

## Structural Adjacency and the Typology of Interrogative Interpretations

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I point out that the generally accepted theory of single-pair versus pair-list readings for multiple *wh*-questions in the Slavic family, as instantiated in Bošković 2001a, predicts the wrong result for Russian multiple *wh*-questions and for coordinated multiple *wh*-questions in several languages. I suggest a reformulation of the connection between the structure and the interpretation of multiple *wh*-questions that relies on the structural adjacency of two or more *wh*-items at LF, and I discuss a number of cases in which this reformulation appears to make the right predictions for multiple *wh*-questions containing clitics.

*Keywords:* multiple *wh*-questions, pair-list reading, single-pair reading, quantifier absorption, coordination

### 1 Introduction

Current work on the typology of multiple *wh*-fronting languages (e.g., Bošković 2001a, 2002) has been directed toward establishing a theoretical connection between the interpretive options available for a multiple *wh*-question and its syntactic structure. Roughly, the typological claim has been that multiple *wh*-fronting languages pattern in two distinct ways, structurally; one pattern coincides with a pair-list reading and the other with both a pair-list and a single-pair reading. Two separate strands of research—those of Grebenyova (2004) and Kazenin (2002)—concentrate on multiple *wh*-fronting data from Russian that seem to be at odds with the typological observation made in Bošković 2001a, 2002. While the theoretical drive to connect the available semantic readings with the available syntactic structures for multiple questions is fitting, it appears that the current formulation of this connection misses crucial evidence from a number of languages, including Czech, Hungarian, Romanian, Russian, and Serbo-Croatian.

The empirical focus of this article is an underexplored type of multiple *wh*-question: the *coordinated multiple wh-question* (henceforth CMW), instantiated by the Russian example in (1). The CMW appears to differ minimally from a typical multiple *wh*-question (i.e., (2)); but upon closer examination, there turn out to be substantial differences, interpretive and structural, between the two types.

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- (1) Kto *i* kakoj gorod zaxvatil?  
     who.NOM *and* which.ACC city.ACC conquered.3SG  
     ‘Who conquered which city?’

(2) Kto kakoj gorod zaxvatil?  
     who.NOM which.ACC city.ACC conquered.3SG  
     ‘Who conquered which city?’

Building on the Russian data, I attempt to reformulate the connection between the structure and interpretation of multiple *wh*-questions for languages in the Slavic family, Hungarian, and Romanian. Advancing toward this goal involves investigating the interpretation of the CMW construction: the main empirical claim (following Kazenin (2002), among others) is that there is a salient difference between the interpretation of the CMW and the interpretation of standard multiple *wh*-questions in Russian. In discussing questions of the CMW type, the theoretical goal will be to integrate this subtype into our existing understanding of the interpretation of multiple *wh*-questions. After a brief prelude (section 2), I argue that the currently dominant theory, developed in Bošković 2001a, cannot account for the relevant facts in Russian (sections 3.1 and 3.2). I further propose that the distinction between single-pair and pair-list readings can be linked to the presence or absence of a particular structural configuration at LF (section 3.3). The overarching aim of section 3.3 is to explicate the relation between the syntactic structure of a multiple *wh*-question (for each multiple *wh*-fronting language type) and the mechanism by which it can be interpreted. I propose that the distinction between single-pair and pair-list readings can be linked to the presence or absence of a particular structural configuration at LF (section 3.3.1). In section 3.3.2, I discuss the implications and empirical predictions of the newly proposed view, citing several cases in which these predictions are borne out; and in section 4, I discuss the consequences of the present findings for future research.

2 Prelude

2.1 Empirical Prelude

Before moving to a theoretical discussion of the CMW, I set out the core empirical properties of the construction. *Wh*-phrases in Russian multiple questions can, in principle, appear adjacent to a coordinator either preverbally (as in (3)) or postverbally (as in (4)).

- (3) Čto i kogda oni podarili?  
 what.ACC and when they.NOM gave.3PL  
 ‘What did they give, and when?’ (CMW construction)

(4) Čto oni podarili, i kogda?  
 what.ACC they.NOM gave.3PL and when  
 ‘What did they give, and when?’ (not the CMW construction)

In this article, I will be concerned only with cases like (3), which I call here the CMW. For reasons made clear in Kazenin 2002, examples like (4) have a different structure (whose properties

are discussed extensively in Merchant 2001), and they are therefore not the principal focus of the present discussion.

A few syntactic properties of the CMW deserve mention here. First, any number of *wh*-items (two or greater) can be coordinated. This article will focus primarily on coordination of only two *wh*-items, but the ideas developed here should extend to examples like (5).

- (5) Kto, kogo, kogda i začem priglasil?  
 who.NOM whom.ACC when and for.what invited.3SG  
 ‘Who invited whom, when, and for what?’

Second, any sort of *wh*-item, and any combination of *wh*-items, can be coordinated. This includes arguments, adjuncts, and larger *wh*-phrases. Examples (6a) and (6b) show that two argument *wh*-items can be conjoined. Argument coordination can only occur with transitive verbs (6c), suggesting that the *wh*-items probably originate in argument positions, moving to the left edge of the clause at a later point in the derivation. Notice that one of the arguments in (6a) is also a larger *wh*-phrase, of the form ‘[which *x*]’.

- (6) a. Kto i kakoj gorod zaxvatil?  
 who.NOM and which.ACC city.ACC conquered.3SG  
 ‘Who conquered which city?’  
 b. Kto i čto zaxvatil?  
 who.NOM and what.ACC grabbed.3SG  
 ‘Who grabbed what?’  
 c. \*Kto i čto spal?  
 who.NOM and what.ACC slept.3SG

Coordination of adjuncts is also permitted (7), as is coordination of arguments with adjuncts (8).

- (7) Gde i kogda vy vstrelis’?  
 where and when you.NOM.PL met.2PL  
 ‘Where and when did you meet?’  
 (8) Kto i gde budet spat’?  
 who.NOM and where will.3SG sleep.INF  
 ‘Who will sleep where?’

A third property of the Russian CMW is that no ordering restriction appears to hold between the two conjuncts.<sup>1</sup> Thus, we can switch the order of the conjuncts in (6b), (7), and (8) without any change in grammaticality.

<sup>1</sup> This property may be a direct consequence of the fact that no ordering restriction exists in Russian for noncoordinated multiple *wh*-questions. If the ordering facts for the CMW and parallel noncoordinated multiple *wh*-questions are found to be identical in other languages as well, this result would lend support to the assumption that the CMW is built syntactically in a manner that is analogous to the derivation for noncoordinated multiple *wh*-questions.

- (9) Čto i kto zaxvatil?  
 what.ACC and who.NOM grabbed.3SG  
 ‘Who grabbed what?’
- (10) Kogda i gde vy vstrelis'?  
 when and where you.NOM.PL met.2PL  
 ‘When and where did you meet?’
- (11) Gde i kto budet spat'?  
 where and who.NOM will.3SG sleep.INF  
 ‘Who will sleep (and) where?’

The judgments recorded above may vary across speakers, which is not uncommon in the realm of ordering restrictions (one need only check the abundant literature on superiority effects in English to get a sense of how variable judgments are). However, preliminary corpus searches show that orderings like the ones reported here are used frequently.<sup>2</sup>

## 2.2 Theoretical Prelude

The discussion of the CMW construction in later sections of this article takes two points as established. The first point is that the CMW is actually an instance of coordination of two XPs at the left periphery of the clause. This is not necessarily the default assumption, since a different approach has been proposed by Camacho (2003). Camacho suggests that structures analogous to the CMW might be considered coordination of two CPs plus subsequent backward sluicing within the left-hand CP. The backward sluicing approach is also proposed by Giannakidou and Merchant (1998) for certain Greek and English constructions.

The discussion here will take the view that the CMW construction does not in fact involve backward sluicing. Arguments supporting this view have been made by Kazenin (2002) and Lipták (2003). These authors note that a backward sluicing analysis would yield the structure in (12) for cases of argument-argument coordination.

- (12) [CP kto<sub>i</sub> [IP t<sub>i</sub>-zaxvatil-pro<sub>t</sub>]] i [CP[kakoj gorod]<sub>t</sub> [IP pro<sub>i</sub> zaxvatil t<sub>t</sub>]]]

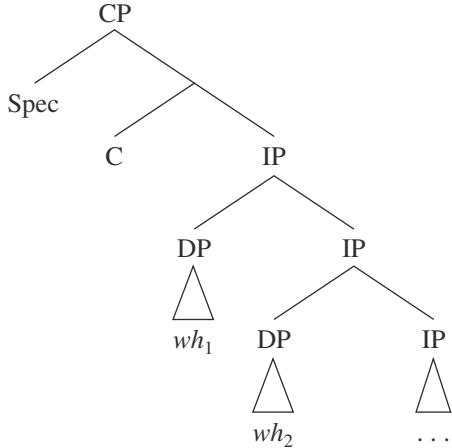
Following Chung, Ladusaw, and McCloskey's (1995) view of sluicing for (12), we are forced to postulate the presence of an empty pronominal in the object position of the first IP, in correspondence with the verb's thematic requirements. This structure results in a cataphoric dependency between the *wh*-phrase *kakoj gorod* ‘which city’ and the pronominal in the first IP. Cataphoric dependencies in Russian are known to be restricted, even for overt pronominals, and especially when the antecedent is a *wh*-phrase. Kazenin's claim is that there is no satisfactory way to license structures like (12). Another objection against the backward sluicing analysis, raised by a reviewer, is that (12) violates the Backwards Anaphora Constraint (Langacker 1966), which prohibits back-

<sup>2</sup> Searches were executed through the National Corpus of the Russian Language, which is located at <http://www.ruscorpora.ru/search-main.html>.

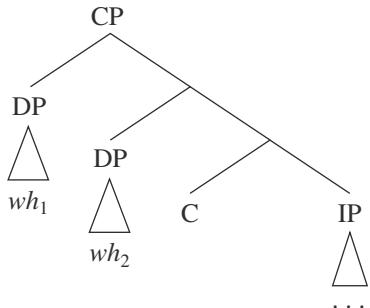
ward but not structurally subordinate anaphora. In the anaphoric relation between *kakoj gorod* and the pronominal in the first IP, the pronominal is not subordinate to its antecedent, so the structure is not licensed.

Given these arguments against the backward sluicing analysis of the CMW, I will view the construction in a way that maximizes its parallelism with more typical cases of multiple *wh*-movement. To situate this effort in a larger context, I provide a brief overview of the traditional approach to multiple *wh*-questions. Since at least Rudin 1988, multiple *wh*-fronting languages have been analyzed as falling into two groups, with differing syntactic structures. In (13) and (14), I adopt the two structural options proposed in Richards 2001, with a minor terminological change.

- (13) *IP-fronting: Russian, Polish, Czech, Serbo-Croatian*



- (14) *CP-fronting: Bulgarian, Romanian*



Recent views of the structural distinction between CP-fronting and IP-fronting (i.e., Bošković 2001a, 2002) have posited that only CP-fronting is movement to the specifier of CP. IP-fronting has been taken to be IP-internal focus movement (Stepanov 1998). Various pieces of evidence support this distinction, including evidence from superiority effects, *wh*-extraction, and island effects. For example, CP-fronting makes use of multiple specifiers; it is not surprising, then, that

CP-fronting languages allow extraction of multiple *wh*-items from embedded clauses and show no sensitivity to *wh*-island effects. In contrast, IP-fronting languages typically do show sensitivity to island effects and do not allow extraction of multiple *wh*-items from embedded clauses, as only one specifier is available as an escape hatch to the upper clause. Finally, the CP-fronting languages exhibit ordering restrictions with respect to multiple *wh*-items, while the IP-fronting languages generally do not. It is traditionally assumed that this difference is captured structurally by the distinction between fronting to multiple specifiers (CP-fronting) and fronting to multiple adjunction sites (IP-fronting); the latter can presumably occur in any order. It is still an open question why these ordering restrictions occur only for specifiers, if this is the relevant distinction. Ideally, this fact should follow from a difference between specifiers and adjuncts; one attempt to flesh out this idea can be found in Richards 2001.

Extending the *wh*-movement parallel to the analysis of the CMW, I assume that whatever feature or combination of features motivates typical *wh*-movement likewise motivates movement of each *wh*-item in the CMW construction to the left periphery of the clause. Because coordination of arguments is one of the configurations the CMW allows, I will assume that all *wh*-items (including arguments) are generated in their normal base positions and later adjoin to IP, where *wh*-items typically land in Russian.<sup>3</sup> On this view, a language is predicted to license the CMW construction only if it also licenses multiple *wh*-movement to the left periphery of the clause. It follows from this assumption that English should not allow instances of the CMW construction with argument *wh*-phrases, since it prohibits noncoordinated instances of multiple *wh*-movement.<sup>4</sup> It should also follow from this assumption that even within a language like Russian, which makes free use of the CMW, not all phrases can conjoin at the left edge. This construction appears limited to the conjunction of quantifiers that can already appear concatenated at the left edge of the clause without the coordinator.<sup>5</sup>

The second starting point concerns the internal structure of the coordinated constituent that appears at the left edge of the matrix clause in Russian. Though other options may be possible, I assume that the coordinated constituent in question has the structure formulated in Zoerner 1995 and shown in (15).<sup>6</sup> Here, the coordinated elements appear in the specifier and complement of the head &.

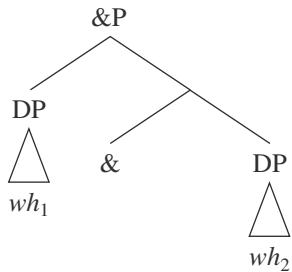
<sup>3</sup> Kazenin (2002) assumes that the coordinated *wh*-items in CMW constructions are located in the specifier of CP, but *wh*-movement in general is thought to be IP-internal in Russian (Stepanov 1998). To maintain consistency with this observation, I will assume that the coordinated *wh*-items are adjuncts to IP.

<sup>4</sup> A reviewer notes that examples cited by Merchant (2001:111) indicate that Turkish, though not a multiple *wh*-fronting language, also makes use of what looks like a CMW construction. Without further investigating the properties of this construction, it is difficult to conclude anything specific. However, if this really is a CMW construction, then the very interesting question of what permits it to exist in a language without multiple *wh*-fronting naturally arises.

<sup>5</sup> Other non-*wh* elements can naturally also be coordinated—for example, negative quantifiers (e.g., *Ja ničego i nikomu ne skazal* ‘I didn’t say anything to anyone’ (lit. I.NOM nothing.ACC and no.one.DAT NEG said.3sg)'), as discussed by Kazenin (2002) and Lipták (2003). These same quantifiers can also be concatenated at the left edge in Russian, much like *wh*-phrases. While these patterns suggest that *wh*-movement might be a subtype of a more general type of movement to the left edge, we need a better understanding of the empirical properties of the other quantifier coordination cases before we can conclude that this is indeed the same construction.

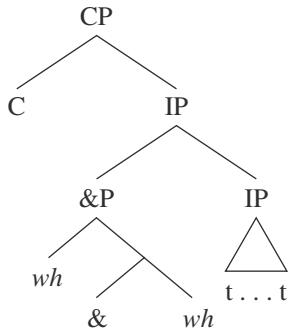
<sup>6</sup> Munn (1993) has also developed a structure for coordination, in which the second conjunct, BP (Boolean Phrase), is right-adjoined to the first DP conjunct. While I assume the structure in (15) in my discussion, assuming the structure proposed by Munn would not change the proposal significantly.

(15) Zoerner 1995: &amp;P



Given these assumptions, we might assume a structure like (16) for the CMW in IP-fronting languages.

(16)



We might also posit a similar-looking structure for the CP-fronting languages, with the &P constituent in the specifier position of CP. Given the discussion of the CMW thus far, the structure in (16) seems like the most straightforward one to assume. For the purposes of the analysis that follows, the required assumption is that the syntax can produce such a structure, though many difficult questions arise about what kind of derivation could do so. By assumption, & would be merged as the derivation progresses, in conjunction with movement of each *wh*-phrase to the left periphery. Further syntactic exploration may naturally lead to a different syntax for the CMW, but for the moment, the structure in (16) seems like a reasonable point of departure.

### 3 Multiple Wh-Questions at LF

#### 3.1 Empirical Observations

Given this much, a natural next step would be to ask how the syntax of the CMW corresponds to its interpretation. Detailed examination of a prominent previous analysis of the semantics of multiple *wh*-questions reveals that the typically accepted account makes incorrect predictions for the CMW construction. Section 3.3 will be concerned with describing a structural and typological observation that might lead to a better understanding.

Primarily, I will be concerned with explaining the interpretive difference between single-pair (SP) and pair-list (PL) readings of questions. The simplest way to demonstrate the difference

between these two readings is to make up scenarios that force one of them (the ones in (17) and (18) are from Grebenyova 2004:169–170).

(17) *Pair-list scenario*

John is at a formal dinner where there are diplomats and journalists. Each journalist was invited by a different diplomat. To find out the details, John asks, “Who invited whom to the dinner?”

*Answer:* Mr. Smith invited Mr. Jones, Ms. Black invited Mr. Green, etc.

(18) *Single-pair scenario*

John knows that a very important diplomat invited a famous journalist to a private dinner. To find out the details, John asks, “Which diplomat invited which journalist to the dinner?”

*Answer:* Ms. Black invited Mr. Smith.

Semantic intuitions in this area can be difficult to capture. The scenarios presented in (17) and (18) are meant to force a particular interpretation; if the multiple *wh*-question can be asked felicitously given the context provided, it can be concluded that the reading is available.<sup>7</sup> The readings in (17) and (18) are not identically available for multiple *wh*-questions crosslinguistically. English, for example, appears to favor a pair-list reading, the reading in (18) being an exceptional case in which we force the single-pair interpretation by using phrases built around the determiner *which* and perhaps via the use of a special intonation (see section 4 for more comments on one possible explanation for these kinds of readings in English).<sup>8</sup> Serbo-Croatian unexceptionally allows both readings (Bošković 2002); Bulgarian allows only the pair-list reading (Bošković 2001a). Typologically, the pair-list reading appears to be more uniformly available; the question is whether or not the single-pair reading is also available for plain multiple *wh*-questions in a given language.

In section 2.2, it was established that clause-peripheral multiple *wh*-questions divide structurally into two groups. Serbo-Croatian, Russian, Polish, and Czech fall into the IP-fronting group, while Bulgarian and Romanian fall into the CP-fronting group. Bošković (2001a, 2002) develops

<sup>7</sup> A reviewer points out that we can ask a question with the expectation of a pair-list answer, but in certain cases the respondent may give us only one pair. Consider this scenario. Matthew hosts a potluck dinner. His sister arrives late. After the dinner, she helps Matthew clean up in the kitchen and asks him, “So, who brought what?” It happens that only one guest, Bill, brought anything. Matthew answers, “Well, Bill brought chips.” It is not entirely clear how we might characterize such a response, but it is clear that there is something special (indeed, unexpected) about the single-pair response in such cases.

<sup>8</sup> A reviewer raises the concern that English and Serbo-Croatian—which is reported by Bošković (2001a, 2002) to regularly allow single-pair readings—might really be in the same category. Here, I treat single-pair readings for English multiple *wh*-questions as exceptional, while assuming that the two readings are equally available for Serbo-Croatian multiple *wh*-questions. This is in part because Bošković’s body of work on Serbo-Croatian multiple *wh*-questions never mentions the need for special conditions to yield the single-pair reading. Though I do not have conclusive evidence that English and Serbo-Croatian differ with respect to the availability of single-pair readings, the literature appears to support this assumption.

a theory about how the syntax of these constructions interacts with their available interpretations: namely, that CP-fronting supports only a pair-list reading, whereas IP-fronting supports both a single-pair and a pair-list reading.

While the connection made between syntactic structure and semantic interpretation in Bošković 2001a is appealing, evidence from Russian suggests something more complicated. Both single-pair and pair-list readings are available in Russian, but they correspond to different structures.

- (19) Kto *i* kakoj gorod zaxvatil?  
 who.NOM and which.ACC city.ACC conquered.3SG  
 ‘Who conquered which city?’  
 The Germans conquered Paris. (SP)  
 ??The Germans conquered Paris, the Russians conquered Berlin, . . . (PL)
- (20) Kto kakoj gorod zaxvatil?  
 who.NOM which.ACC city.ACC conquered.3SG  
 ‘Who conquered which city?’  
 ??The Germans conquered Paris. (SP)  
 The Germans conquered Paris, the Russians conquered Berlin, . . . (PL)

The crucial point here is that although Russian is classified as an IP-fronting language, a plain *wh*-question, as in (20), yields only a pair-list interpretation. Given Bošković’s formulation, (20) should in fact be ambiguous. The CMW construction in (19) is by hypothesis IP-fronting, and it results in only a single-pair reading (Kazennin 2002). This is at odds with the pattern observed in Bošković 2001a, 2002.

Capturing intuitions about single-pair versus pair-list readings can be very difficult, since speakers’ intuitions in this area are fragile. In fact, the judgments reported in (19) and (20) contradict the judgments reported in Stepanov 1998. The intuitions of my own consultants, however, and judgments reported in Kazennin 2002 and Grebenyova 2004, align with the judgments reported above. Aside from testing speakers’ intuitions by comparing scenarios with either pair-list or single-pair answer sets, few diagnostics exist. However, there is one diagnostic that can be applied (following similar observations in Nishigauchi 1998). Consider the examples in (21)–(24), which illustrate multiple *wh*-sllicing in Russian.<sup>9</sup>

- (21) *Każdyj* priglasil *kogo-to* na tanec, no ja ne pomnju, *kto kogo*.  
 everyone invited someone to dance but I NEG remember who whom  
 ‘Everyone invited someone to a dance, but I don’t remember who (invited) whom.’

<sup>9</sup> Note that, given the current view of Russian as an IP-fronting language, the sluiced material here is not the TP/IP complement of C, as has been claimed in previous work (Chung, Ladusaw, and McCloskey 1995). Further discussion of this issue appears in Grebenyova 2006 and Manetta, to appear.

- (22) #*Každyj prigasil kogo-to na tanec, no ja ne pomnju, kto i kogo.*  
*everyone invited someone to dance but I NEG remember who and whom*
- (23) *Kto-to prigasil kogo-to na tanec, no ja ne pomnju, kto i kogo.*  
*someone invited someone to dance but I NEG remember who and whom*  
‘Someone invited someone to a dance, but I don’t remember who (invited) whom.’
- (24) #*Kto-to prigasil kogo-to na tanec, no ja ne pomnju, kto kogo.*  
*someone invited someone to dance but I NEG remember who whom*

Grebennyova (2006) notes that the noncoordinated *wh*-items that appear just before the sluiced material are infelicitous if the antecedent forces a single-pair reading, as in (24). Noncoordinated *wh*-items in these constructions can appear only if the antecedent licenses a pair-list interpretation, as in (21). On the other hand, if the antecedent favors a single-pair reading, the *wh*-items are felicitous if they are in a CMW construction, as in (23). The judgments here are strong and stable across speakers.<sup>10</sup> We can safely conclude, then, that the CMW construction in Russian gives rise to a single-pair reading, while typical multiple *wh*-questions yield a pair-list reading.<sup>11</sup>

Our task, then, is to attempt to integrate the data on the interpretive options available for Russian multiple *wh*-questions and the CMW into a coherent view of the link between syntactic structure and semantic interpretation. In section 3.2, I discuss one influential view of the interpretation of multiple *wh*-questions in multiple *wh*-fronting languages, and I argue that it cannot account for the facts discussed above.

### 3.2 A Semantics for Multiple Questions Based on Hagstrom 1998

3.2.1 *Hagstrom 1998* Bošković (2001a) adopts a semantics for multiple questions developed by Hagstrom (1998).<sup>12</sup> A standard assumption (at least since Hamblin 1973) is that the semantic value of each question is the set of possible answers to it. Hagstrom’s theory relies crucially on the notion of the Q-morpheme, which is an existential quantifier over choice functions. The choice

<sup>10</sup> A reviewer points out that the increased stability of judgments in the sluicing examples might reflect a different type of *wh*-movement in such examples (i.e., movement to specifiers of CP and subsequent sluicing of TP/IP). If that were the case, however, only one order for multiple *wh*-questions would be permissible. In fact, both orders are allowed, as long as the ordering of quantifiers in the antecedent is identical.

<sup>11</sup> The Romanian evidence is entirely analogous and displays the same pattern: plain *wh*-fronting results in a pair-list reading, while the CMW construction has the single-pair reading (Donka Farkas, pers. comm.). However, a reviewer points out that judgments reported by Merchant (2001:100–112) for Turkish and Bulgarian multiple sluicing contexts appear not to align with the Russian facts: antecedents that set up what we might expect to be a single-pair reading still allow multiple noncoordinated *wh*-items in the sluice. It’s not apparent to me whether this is a property of sluicing, as another reviewer suggests in footnote 10, or a property of the nature of single-pair and pair-list readings in these languages. In either case, this is a very interesting area for further exploration.

<sup>12</sup> A brief exposition of Hagstrom’s proposal is contained in Bošković 2001a, and the outline presented here is based largely on that summary.

function applies to a nonempty set and yields a member of that set. The Q-morpheme originates lower in the clause and then moves to the specifier of CP. In Bošković's adaptation of this theory, two possible structures exist for multiple questions, and they correspond to the two different readings, pair-list and single-pair.

- (25)  $[\text{CP } Q_j\text{-C} \dots [\text{IP} \dots wh_1 \dots V \dots t_j wh_2 \dots]]$  (PL)  
 (26)  $[\text{CP } Q_j\text{-C} \dots [\text{FocP } t_j\text{-F} [\text{IP} \dots wh_1 \dots V \dots wh_2 \dots]]]$  (SP)

In (25), the Q-morpheme merges with the lower *wh*-item and then covertly moves to the CP domain. The choice function variable left behind has the lower *wh*-item in its scope, but not the higher one. The result of the semantic composition is a set of sets of propositions, which in turn results in a pair-list reading. In (26), the Q-morpheme merges in a higher position (the specifier of a Focus Phrase),<sup>13</sup> and both of the *wh*-items are in the scope of the choice function. Composition proceeds up the tree until it reaches the choice function, which reduces the set of propositions to a single proposition, which becomes the input to further composition. This results in a set of propositions, which corresponds to a single-pair reading.

**3.2.2 Relativized Minimality** Hagstrom's proposal reduces the single-pair/pair-list distinction to a basic structural ambiguity. Bošković's (2001a) contribution shows that only one of these structures can be licensed in languages with overt *wh*-movement to the specifier of CP. Consider (27) and its corresponding failed derivation in (28).<sup>14</sup>

- (27) Who invited whom to the dinner? (\*SP)  
 (28) \*[ $[\text{CP } \text{who}_j \text{ C} \dots [\text{FocP } Q\text{-F} [\text{IP } t_j \dots \text{invited} \dots \text{whom to the dinner}]]]$ ] (\*SP)

Because the Q-morpheme carries a [+wh] feature, movement of the higher *wh*-item across it violates Relativized Minimality. The moved *wh*-item cannot govern its trace because the Q-morpheme constitutes an intervening governor of the same kind. Therefore, only a pair-list reading is predicted to be available in languages with overt movement to the specifier of CP. This analysis also predicts that both readings (pair-list and single-pair) should be available for the IP-fronting languages, as no Relativized Minimality violation should occur if no movement takes place to the specifier of CP (because there is no movement across the Q-morpheme in such cases).

**3.2.3 Unraveling the Argument** The Russian facts discussed in section 3.1 pose an apparent problem for the theory developed in Bošković 2001a. Two empirical observations appear to be at odds with the predictions of this theory:

<sup>13</sup> In line with much recent work on multiple *wh*-fronting, which posits that *wh*-items move to the specifier of a focus projection, Grebenyova (2004) posits a focus projection in her adaptation of Hagstrom's semantic composition. I follow her in adopting this convention, though it is not the only plausible one.

<sup>14</sup> The derivation in (28) is taken directly from Grebenyova 2004:176.

- Russian is an IP-fronting language but yields only the pair-list reading in multiple *wh*-questions.
- The CMW construction yields only a single-pair reading, even though it is analyzed as movement to an adjoined position at IP.

Grebennyova (2004) attempts to address part of the problem, positing that each language specifies in its lexicon what sort of Q-morpheme it has. On this proposal, Russian has only the Q-morpheme that merges with *wh*<sub>2</sub>, as in (25). This solution gives only the pair-list reading for plain multiple *wh*-questions in Russian. An immediate problem arises: Russian *does* allow single-pair readings of multiple *wh*-questions. These questions just look slightly different; they must be rendered as CMW constructions. Grebennyova's proposed solution takes care of part of the problem, but it also predicts that we should never be able to get a single-pair reading for CMW constructions in Russian, since no single-pair Q-morpheme is available for Russian on her account.<sup>15</sup>

A second problem with the account proposed in Bošković 2001a is that Romanian, a CP-fronting language, also makes use of the CMW construction and also allows only the single-pair reading for this construction (Donka Farkas, pers. comm.).

- (29) Cine și ce a cumpărat?  
 who.NOM and what.ACC has bought  
 'Who bought (it) and what (did they buy)?' (SP/\*PL)

Assuming that each *wh*-item here will have undergone a separate movement to a specifier of CP from its respective base position, this movement should cause a Relativized Minimality violation in a single-pair derivation. Yet the construction in (29) and its single-pair interpretation are fully grammatical and felicitous.

A reviewer brings to light a third problem, relating to the claim that movement of the *wh*-item across the Q-morpheme causes a Relativized Minimality violation in single-pair derivations. Notice that the pair-list derivation of the question in (27) would look like (30).

- (30) [CP who<sub>i</sub> Q<sub>j</sub>-C . . . [IP . . . t<sub>i</sub> . . . invited . . . t<sub>j</sub> whom to the dinner]] (PL)

It appears that on the pair-list derivation, too, a Relativized Minimality violation would result, since the subject *wh*-phrase crosses the Q-morpheme on its way to the specifier of CP. The question, then, is why the pair-list reading of the question in (27) is not likewise blocked. To resolve the issue, we might stipulate that *wh*-movement must occur before the movement of Q,

<sup>15</sup> A reviewer suggests that the Q-morpheme account might be amended by specifying that the Q-morpheme attach to the &P that contains both *wh*-phrases by the end of the cycle, provided that & is merged low, attaching directly to a *wh*-phrase. While such an account might be worked out, it depends on a lexical specification for Q that I would prefer to avoid, if possible.

but this hardly seems satisfactory.<sup>16</sup> In section 3.3, I propose that a different structural pattern is responsible for the distribution of pair-list and single-pair readings. This observation provides a clue to why the CMW construction receives the single-pair reading in all languages for which it is attested.

### 3.3 Structural Adjacency and Interrogative Interpretations

*3.3.1 The Proposal* The view promoted here is that a certain type of structural configuration at LF is the precondition for a pair-list reading to result. I argue that the syntax of the CMW construction crucially does not meet this precondition, rendering the pair-list reading unavailable. The structural precondition proposed here originated from work on quantifier absorption (QA); it was first developed by Higginbotham and May (1981) and has been revised by Barss (2000). My goal here is to explore the empirical adequacy of the (revised) structural precondition as a predictor for the distribution of pair-list and single-pair readings in several languages. While this precondition has its roots in the theory of QA, my focus will be empirical coverage, rather than the mechanism of QA itself. In what follows, I briefly summarize this mechanism and then explore the empirical validity of what I call the *structural adjacency* requirement.

QA optionally maps two or more structurally adjacent quantifiers at LF into one binary (or *n*-ary) quantifier. For QA to work, we must assume that *wh*-items are quantifiers at LF.<sup>17</sup> We must also take the single-pair reading to involve a presupposition that the answer to a question consists of one pair (or *n*-tuple).

QA can map two structurally adjacent quantifiers into one binary (or *n*-ary) quantifier. The *n*-ary quantifier binds all relevant variables simultaneously, giving rise to a bijective interpretation for a multiple question.

- (31) Which man admires which woman?

$$[\text{WH}_x: x \text{ a man}][\text{WH}_y: y \text{ a woman}] x \text{ admires } y \rightarrow [\text{WH}_2^{1,2}x,y: x \text{ a man \& } y \text{ a woman}] \\ x \text{ admires } y$$

QA is defined so that for every *x* in the domain, there is a unique *y*, and for every *y* in the domain, there is a unique *x*. There is a presupposition that a complete answer to such a question requires an exhaustive listing of pairs, which results in a pair-list reading.<sup>18</sup> On this view, the

<sup>16</sup> See Bošković 2001a:fn. 20 for further discussion of this issue.

<sup>17</sup> The Slavic language family has come to be known for “wearing its LF on its sleeve.” That is, the syntactic ordering and structure of *wh*-items can be assumed to be identical to their LF ordering and structure.

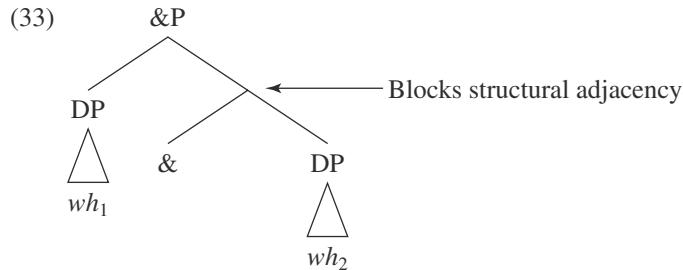
<sup>18</sup> It has been argued that nonbijective interpretations exist (see Comorovski 1996, Dayal 2002). If this turns out to be the case, the bijectivity condition on the absorption mechanism will need to be relaxed or otherwise revised in some way.

key to deriving the right distributions of pair-list and single-pair readings will be the correct understanding of structural adjacency for quantifiers at LF. In order to undergo QA, two (or more) quantifiers must be in a particular structural configuration at LF: they must be *structurally adjacent*, under the definition given in (32).

- (32)  $\alpha$  and  $\beta$  are *structurally adjacent* if and only if
- $\alpha$  c-commands  $\beta$ , and
  - $\alpha$  c-commands no head that c-commands  $\beta$ .

(32b) requires that c-command be *immediate*, in the sense that no head may intervene between the two quantifiers at issue.<sup>19</sup>

With the structural adjacency requirement defined, we are in a position to see why QA will be blocked in the CMW construction. In section 2.2, I analyzed the CMW as forming an &P structure, and I adopt that structure here.



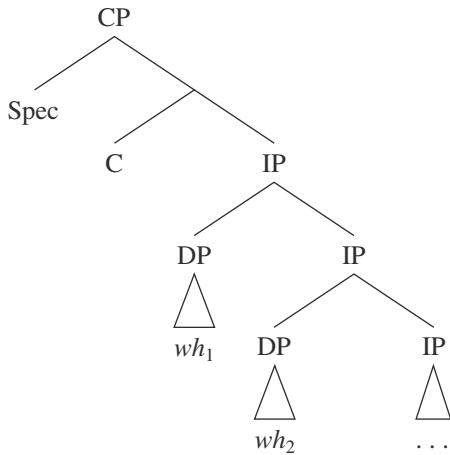
The structural adjacency precondition for QA is not met in (33). In this structure,  $wh_1$  does c-command  $wh_2$ , but there is also an intervening head,  $\&$ , which is c-commanded by  $wh_1$  and which itself c-commands  $wh_2$ . This violates the second part of the structural adjacency requirement, and thus QA cannot apply. By assumption, the coordinator here is semantically vacuous; it receives no interpretation of its own and serves only as a structural blocker to QA.<sup>20</sup> If we take structural adjacency to be the relevant precondition for deriving the pair-list reading, then CMW constructions are predicted never to result in a pair-list reading. This is confirmed by data from Russian (Grebenyova 2004), Romanian (Donka Farkas, pers. comm.), Czech (Skrabalova 2006), Serbo-Croatian (Browne 1972), and Hungarian (Lipták 2003), all of which allow the CMW construction.

<sup>19</sup> The proposal made here differs slightly from previous proposals (Higginbotham and May 1981, May 1985) in defining the structural precondition more precisely. Previous instantiations have formulated this precondition as requiring either that  $\alpha$  immediately c-command  $\beta$  (leaving *immediate* undefined) or that  $\alpha$  and  $\beta$  c-command each other.

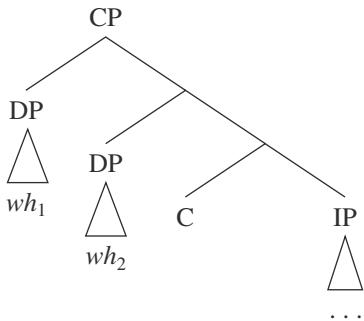
<sup>20</sup> The coordinator in Russian is not always semantically vacuous, of course. It clearly has numerous other (perhaps nontypical) functions; as a reviewer points out, it can also appear as a focus particle in contexts not related to multiple *wh*-questions. Looking forward, it would be interesting to investigate the nature of the connection, if there is one, between the ability of *i* to serve as a focus marker and the hypothesized focus-driven *wh*-movement in languages like Russian (Stepanov 1998).

Adopting structural adjacency as the relevant configuration for obtaining pair-list readings has thus far yielded the correct result: it prevents the CMW construction from ever being assigned a pair-list reading. Let us now turn to obtaining the pair-list reading for noncoordinated multiple *wh*-questions in Russian, Serbo-Croatian, Romanian, and Bulgarian. Recall Richards's (2001) schemas for IP-fronting and CP-fronting languages, repeated here in (34) and (35), respectively.

(34) *IP-fronting languages*



(35) *CP-fronting languages*



Both configurations meet the requirement for structural adjacency. In each structure, *wh*<sub>1</sub> c-commands *wh*<sub>2</sub>, and no head intervenes. Just because the two configurations in (34) and (35) fit the criterion for QA, however, does not make the solution complete. QA was originally formulated as an optional rule, in part because Higginbotham and May (1981) were concentrating exclusively on English, which presumably allows both the pair-list and the single-pair readings, depending on context (though the default reading, without context, is reported to be the pair-list reading). Thus, optional rule application seemed fitting. However, we have already seen that the multiple *wh*-fronting languages vary with respect to whether the single-pair reading is possible in plain multiple *wh*-questions (e.g., in Serbo-Croatian). It appears that QA would have to apply optionally in some cases and obligatorily in others, as sketched in (36)–(39).

(36) *Serbo-Croatian*

*Wh*-quantifiers would need to undergo QA *optionally*.

- Both single-pair and pair-list readings are available for noncoordinated multiple *wh*-questions.
- A single-pair reading is available via a CMW construction; QA is blocked.

(37) *Bulgarian*

*Wh*-quantifiers would need to undergo QA *obligatorily*.

- Only pair-list readings are available for noncoordinated multiple *wh*-questions.

(38) *Russian*

*Wh*-quantifiers would need to undergo QA *obligatorily*.

- Only pair-list readings are available for noncoordinated multiple *wh*-questions.
- A single-pair reading is available via a CMW construction; QA is blocked.

(39) *Romanian*

*Wh*-quantifiers would need to undergo QA *obligatorily*.

- Only pair-list readings are available for noncoordinated multiple *wh*-questions.
- A single-pair reading is available via a CMW construction; QA is blocked.

Recall that the solution proposed in Grebenyova 2004 relies heavily on lexical specification for the sort of Q-morpheme a language allows. In section 3.2.3, I argued that that proposal does not cover the range of relevant facts. Still, there is certainly a remaining question about how to account for the distributions in (36)–(39), if we take structural adjacency to be the relevant condition. While I leave this question for further research, note that on this view, Serbo-Croatian and English are two exceptional languages in which QA is presumed to apply optionally. In section 4, I tentatively propose that QA applies obligatorily, arguing that the availability of single-pair readings in English and Serbo-Croatian is related to exceptional configurations in which the structural precondition for QA is not met.

**3.3.2 Multiple Wh-Items and Clitics in Serbo-Croatian and Bulgarian** The proposal in the previous section makes a strict prediction about when a pair-list reading can be obtained: *wh*-items in CMW constructions are not structurally adjacent and thus can never receive a pair-list reading. We might also predict that other *wh*-constructions in which two *wh*-items are not structurally adjacent should never allow a pair-list interpretation. It happens that Serbo-Croatian and Bulgarian provide a rich testing ground for this prediction.

Bošković (2001a, 2002) develops a theory of multiple *wh*-fronting for Serbo-Croatian, which holds that this sort of fronting in matrix clauses never actually reaches the CP domain. This is consistent with the present classification of Serbo-Croatian as an IP-fronting language. However, it has been noted that in certain instances, one of the *wh*-items can in fact move to the specifier of CP, leaving all other *wh*-items still adjoined to IP. In such cases, what is normally analyzed as an overt complementizer, *li*, is realized between the first *wh*-item and the remaining ones.

- (40) Ko li koga pozva na večeru?

who c whom invited to dinner

‘Who (on earth) invited whom to dinner?’

(SP/??PL)

(Grebenyova 2004:181)

- (41) Ko li koga tuche?

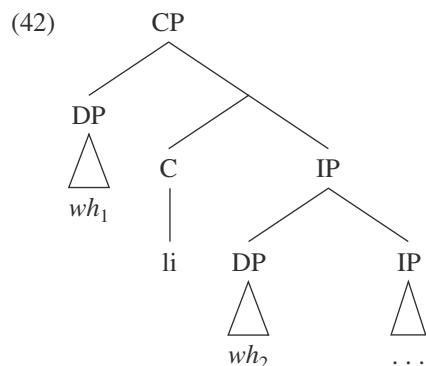
who c whom beats

‘Who (on earth) is beating whom?’

(SP/??PL)

(Grebenyova 2004:181)

Not surprisingly, the only reading available for (40) and (41) is the single-pair reading. Following an analysis proposed in Bošković 2001b, I will take the leftmost *wh*-item in these examples to be located in the specifier of CP. In such a case, the structure of the left edge should look like (42).



The interrogative *li* has been analyzed as a complementizer for Serbo-Croatian (Bošković 2002); this is, then, an instance in which linear order can actually help us to determine the landing site of a *wh*-item. Additional evidence, such as the fact that overt-C questions in Serbo-Croatian exhibit superiority effects, while nonovert-C questions do not, points to a structural asymmetry of the type sketched in (42). An expanded discussion of this issue and its relevance for a QA analysis appears in section 4.

Crucially, the precondition for structural adjacency of the two *wh*-quantifiers is not met in (42): *wh*<sub>1</sub> c-commands *wh*<sub>2</sub>, but *wh*<sub>1</sub> also c-commands an intervening head, C, which is not c-commanded by *wh*<sub>2</sub>. If a structure like (42) is indeed correct, then the QA account put forth in section 3.3.1 correctly predicts that only the single-pair reading will be appropriate in the Serbo-Croatian examples (40)–(41).

Despite the tidy result for Serbo-Croatian *li*-questions, the presence of other clitics between *wh*-items in Serbo-Croatian yields seemingly contradictory results. I argue, however, that importing the analyses of these phenomena developed in Bošković 2001b is sufficient to explain the difference in interpretation. As we might expect, differences with respect to interpretation should arise depending on whether the clitic is placed between *wh*-items syntactically or whether it is placed there because of a PF requirement. In the former case, we get the result just described:

LF structure is read off the syntactic structure, and the two *wh*-items are not structurally adjacent. In the latter case, the two *wh*-items are indeed structurally adjacent, and a pair-list reading should result (optionally, for Serbo-Croatian). This prediction seems to be borne out. Consider (43), which can receive either a pair-list or a single-pair reading, according to the judgment in Bošković 2001a.

- (43) Ko je šta kupio?  
 who is what bought  
 ‘Who bought what?’  
 (Bošković 2001a:9)

In (43), an auxiliary clitic appears between the two *wh*-items, yet both readings for the multiple *wh*-question are available. Following Bošković’s (2001b) extensive work on clitic placement, I adopt an analysis of the auxiliary clitic in which its placement is regulated by a PF requirement that it appear second in the clause. On Bošković’s proposal, a lower copy of one of the moved *wh*-items is pronounced in order to satisfy the PF requirement of the auxiliary clitic; in the syntax, the *wh*-items are still structurally adjacent, allowing for the possibility of a pair-list reading.<sup>21</sup>

One final clitic-placement phenomenon deserves mention here. Bulgarian also allows the question particle *li* to cooccur with multiple *wh*-items; the clitic appears second in the clause, just as in Serbo-Croatian. In contrast to the Serbo-Croatian case, however, only a pair-list reading is available for these questions in Bulgarian.

- (44) Koj li kakvo kupuva?  
 who c what bought.3SG  
 ‘Who (on earth) is buying what?’  
 (Lydia Grebenyova, pers. comm.)

(44) looks strikingly similar to the Serbo-Croatian *li*-questions (40) and (41), but the availability of readings is different; instead of an exclusive single-pair reading, (44) has an exclusive pair-list reading. Recall that structurally, Bulgarian and Serbo-Croatian fall into separate categories: Bulgarian *wh*-questions are analyzed as CP-fronting, while Serbo-Croatian *wh*-questions are analyzed as IP-fronting. Again following the analysis proposed in Bošković 2001b, I take the *li*-particle in Bulgarian to be placed in the syntax at C; this creates the syntactic structure in (45).

- (45) [CP koj kakvo [C' li kupuva]]

However, according to Bošković (2001b), the Bulgarian *li*-particle is still subject to a PF require-

<sup>21</sup> The proposal as it stands predicts that purely prosodic placement of a clitic in Serbo-Croatian will not have any interpretive consequence. A reviewer points out that an interesting testing ground for this prediction might be phrases of the type ‘[which *x*]', where the clitic is placed after ‘which’ because of a prosodic requirement that it appear second in the clause. I have not yet tested such cases, but if they exist, the prediction is clear: the reading should not be affected.

ment, which means that a lower copy of one of the *wh*-items is actually pronounced in order to satisfy it.<sup>22</sup>

- (46) [CP koj kakvo [C' li kakvo kupuva]]

It should become clear now why the Bulgarian *li*-questions yield only a pair-list reading: if QA is always obligatory in Bulgarian, and the structural precondition is met, then the judgment in (44) is expected. Thus, despite the surface similarity of Bulgarian and Serbo-Croatian *li*-questions, clitic placement in these two instances is regulated by different mechanisms: both complementizers are generated in C, but because Bulgarian is a CP-fronting language, this is not enough to land *li* in second position in Bulgarian. An additional PF requirement forces a lower copy of a *wh*-item to be pronounced. In the syntax, then, only the Bulgarian structure meets the precondition for QA.

Here it is worth noting that Kazenin (2002) has proposed a different way of accounting for the single-pair reading correlated with the Russian CMW construction. On Kazenin's view, noncoordinated multiple *wh*-questions have the pair-list reading because one of the *wh*-items moves to a universal quantifier position at LF (É. Kiss 1993, Comorovski 1996, Krifka 1999, Dayal 2002). On Kazenin's approach, the single-pair reading for the CMW follows from the fact that moving a *wh*-item out of a coordinate structure would violate the Coordinate Structure Constraint. If no *wh*-item can move out of the coordinate structure, then no *wh*-item can move to the necessary position at LF, and no pair-list reading can be obtained. While this proposal does provide a way of understanding why the CMW is associated with the single-pair reading, it cannot account for the cases of clitic placement we are looking at here. Since no coordinate structure is involved in Serbo-Croatian cases like (40)–(41), Kazenin's proposal does not explain why a pair-list reading is impossible in these cases. The QA analysis proposed here covers a broader range of cases, because it refers to a structural precondition for pair-list readings that excludes not only the CMW, but also other constructions in which a head intervenes between two otherwise structurally adjacent *wh*-items.

It is important to emphasize that the claims about clitic placement on which this discussion rests were made entirely independently of the concerns of this article. Clitic placement in the Slavic language family, and the requirements on each particular clitic in the languages at issue, have been very well documented; the analyses presented in Bošković 2001b are carefully thought out and well developed. What should be surprising is how well the data and the already developed analyses align with the idea of structural adjacency. By contrast, none of the data concerning the interaction of clitics with multiple *wh*-items can be accounted for using an approach based on Hagstrom's (1998) semantics. The analyst must again resort to specifying lexical conditions on the Q-morpheme to achieve the same empirical results (along the lines of Grebenyova 2004).

<sup>22</sup> A reviewer points out that the lower copy here is pronounced in what is presumably an argument position (specifier of TP/IP). This result may in turn make predictions about argument-adjunct asymmetries for *wh*-words. This problem is inherited from Bošković 2001b; unfortunately, resolving it is too extensive a task for the present discussion.

#### 4 Remarks

The discussion thus far has stemmed from the observation that the standard approach to the semantics of multiple *wh*-questions predicts the wrong interpretation for CMW constructions in Russian (as well as Czech, Hungarian, and Romanian). I have proposed an alternative treatment, which takes structural adjacency at LF to be the relevant configuration for obtaining pair-list readings. Because QA can apply only when a certain structural precondition is met, single-pair readings are expected any time this precondition is not met. Since the CMW does not meet the precondition of structural adjacency, the single-pair reading for the CMW follows from this analysis. The predicted result also holds any time clitics intervene as syntactic heads between multiple *wh*-items in the syntax. When clitics are placed between *wh*-items because of a prosodic restriction, a pair-list reading can still be obtained; this is expected if structural adjacency is a requirement that holds at LF (and is therefore blind to prosodic structure).

The QA proposal, as construed here, leaves several questions unanswered. Possibly the most pressing one is this: what gives rise to the distribution of just pair-list or both pair-list and single-pair readings in the cases where the syntactic precondition for QA is met? This question has to do with the distributions sketched in (36)–(39). It seems that in certain languages, the *wh*-quantifiers would need to be able to undergo QA optionally, while in others the operation appears to be obligatory. This distinguishes Romanian, Bulgarian, and Russian from Serbo-Croatian and English.

Although I leave this question open here, one comment may be relevant: if the possibility of having two readings (single-pair and pair-list) depends on structural adjacency, then perhaps the languages that allow both readings also allow two possible structures for a typical multiple *wh*-question. In particular, it is already apparent that languages like Serbo-Croatian allow two possible positions for the higher *wh*-item (either in the specifier of CP or adjoined to IP) (Bošković 2002). The reason for this choice is unclear, but in section 3.3.2, we saw that the structural option of fronting one *wh*-item to the specifier of CP is a viable alternative, and that this alternative, as predicted, has consequences for the question's interpretive possibilities. More work would need to be done, then, to nail down exactly what motivates these two possibilities in Serbo-Croatian. Minimally, though, we may be able to posit that the availability of both readings corresponds to the availability of both positions for *wh*-quantifiers at LF.

Even if we decide to adopt this tentative proposal for Serbo-Croatian, however, we are left with the case of English. Indeed, QA was originally proposed by Higginbotham and May (1981) as an optional rule for structurally adjacent *wh*-quantifiers at LF, because of the presumed availability of both readings (pair-list and single-pair) in English. Since Pesetsky 1987, however, it has been widely thought that *wh*-quantifiers do not always raise to a clause-initial position at LF in English. Various factors have been claimed to prevent this movement. In Pesetsky 1987, the crucial factor is whether or not the *wh*-phrase is discourse-linked (D-linked), because D-linked *wh*-phrases remain in situ. The empirical claim is that phrases of the form [which *x*] are more likely to be D-linked, since they invoke a contextually determined set from which one should choose. If this is the case, we should expect a distinction in available readings between multiple questions in which *wh*-phrases are D-linked and ones in which they are not, since only if the *wh*-item is raised covertly will the crucial structural adjacency condition be met.

- (47) Which man did you persuade to read which book? (SP > PL)  
 (48) Who did you persuade to read what? (PL > SP)

Indeed, the contrast between (47) and (48) appears to confirm that *which*-phrases have a tendency to favor the single-pair reading.<sup>23</sup> Combining the observations made in Pesetsky 1987 with the idea of QA, it seems natural to suggest that the availability of pair-list readings is contingent on the possibility of raising both *wh*-phrases at LF. Raising *wh*-items at LF may in turn be associated with factors like D-linking, among possibly others. Such a proposal certainly needs to be explored further, but if the result is accurate with respect to the interpretive judgments for English, it would confirm that QA really can be viewed as obligatory, when the structural precondition of adjacency is met.

A generalization that can be safely taken away from this work is that structural adjacency at LF, as I have defined it, is the relevant factor in determining the sort of reading that a multiple *wh*-question will yield. This observation aligns nicely with Higginbotham and May's (1981) work on QA, but a fully fleshed-out semantic analysis based on QA has yet to be provided. My goal in this article has been to explicate the nature of the link between the structure of multiple *wh*-questions and their interpretation. A next step along this path is to develop a fuller semantic account of how the unification of two quantifiers actually yields a pair-list reading.

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<sup>23</sup> A reviewer notes that the single-pair reading is less salient if the *which*-phrase is plural (e.g., *Which men did you persuade to read which books?*). It seems to me, however, that the felicitous answer to this question should still consist of a single pair (e.g., *I persuaded the men in the library to read the entire Dickens collection*). Given the divergent judgments, it is apparent that more empirical work needs to be carried out before we can better understand whether it is really D-linking at play in cases like (47), or plurality.

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