

Structural adjacency and the typology of interrogative interpretations

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Abstract

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 across several languages. I suggest a reformulation of the connection between the structure and interpretation of multiple wh-questions that relies on the structural adjacency of two or more wh-items at LF, and 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, single-pair, 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; each pattern is observed to coincide with either a pair-list (PL) reading, or both a pair-list and a single-pair (SP) reading. More recently,

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two separate strands of research — that of Grebenyova (2004) and Kazenin (2002) — concentrate on multiple wh-fronting data from Russian which 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 paper 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.

- (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 (§2), I argue that the currently dominant theory, developed in Bošković 2001a, cannot account for the relevant facts in Russian (§3.1). 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 (§3.2). The overarching aim of this section is to understand 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. §3.2.2 discusses the implications and empirical predictions of the newly proposed view, citing several cases in which these predictions are borne out; §4 concludes by discussing the consequences of the findings here 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. Coordination of multiple wh-items in Russian can, in principle, occur 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

The discussion in this paper will be concerned only with cases like (3), which I call here the CMW. For reasons which are made clear in Kazenin 2002, examples like (4) have an entirely distinct structure (the properties of which are discussed extensively in Merchant 2001), and 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 can be coordinated (as long as there are at least two). This paper 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, for what, and when?’

Second, any sort of wh-item, and any combination of wh-items, can be coordinated. This includes arguments, adjuncts, and larger wh-phrases. The example in (6) shows 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 below 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 vstretilis’?
 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.¹ Thus, for the examples above we can switch the ordering of the conjuncts without any change in grammaticality.

- (9) Čto i kto zaxvatil?
 what.ACC and who.NOM grabbed.3SG
 ‘Who grabbed what?’
- (10) Kogda i gde vy vstretilis’?
 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?’

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

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 with regular frequency.²

2.2 Theoretical Prelude

The discussion of the CMW construction in later sections of this paper 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 an entirely different approach has been proposed in Camacho 2003. There, it is suggested that structures analogous to the CMW might be considered coordination of two CPs and subsequent backward sluicing within the lefthand CP. The backwards sluicing approach is also proposed by Giannakidou and Merchant 1998 for certain Greek and English constructions.

The discussion here will take as its starting point that the backward sluicing approach is not the right way to understand the CMW construction. Arguments in support of this view can be found in Kazenin 2002 and Lipták 2003. There, it is noted that a backward sluicing analysis would yield the structure in (12) for cases of argument-argument coordination.

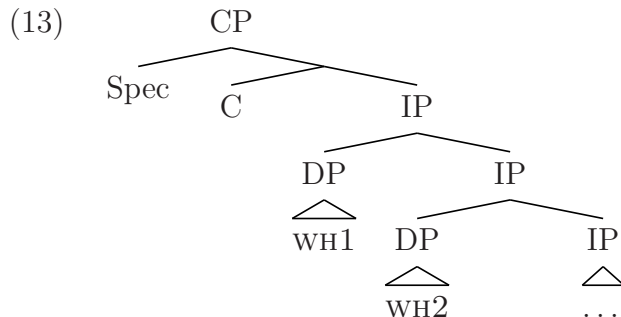
$$(12) \quad [_{CP} \text{Kto}_i [_{IP} \text{t}_i \text{zaxvatil pro}_t]] \text{ i } [_{CP} [\text{kakoj gorod}]_t [_{IP} \text{pro}_i \text{zaxvatil t}_t]]$$

Following the Chung, Ladusaw and McCloskey 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* 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 states that no backwards 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.

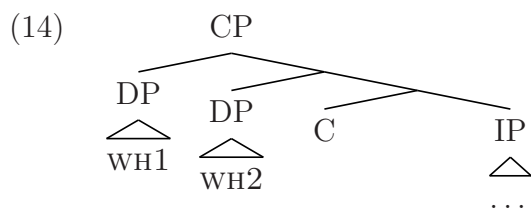
Given these arguments against the backward sluicing analysis of the CMW, I will view the construction in a manner that maximizes its parallelism with more typical cases of multiple wh-movement. To situate this effort in a larger context, I provide a brief overview of the traditional approach to multiple wh-questions. Since at least Rudin 1988, multiple wh-fronting languages have been analyzed as falling into two

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

different groups, with correspondingly differing syntactic structures. In (13) and (14), I adopt the two structural options proposed in Richards 2001, with a minor terminological change.



IP FRONTING: Russian, Polish, Czech, Serbo-Croatian



CP FRONTING: Bulgarian, Romanian

Recent views of the structural distinction (i.e. Bošković 2001a, 2002) between CP-fronting and IP-fronting 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 facts, and island effects. For example, CP-fronting makes use of multiple specifiers; it is not surprising, then, that this group allows extraction of multiple wh-items from embedded clauses and shows no sensitivity to wh-island effects. In contrast, IP-fronting languages typically *do* show sensitivity to island effects and *do not* allow multiple extractions of wh-items from embedded clauses, as only one specifier would be available as an escape hatch to the upper clause. Lastly, the CP-fronting languages exhibit ordering restrictions with respect to multiple wh-items, while the IP-fronting languages generally exhibit no such restrictions. 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 fall out 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.³ 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 also prohibits non-coordinated instances of multiple wh-movement.⁴ 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.⁵

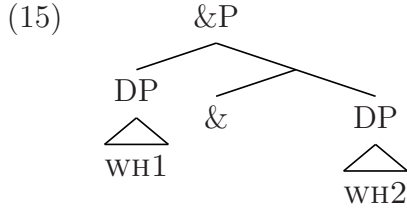
The second starting point concerns the internal structure of the coordinated constituent that appears at the left edge of the matrix clause in Russian. Though other options may be possible, I assume that the coordinate structure in question is structured as formulated in Zoerner 1995, and shown in (15).⁶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

³Kazenin (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). In order to maintain consistency with this observation, I will assume that the coordinated wh-items are adjuncts to IP.

⁴A reviewer notes that Turkish examples cited by Merchant (2001, 111) indicate that Turkish, though a non-multiple wh-fronting language, also makes use of what looks like a CMW construction. Without further investigation of 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 non-multiple wh-fronting language naturally arises.

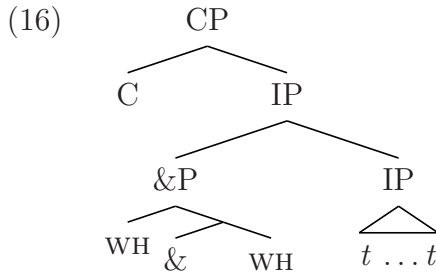
⁵Other non-wh elements can naturally also be coordinated, for example negative quantifiers (e.g., *Ja ničego i nikomu ne skazal*, ‘I didn’t say anything to anyone’) as discussed by Kazenin 2002 and Lipták 2003. These same quantifiers can also be concatenated at the left edge in Russian, much like wh-phrases. While these patterns suggest that wh-movement might be a sub-group 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 it can be concluded that this is indeed the same construction.

⁶Munn (1993) has also developed a structure for coordination, in which the latter 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 (1993) would not change the proposal significantly.



ZOERNER 1995: &P

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



We might also posit a similar-looking structure for the CP-fronting languages, with the &P constituent in the specifier position of CP. Following through on 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 give rise to it. By assumption, $&^0$ would be merged in 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 present time, the structure in (16) seems like a reasonable point of departure.

3 Multiple Questions at LF

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. The latter part of this section 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 by making up scenarios that force one of the readings (the ones below are from Grebenyova 2004).

(17) PL 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) SP 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.⁷ The readings in (17) and (18) are not identically available in multiple *wh*-questions cross-linguistically. English, for example, appears to favor a pair-list reading, with 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 §4 for more comments on one possible explanation for these kinds of readings for English).⁸ Serbo-Croatian unexceptionally allows for 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 §2.2, it was established that clause-peripheral multiple *wh*-questions fall into two groups, structurally. 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 a theory of the interaction between the syntax of

⁷A reviewer points out that we can ask a question with the expectation of a pair-list response, but in certain instances we may receive only one pair as a response to the question. Consider the following scenario. Matthew hosts a potluck dinner. His sister arrives to the event late, and wants to know which guest brought which food item to the party. After the event, she helps Matthew clean up in the kitchen, and asks him, “so, who brought what?”. With the exception of one guest, Bill, the rest of the guests did not bring 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.

⁸A 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 questions as exceptional, while treating Serbo-Croatian multiple *wh*-questions as having both readings equally available. 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, there appears to be enough justification provided by the literature to make this assumption.

these constructions and their available interpretations. The claim is that CP-fronting supports only a pair-list reading. 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 whichACC 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 Russian is classified as an IP-fronting language; but 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 (Kazenin, 2002). This is at odds with the pattern observed in Bošković 2001a, 2002.

Capturing intuitions about single-pair versus pair-list readings can be a very difficult task, 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 Kazenin 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 other diagnostics exist. However, there is one diagnostic that can be applied (following similar observations in Nishigauchi 1998). Consider the Russian examples in (21)–(24), which show multiple wh-slucing in Russian.⁹

- (21) **Každyj** 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.’

⁹Note 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** priglasil **kogo-to** na tanec, no ja ne pomnju, **kto i**
everyone invited **someone** to dance but I NEG remember **who and**
kogo.
whom

(23) **Kto-to** priglasil **kogo-to** na tanec, no ja ne pomnju, **kto i**
Someone invited **someone** to dance but I NEG remember **who and**
kogo.
whom

‘Someone invited someone to a dance but I don’t remember who (invited) whom.’

(24) #**Kto-to** priglasil **kogo-to** na tanec, no ja ne pomnju, **kto kogo.**
someone invited **someone** to dance but I NEG remember **who whom**

Grebenyova (2006) notes that the non-coordinated wh-items that appear just before the sluiced material are infelicitous if the antecedent forces a single-pair reading, as in (24). Non-coordinated 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 (23). The judgments here are strong and stable across speakers.¹⁰ 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.¹¹

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 §3.1, I discuss one influential view of the interpretation of multiple wh-questions in multiple wh-fronting languages, and argue that it cannot account for the facts discussed above.

¹⁰A reviewer points out that the increased stability of judgments in the sluicing examples might be a reflection of a different type of wh-movement in such examples (that is, 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.

¹¹The Romanian evidence is entirely analogous, and displays the same pattern: plain wh-fronting gets a pair-list reading, while the CMW construction gets the single-pair reading (Donka Farkas, p.c.). However, a reviewer points out that judgments reported by Merchant (2001, 100-112) for Turkish and Bulgarian in 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 non-coordinated wh-items in the sluice. It’s not entirely apparent to me whether this is a property of sluicing, as another reviewer suggests in *fn.* 11, or a property of the nature of single-pair and pair-list readings in these languages. In either case, this is certainly a very interesting area for further exploration.

3.1 A Hagstrom 1998 Semantics for Multiple Questions

3.1.1 Hagstrom 1998

Bošković (2001a) adopts a semantics for multiple questions developed by Hagstrom (1998).¹² A standard assumption here is that the semantic value of each question is the set of possible answers to it (at least since Hamblin 1973). Hagstrom’s theory relies crucially on the idea of the Q-morpheme, which is an existential quantifier over choice functions. The choice function applies to a non-empty 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 (SP & PL).

$$(25) \quad [_{CP} Q_j-C^0 \dots [_{IP} \dots WH1 \dots V \dots t_j WH2 \dots]] \quad PL$$

$$(26) \quad [_{CP} Q_j-C^0 \dots [_{FOCP} t_j-F^0 [_{IP} \dots WH1 \dots V \dots WH2 \dots]]] \quad SP$$

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 results in a pair-list reading. In (26), the Q-morpheme merges in a higher position (the specifier of a focus phrase),¹³ with both of the wh-items 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 gives us a set of propositions, which corresponds to a single-pair reading.

3.1.2 Relativized Minimality

Hagstrom’s proposal reduces the single-pair/pair-list distinction to a basic structural ambiguity. Bošković’s (2001a) contribution shows how 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):¹⁴

$$(27) \quad \text{Who invited whom to the dinner?} \quad *SP$$

$$(28) \quad *[_{CP} Who_j C^0 \dots [_{FOCP} Q-F^0 [_{IP} t_j \dots \text{invited} \dots \text{whom to the dinner}]]] \quad *SP$$

¹²A brief exposition of Hagstrom’s proposal is contained in Bošković 2001a, and the exposition in this paper is based largely on that summary. The full version can naturally be located in Hagstrom’s original work.

¹³In 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.

¹⁴The example derivation here is taken directly from Grebenyova 2004.

Because the Q-morpheme carries a [+wh] feature, movement of the higher wh-item across it creates a relativized minimality violation. 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 (PL & SP) should be available for the IP-fronting languages, as no relativized minimality violation should occur if no movement to the specifier of CP occurs (because there is no movement across the Q-morpheme in such cases).

3.1.3 Unraveling the Argument

Recalling the Russian facts discussed in §3, we should see an apparent problem for the theory developed in Bošković 2001a. Two empirical observations appear to be at odds with these predictions:

- Russian is an IP-fronting language, but yields only the PL 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.

An attempt to address part of the problem can be found in Grebenyova 2004, where it is posited that languages specify what sort of Q-morpheme they have as part of their lexicon. On this proposal, Russian has only the Q-morpheme that merges with WH2, as in (25). This solution gives us 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. Grebenyova’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 there is no single-pair Q-morpheme available for Russian on her account.¹⁵

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, p.c.).

- (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 both wh-items here will have undergone separate movements to a specifier of CP from their respective base positions, this movement should cause a

¹⁵A 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 &⁰ be merged low, attaching to a wh-phrase directly. While such an account might be worked out, it depends on a lexical specification for Q that I would prefer to avoid, if possible.

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) $[_{CP} \text{ Who}_i \text{ Q}_j\text{-C}^0 \dots [_{IP} \dots t_i \dots \text{invited} \dots t_j \text{ whom to the party}]]$ 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, but this seems hardly satisfactory.¹⁶ In §3.2, I propose that a different structural pattern is responsible for the distribution of pair-list and single-pair readings. This observation provides a clue as to why the CMW construction receives the single-pair reading, thus far in all languages for which it is attested.

3.2 Structural Adjacency and Interrogative Interpretations

3.2.1 The Proposal

The view promoted here is that a certain type of structural configuration at LF is the necessary 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), first developed by Higginbotham and May (1981); since then, it has been more recently revised by Barss (2000). The 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 across several languages. While this precondition has its roots in the theory of QA, the focus will be empirical coverage, rather than the mechanism of QA itself. In what follows, I give a brief summary of this mechanism, and move to exploring 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. In order for QA to work, we must assume wh-items to be quantifiers at LF.¹⁷ We must also take the single-pair reading to involve a presupposition that the answer to a question consists of one pair (or n-tuplet).

¹⁶See Bošković 2001a, *fn.* 20 for further discussion of this issue.

¹⁷The 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 the LF ordering and structure.

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?

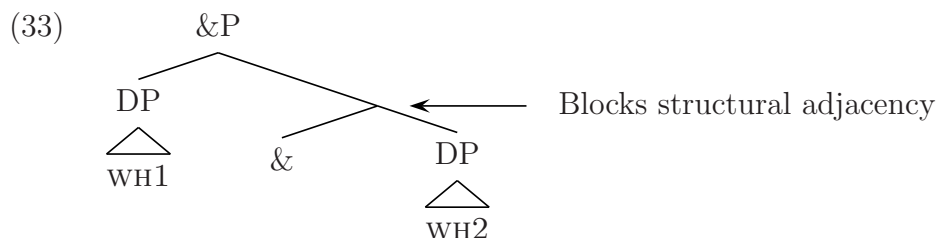
$[WHx: x \text{ a man}][WHy: y \text{ a woman}] x \text{ admires } y \rightarrow [WH_{2^{1,2}}x, y: x \text{ a man} \ \& \ y \text{ a woman}] x \text{ admires } y$

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.¹⁸ On this view, the key to deriving the right distributions of pair-list and single-pair readings will be the 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 below in (32).

(32) α and β are *structurally adjacent* iff:
 $\rightarrow \alpha$ c-commands β
 $\rightarrow \alpha$ c-commands no head that c-commands β

The second line of (32) requires that c-command be *immediate*, in the sense that no head may intervene between the two quantifiers at issue.¹⁹

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



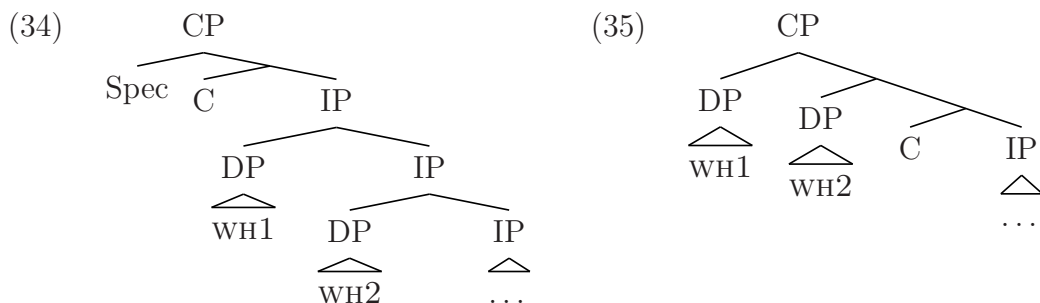
The structural adjacency precondition for QA is not met in (33). WH1 does c-command WH2, but there is also an intervening head, &, which is c-commanded by WH1, and which itself c-commands WH2. This violates the second part of the

¹⁸It has been argued that non-bijective interpretations exist (see Comorovski 1996; Dayal 2002). If this is the case, the bijectivity condition on the absorption mechanism would need to be relaxed or otherwise revised in some way.

¹⁹The proposal 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 α immediately c-command β (leaving *immediate* undefined), or requiring mutual c-command of α and β .

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.²⁰ 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, p.c.), Czech (Skrabalova, 2006), Serbo-Croatian (Browne, 1972) and Hungarian (Lipták, 2003), all of which allow the CMW construction.

Adopting structural adjacency as the relevant configuration for obtaining pair-list readings has thus far yielded the right result: it prevents the CMW construction from ever being assigned a pair-list reading. We now concern ourselves with obtaining the pair-list reading for non-coordinated multiple wh-questions in Russian, Serbo-Croatian, Romanian, and Bulgarian. Recall the Richards 2001 schema for IP-fronting and CP-fronting languages, repeated here as (34) and (35), respectively:



Both configurations meet the requirement for structural adjacency. WH1 in each structure c-commands WH2, and no head intervenes. Just because the two configurations in (34) and (35) fit the criterion for QA, however, does not make the solution a complete one. 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 seen already that there is variation within the multiple wh-fronting languages 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).

²⁰The coordinator in Russian is not always semantically vacuous, of course. It clearly has numerous other (perhaps non-typical) 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 very 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 for languages like Russian (Stepanov, 1998).

- (36) Serbo-Croatian: wh-quantifiers would need to undergo QA **optionally**.
 → both SP and PL readings are available for non-coordinated multiple wh-questions.
 → an SP reading is available via a CMW construction; QA is blocked.
- (37) Bulgarian: wh-quantifiers would need to undergo QA **obligatorily**.
 → only PL readings are available for non-coordinated multiple wh-questions.
- (38) Russian: wh-quantifiers would need to undergo QA **obligatorily**.
 → only PL readings are available for non-coordinated multiple wh-questions.
 → an SP reading is available via a CMW construction; QA is blocked.
- (39) Romanian: wh-quantifiers would need to undergo QA **obligatorily**.
 → only PL readings are available for non-coordinated multiple wh-questions.
 → an SP reading is available via a CMW construction; QA is blocked.

Recall that the solution proposed in Grebenyova 2004 relied heavily on lexical specification for the sort of Q-morpheme allowable in a language. In §3.1.3, I argued that that proposal was not enough to cover the range of relevant facts. Still, there is certainly a remaining question about how to get 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 Serbo-Croatian and English, on this view, are two exceptional languages in which QA is presumed to apply optionally. A tentative proposal, in which it is suggested that QA applies obligatorily, is put forth in §4. There, it is argued 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.

3.2.2 Multiple Wh-items and Clitics in Serbo-Croatian and Bulgarian

The proposal in the previous section makes a strict prediction regarding 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 so 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 our 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, undergo movement 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.

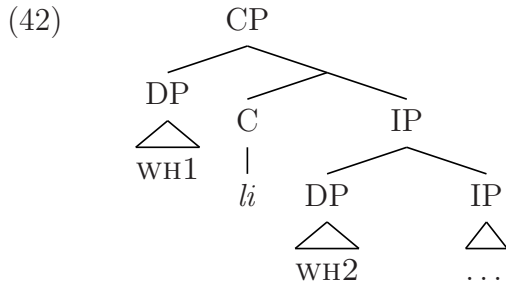
- (40) Ko li koga pozva na veceru?
 who C whom invited to dinner

‘Who (on earth) invited whom to dinner?’ (Grebenyova, 2004) SP/??PL

- (41) Ko li koga tuce?
 who C who beat

‘Who (on earth) is beating whom?’ (Grebenyova, 2004) SP/??PL

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 left-most wh-item in these examples to be 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 exhibit superiority effects, while non-overt C questions in Serbo-Croatian do not, points to a structural asymmetry of the sort sketched in (42). An expanded discussion of this issue and its relevance for a QA analysis appears in §4.

Crucially, the precondition for structural adjacency of the two wh-quantifiers is not met in (42): WH1 c-commands WH2, but WH1 also c-commands an intervening head, C, which is not commanded by WH2. If a structure like (42) is indeed correct, then the QA account put forth in §3.2 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 in 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 one might expect, differences with respect to interpretation should arise based on whether the clitic is placed syntactically in between wh-items, or if it is placed there because of a PF requirement. In the former case, we get the result just described above: LF structure is read off of 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 single-pair reading, according to the judgment in Bošković 2001a.

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

‘Who bought what?’

(Bošković, 2001a) SP/PL

In (43), an auxiliary clitic appears between the two wh-items; yet, both sorts of readings for the multiple wh-question are available. Following the extensive work on clitic placement done in Bošković 2001b, 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 (2001b) 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.²¹

A last clitic-placement phenomenon deserves mention here. Bulgarian also allows the co-occurrence of the *li* question particle with multiple wh-items; the clitic appears second in the clause, just as in Serbo-Croatian. Notice, however, that in contrast to the Serbo-Croatian case, 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?’

(Grebennyova, p.c.) PL/??SP

(44) looks strikingly similar to the cases of Serbo-Croatian *li*-questions (e.g. (40) and (41)), but the availability of readings is different; instead of an exclusive single-pair reading, we get 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 C⁰; this creates the syntactic structure in (45).

- (45) [_{CP}Koj kakvo [_C li kupuva]]

However, according to Bošković (2001b), there is still a PF requirement placed on the Bulgarian *li*-particle, which means that a lower copy of one of the wh-items is actually pronounced in order to satisfy it.²²

²¹The proposal as it stands predicts that purely prosodic placements of clitics 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.

²²A reviewer points out that the lower copy here is pronounced in what is presumably an argument position (specifier of TP/IP), which may make predictions about argument-adjunct asymmetries for

(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 (45) 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 due to the fact that Bulgarian is CP-fronting, 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 this view, the pair-list reading is obtained for non-coordinated multiple wh-questions because one of the wh-items moves to a universal quantifier position at LF (Comorovski, 1996; Kiss, 1993; 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, there is no possibility of a wh-item moving to the necessary position at LF, and no pair-list reading can be obtained. While the 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 under discussion in this section. Since no coordinate structure is involved in Serbo-Croatian cases like (40)–(41), Kazenin's proposal offers no explanation for the prohibition of a pair-list reading in these cases. The QA analysis under consideration in this paper 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 upon which this discussion rests were made entirely independently of the concerns of the present paper. Clitic placement in the Slavic language family, and the requirements on each particular clitic in the languages at issue, has 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 already developed analyses and data align with the idea of structural adjacency. On a Hagstrom-based account, none of the data concerning the interaction of clitics with multiple wh-items can be accounted for. The analyst must again resort to specifying lexical conditions on the Q-morpheme to achieve the same empirical results (see Grebenyova 2004 for an approach along these lines).

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 it is construed here, leaves several questions unanswered. Possibly the most pressing of these questions is, what gives us 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.

While this question is left open here, one comment may be relevant: if the possibility of having two readings (SP & PL) depends on structural adjacency, then it is possible that the languages which 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 to the specifier of CP or adjoined to IP) (Bošković, 2002). It is unclear what this choice is motivated by, but in §3.2.2, we saw that the structural option for fronting on wh-item to the specifier of CP is a viable alternative, and that this alternative, as predicted, has consequences for the interpretive possibilities of the question. More work would need to be done, then, to nail down exactly what motivates these two possibilities in Serbo-Croatian. Minimally, though, since both positions are available, 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 employ this tentative proposal for Serbo-Croatian, however, we are still 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 (PL & SP) for English. Since the work of 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. For Pesetsky 1987, the crucial factor is whether or not the *wh*-phrase is discourse-linked, because discourse-linked *wh*-phrases remain *in situ*. The empirical claim is that phrases of the sort [*which x*] are more likely to be discourse-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.²³ 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 availability of raising of both *wh*-phrases at LF. Raising of *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, in the way that I have defined it, is the relevant factor in determining the sort of reading that will be yielded for a multiple *wh*-question. 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. The aim of the current work has been to understand 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 into one actually yields a pair-list reading.

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²³Here, 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 come to a better understanding of whether it is really D-linking or plurality at play in cases like (47).

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