this position. The conclusion here is that there are no defective heads regarding feature checking (in the sense that they undergo feature checking but fail to deactivate the goal). All probes delete the uK of the goal that has made the goal active for entering into a relation with the probe (putting aside the above exception regarding wh-islands. This also means there is no feature checking with intermediate heads during successive-cyclic movement.) If there are no defective heads, we can explain the freezing effect that agreement with a C has on wh-phrases in Kinande. If a wh-phrase moves to SpecCP and undergoes agreement even with an intermediate C like *that*, its uK feature that makes it active for wh-movement is erased, freezing it in SpecCP. A wh-phrase can then never move from the Spec of a C like *that* if it undergoes agreement with it. (In English, it

doesn't agree with it, and in Kinande it does). There are then two options to get legitimate long-distance wh-structures: (a) reanalyzing long-distance wh-dependencies as a series of local wh-dependencies, where the declarative C agrees with the element in its Spec, freezing it in place; (b) a wh-phrase moves to the Spec of *that* without undergoing agreement with *that*, the movement being driven by the factors discussed above. Kinande takes option (a) in the above examples and English takes option (b). A combination of these options may account for Russian, which disallows long-distance wh-dependencies. Apparently, declarative C in the relevant Kinande examples agrees with the element in its Spec. Suppose this also holds for Russian declarative C. However, suppose that, as in English, the option of reanalyzing long-distance wh-dependencies as a series of local wh-dependencies is unavailable in Russian. The result is that Russian disallows long-distance wh-dependencies.

#### 4. The basic wh-movement typology reconsidered

Let us see how the basic wh-typology can be implemented formally. (The Agree option will be considered for wh-phrases-in-situ in this section.) In Chomsky's (2000, 2001) system, where movement is driven by a property of the target, we can assume that the target head is specified with an Attract-all feature in MWF languages. (I put aside the issue of what the target and the feature are.) English C has an Attract-1-F property. Wh-phrases optionally have the uninterpretable feature that makes them visible for wh-movement (uK). The wh-phrase has uK in *Who did she say he gave the book to* (or it could not undergo wh-movement), but not in *What did she say he gave to who* (uK could not be checked due to the PIC, which for Chomsky constrains Agree). As for wh-in-situ languages, the situation is more complicated. Since for Chomsky Agree is constrained by the PIC, wh-dependencies cannot be licensed through Agree in such languages (otherwise, a wh-phrase in-situ could not be dominated by v' or -wh-C' that doesn't dominate +wh-C). They then have to be handled in one of the ways discussed above.

Consider then how the multiple-question typology would be stated in Bošković's (2007a) system, which eliminates the EPP/strength property of the heads which are targeted by movement and where all movement is driven by an uninterpretable feature of the moving element, under the assumption that uninterpretable features must serve as probes, i.e. they can only be checked if they c-command the checker. (X with a uK then moves to probe its checker, since this is the only way to check a uK.) Another property of that system is that the PIC and the Activation Condition are used only to implement successive-cyclic movement, which means they do not hold for Agree. In this system, in a MWF language like Bulgarian, wh-phrases are obligatorily specified with a uF feature (its precise identity is not important for our purposes). Hence, they all undergo A'-movement. The corresponding F-feature of the target (which may not be the same in all languages, I will simply assume it is C below) can be assumed to be uninterpretable in all languages.<sup>28</sup> In wh-in-situ languages like Korean, the F-feature of wh-phrases is interpretable, which means wh-phrases remain in-situ, undergoing Agree with the relevant head. (This is possible since in this system the Activation Condition and the PIC do not hold for Agree). Finally, English wh-phrases optionally have uF, with the further assumption that English +wh-C doesn't allow more than one Specifier.<sup>29</sup> Exactly one wh-phrase then *always*

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<sup>28</sup>I assume two uKs can be checked against each other if one of them is valued (Bošković 2011, Pesetsky and Torrego 2007), which also allows us to dispense with reflex feature checking.

<sup>29</sup>This is in fact the only point of variation that implicates the target of wh-movement, not wh-phrases



moves to SpecCP in English. Consider (81)-(82).

- (81) I wonder what John bought.  
(82) \*I wonder John bought what.

If *what* has uF, it must move to SpecCP to check off the feature by probing the interrogative C. This derivation yields (81). If *what* doesn't have uF it remains in-situ, yielding (82). However, this derivation is ruled out because the uF of the interrogative C cannot be checked. The feature is checked against *what* in (81). However, this is not an option in (82) because *what* doesn't have uF.

The analysis bears on the controversy regarding whether *who* in (83) moves to SpecCP.

(83) Who left?

If *who* has uF, it moves to SpecCP to probe the C. If *who* doesn't have uF, it will not move to SpecCP. However, since the uF of C remains unchecked, this derivation crashes. This means *who* in (83) must move to SpecCP, as argued by An (2007), Boeckx (2003), and Pesetsky and Torrego (2001).<sup>30</sup>

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themselves. The Bulgarian/English difference in this respect can also be captured by assuming the F-feature of C disappears (erases and deletes in Chomsky's 1995 terms) after first checking in English, but not in Bulgarian. Assuming Higginbotham and May's (1981) absorption for multiple questions, another possibility (which allows multiply-filled CPSpecs in all languages) is that multiple wh-phrases located in SpecCPs (*not* in-situ) in English cannot undergo absorption, whereas this is possible in Bulgarian. Under this analysis, MWF questions in English are ruled out for semantic reasons. There is independent evidence that Bulgarian wh-phrases in interrogative SpecCPs are unusually free regarding absorption, which suggests the proper way of stating the crosslinguistic difference regarding absorption is as follows: a language either doesn't allow additional wh-phrases in SpecCP to undergo absorption at all, or such wh-phrases are free to undergo absorption in any SpecCP. Dayal (1996) observes *kade* in (i), which is located in the embedded SpecCP, can take either matrix or embedded scope (i.e. it can be absorbed either with the embedded or the matrix wh-phrase).

- (i) Koj znae kakvo kade e kupila Mariya?  
who knows what where is bought Maria  
'Who knows where Maria bought what?'

For another perspective see Pesetsky (2000), where English allows multiple SpecCPs syntactically but it doesn't allow pronunciation of more than one SpecCP in PF.

<sup>30</sup>*Who left what* has the following derivation: *who* (with uF) and C check their F-feature against each other, while *what* doesn't have uF.

Consider also the following Korean/English contrast.

- (i) John-i way ttena-ss-n?  
John-nom why left  
(ii) \*Who left why?

In Korean, C undergoes Agree with *why* for the F-feature, which is impossible in English for reasons discussed above. If wh-C must have some kind of a relation with each wh-phrase, we can then use only

The pattern of crosslinguistic variation is summarized below. It is worth emphasizing that the locus of the crosslinguistic variation in question resides in the lexical properties of wh-phrases (though see footnote 29 for one exception. Note that if wh-phrases optionally bear iF, such languages would still be wh-in-situ languages.<sup>31</sup>)

|                   |                      |                   |                     |
|-------------------|----------------------|-------------------|---------------------|
| (84) target       | Bulgarian wh-phrases | Korean wh-phrases | English wh-phrases  |
| uninterpretable F | uninterpretable F    | interpretable F   | (uninterpretable F) |

Another proposal is made in Richards (2010), who tries to deduce the wh-fronting typology from the requirement that a wh-phrase and the +wh-C be separated by as few prosodic boundaries (in particular, Minor Phrase boundaries) as possible. In wh-in-situ languages, this can be achieved by manipulating the prosodic structure hence there is no need for wh-movement to satisfy the requirement in question. In wh-movement languages, due to the head-initial nature of C and the placement of prosodic boundaries to the left of wh-phrases, the requirement cannot be satisfied through prosodic manipulation; the wh-phrase then must move close to C to satisfy it. Richards thus treats wh-typology in terms of syntax-phonology interaction, the relevant crosslinguistic variation being reduced to variation in prosody (on which side of the wh-phrase Minor Phrase boundaries are inserted) and whether CP is head-initial or head-final (the analysis may predict that C-final languages will not involve wh-movement; note that Richards leaves open the case of MWF languages).

## 5. Final remarks

The above discussion only scratches the surface of crosslinguistic variation in the domain of wh-questions/movement. It should, however, be clear from the above discussion that much of the rather complex patterns of crosslinguistic variation in this domain can be rather straightforwardly attributed to the lexical properties of elements involved in wh-questions/movement (especially when it comes to its syntactic aspects). This in itself may warrant pursuing the research strategy where all relevant variation is lexically based.

Finally, I note that there are areas of variation pertaining to wh-questions/movement that cannot be discussed here in any detail due to space limitations. E.g., languages differ regarding whether they allow partial wh-movement; furthermore languages that allow it do not behave uniformly (see Lutz and Müller 1996), i.e. partial wh-movement exhibits crosslinguistic variation regarding several properties (e.g. what kind of predicates allow it, the form of the higher phrase (typically *what*, but Russian uses *how*, see Stepanov 2000) and scope-markers in intermediate

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unselective binding in English. (ii) is then ruled out because adverbs cannot be unselectively bound.

<sup>31</sup>There is an alternative where wh-phrases in all languages always have the F-feature, where F is optionally uninterpretable or interpretable in English (English then has both the Bulgarian and the Korean option). Since *what* in (82) may then have iF, hence can check the uF of C while in-situ, to force wh-movement we can appeal to Cheng's (1997) clausal typing, on which questions where wh-movement does not occur overtly in English are filtered out due to the failure to type the clause as interrogative. (For Cheng, wh-movement is not necessary to type a clause in wh-in-situ languages.)

clauses).<sup>32</sup> Another interesting area of variation concerns what appear to be coordinated wh-phrases in examples like (85). There is considerable crosslinguistic variation in this respect, Slavic languages being particularly promiscuous in that they even allow coordinations like SC (86) (see Gračanin-Yukseš 2007, Citko and Gračanin 2013, Tomaszewicz 2011, Zanon 2014).

- (85) When and where did you see them?  
(86) Da li i gdje si ih vidio?  
      whether and where are them seen

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<sup>32</sup>It's possible that in partial wh-movement languages, declarative C can check the uF of wh-phrases. Under some analysis, the clause hosting partial wh-movement is treated like a question (Dayal 1996), which means the partially-moved wh-phrase moves to a +wh-CP.

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