Adverbial Quantification over (Interrogative) Complements

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1. Introduction

(1a) can mean what (1b) does, and (2a) can mean (2b).[1] Stephen Berman (1991) called these the 'QV' interpretations, short for 'Quantificational Variability.' Some verbs don't allow QV readings. (3a), for example, can't mean anything with apparent quantification over kids, like (3b).

(1) a. For the most part, Al knows which kids are drunk right now.
b. = For most *x*, kid *x* is now drunk: Al knows that *x* is now drunk.

(2) a. Al knows to a very limited extent which kids are drunk right now.
b. = For few *x*, kid *x* is now drunk: Al knows that *x* is now drunk.

(3) a. For the most part, Al wonders which kids are drunk right now.
b. ≠ For most *x*, kid *x* is drunk: Al wonders [?]whether[?] *x* is now drunk.

Apparently QV involves quantification by a sentential adverb over something. A theory of QV needs to answer, first, what the adverb actually quantifies over, and second, why this quantification has the distribution it does.

This paper rejects Berman's 1991 theory of QV and supports that of Utpal Lahiri (1991, 1998). Berman takes QV to be quantification over the WH variable in the interrogative, as suggested by the form of (1b) and (2b). In section 3 I will give arguments against this, mostly novel. I will then introduce Lahiri's theory, which takes QV to be quantification over the semantic object of the embedding verb—namely, a complete set of partial

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1. An equal sign will indicate that the sentence in item (a) can mean roughly the same as what follows; a not-equal sign will indicate that it cannot. The availability of a QV reading, it should be emphasized, does not exclude the possibility of alternative readings. For extensive discussion of the possible alternatives, and of which adverbs tend to elicit what readings, see Lahiri 1991 and 1998: Ch.2.

answers to the embedded question. I will discuss some advantages and implications of this theory, before introducing a problem in section 6. The theory will need to be generalized to handle problems that arise when the embedded interrogative contains a plural definite description, or a non-distributive predicate. We will have to consider seriously the role of pragmatics in determining what, for the purposes of quantification, counts as the set of partial answers to a question.

2. Berman

Berman 1991 proposes to explain QV as unselective binding over WH variables, potentiated (crucially) by a certain sort of presupposition. WH phrases are bindable, according to Berman, because they denote open formulas, as indefinites do in DRT (Heim 1982, Kamp 1984). The presupposition that potentiates the binding of a WH variable is a kind of factivity presupposition. The verb *know*, for example, expresses a relation presupposed to have in its domain only true propositions. According to Berman, all the verbs that show QV have this kind of factive presupposition, at least when they have an interrogative complement, and all those that don't show QV don't. If I wonder or ask who is drunk, for example, this alone does not put me into any relation with any true proposition.

Berman now takes inspiration from well-known examples like (4a), where a presupposition of the verb seems to restrict the adverbial quantifier (Schubert and Pelletier 1989). Landing presupposes falling, and this apparently limits the domain of *always* such that (4a) can be paraphrased as (4b).

(4) a. Cats always land on their feet.
b. = Always, when cats fall, they land on their feet.

What Berman proposes is that, as a syntactic reflex of presupposition accommodation, the complements of factive verbs are copied into a position where they are interpreted as restricting a sentential quantifier. The value of the quantifier may be given by an adverb; otherwise it is universal, with a few exceptions.

The explanation of QV is now straightforward. Consider (1a). The embedded interrogative denotes the open formula: KID(x) & DRUNK(x) (now). Because *know* is factive, the interrogative is copied into a position where it will be interpreted as restricting (the denotation of) *for the most part* (given here as MOST), as in (5). The free variable *x* gets bound by MOST, and thus (1a) means (1b).

(5) MOST [KID(x) & DRUNK(x) now] [Al knows that DRUNK(x) now]

Verbs like *ask* and *wonder*, on the other hand, are not factive, so the denotations of their complements are not copied into the restriction of the sentential quantifier. Hence the quantifier cannot bind the variables introduced inside the complement, and the QV reading cannot obtain.[2]

I now want to argue that all of Berman's central claims are false. QV is not a side-effect of factivity, QV does not coincide with presupposition accommodation, and QV cannot arise from fortuitous binding of open variables.

3. Problems for Berman

Already Utpal Lahiri (1991, 1998) has shown that factivity can't be the source of QV readings, since there are non-factive predicates that show QV. For example, one can be *sure about* propositions that are false, but nevertheless (6a) can be understood roughly as in (6b). So factivity as such can't play a role in the explanation of QV.

(6) a. For the most part, Al is sure about which kids are drunk.
b. = For most *x*, kid *x* is (conceivably) drunk: Al is sure that *x* is drunk.

I want to add to this two further observations that force the disengagement of QV from presupposition.

First, quantification into *declarative* complements of factive verbs seems to be impossible. In my judgment, (7a) cannot mean what (7b) does.

(7) a. For the most part, Al knows that undergraduates got drunk.
b. ≠ For most *x*, undergraduate *x* got drunk: Al knows that *x* got drunk.

This is completely unexpected if Berman is right, since factivity is supposed to trigger the copying of embedded clauses into the restriction of a higher quantifier, and indefinites are supposed to denote open formulas.

2. This is how Berman puts his explanation. Somewhat inadvertently, he supplies a second explanation by positing, in response to technical and semantic concerns, that WH variables under *wonder*-type verbs are bound by a question morpheme. Variables already bound are of course not open to be bound by an adverb.

Second, QV is always clause-bound, even where the accommodation of presuppositions is not. Consider (8a). It presupposes whatever the embedded clause *Al told Bob which kids are drunk* does, since *know* passes on the presuppositions of its complement. But apparently this does not allow a matrix quantifier to quantify over the *wh*-phrase: (8b) does not have the interpretation in (8c).

(8) a. Dan knows that Al told Bob which kids are drunk.
b. For the most part, D knows that A told B which kids are drunk.
c. ≠ For most *x*, *x* a drunk kid: D knows that A told B that *x* is drunk.

The presuppositional restriction of quantifiers doesn't otherwise behave this way. (9a), for example, is understood as quantifying over men with girlfriends (compare (9b)), despite the fact that the presuppositional phrase *their girlfriend* is embedded under both *say* and *if*.

(9) a. Men usually get angry if someone says their girlfriend is ugly.
b. = Men *with girlfriends* usually get angry if …

Thus presupposition alone can't explain the distribution of QV, since QV obeys locality principles that presupposition does not. To explain the locality of QV, Berman needs an additional constraint, necessarily independent of anything to do with presupposition, and so extrinsic to his core theory of QV. It would be better to have a theory from which the locality of QV falls out naturally.

The most telling problem with Berman's analysis is that it cannot handle WH/quantifier interactions. (10a) is true if, for example, Carl drank the absinthe, Dan drank the bourbon, and Ely drank the cognac—and Al knows two of these three facts. Within Berman's theory, this interpretation would seem to require a logical form like (10b). But this would involve treating the quantifier *each* as semantically vacuous, such that *each kid* introduces a free variable over kids, and this is hardly plausible.

(10) a. For the most part, Al knows what each kid drank.
b. For most $\langle x,y \rangle$, kid *x* drank *y*: Al knows that *x* drank *y*.

4. Lahiri

Lahiri (1998) avoids the problems just raised for Berman. The crux of his theory is just this: QV is quantification over the semantic object of the embedding verb. Verbs like *know*, *tell* and also *sure about* express relations to propositions. When a verb like this has an interrogative complement, it expresses a relation to (some of) the propositions that answer the question the interrogative denotes. QV is just quantification over those answers.

Assume for now that an interrogative denotes the set of propositions generated by making all possible substitutions for WH phrases (Hamblin 1973), and call this set *the general answer set*. Call the subset of the answer set selected by the embedding verb—as for example *know* selects the subset of true answers—*the answer set* simply (Karttunen 1977). It will do no harm in this paper to regard the conjunction of all the propositions in the answer set as defining *the total answer*.[3] Correspondingly, we can regard the answer set as a complete set of mutually independent partial answers.

Now consider again (1a), repeated as (12a). If there are four kids—Carl, Dan, Ely and Frank—then the general answer set for (12b) is (12c). If only Carl, Dan and Ely are in fact drunk, then *know* in (12a) will express a relation to only the subset of (c) given in (d). Thus the denotation of *for the most part* will quantify over the set in (d), with the result that (a) says what (e) does: Most of the three propositions in (d), Al knows. And that has basically the right truth-conditions.

(12) a. For the most part, Al knows which kids are drunk right now.
b. which kids are drunk right now
c. {Carl is drunk, Dan is drunk, Ely is drunk, Frank is drunk}
d. {Carl is drunk, Dan is drunk, Ely is drunk}
e. = For most *p*, $p \in$ (12d): Al knows *p*.

This account of QV has the capacity to handle WH/quantifier interactions straightforwardly. Suppose that the argument to *know* in (13a) is the answer set in (13b). Then (a) gets the interpretation in (c), as seems correct.

(13) a. For the most part, Al knows what each kid drank.
b. {Carl drank absinthe, Dan drank bourbon, Ely drank cognac}
c. = For most *p*, $p \in$ (13b): Al knows that *p*.

To block QV for verbs like *wonder* and *ask*, little needs to be said other than this: *wonder* and *ask* express relations not to answers, but to questions. Why does this matter? Lahiri's response relies the specific ma-

3. For problems with this assumption, see Groenendijk and Stokhof 1982, Heim 1994, Higginbotham and May 1981, and Lahiri 1998, among others.

chinery he uses to model quantification. I will offer a more neutral answer, no less adequate and far simpler.

An interrogative like (12b) expresses a single, atomic question—not a plurality of questions made up of several independently meaningful partial questions. So, if QV is indeed quantification over the semantic object of the verb, the absence of quantification over questions in (3a) comes as no surprise. The domain of quantification here is simply too small. Over a singleton domain, there is not much meaningful counting to be done.

This has the interesting implication that, if there were interrogatives that denoted a plurality of questions, an adverb could quantify over them, yielding a higher-order QV reading. Seems to me, this does not happen, which suggests that no interrogative denotes a plurality of questions.

For example, the pair-list reading of questions like (14a) is sometimes modeled by quantifying-in the universal, such that (14a) denotes the family of questions in (14b) (May 1985, and many others). The theory I am defending says that this must be false, since (15a) cannot mean (15b). The same can be said for multiple WH questions, as sketched in (16).

(14) a. What did every kid drink?
b. {what did C drink?, what did D drink?, …}

(15) a. For the most part, Al wondered what each kid drank.
b. ≠ For most q, $q \in$ (14b): Al wonders q.

(16) a. For the most part, Al wondered who drank what?
b. ≠ For most q, $q \in$ {who drank a, who drank b, …}: Al wondered q.
c. ≠ For most q, $q \in$ {what did C drink, what did D drink, …}: Al wondered q.

It has also been claimed that an interrogative containing a plural *in*-definite may denote a non-singleton family of questions, at least one of which the addressee is enjoined to answer (Chierchia 1993, Groenendijk & Stokhof 1984, but cf. Szabolcsi 1996). (19a), for example, is said to denote (19b). Were there such an interpretation of (19a), then we should be able to quantify over this family; (18a) should be able to mean (18b). But clearly it can't, which suggests that, in fact, (19a) cannot mean (19b), a suggestion I think is correct in any case, along with Szabolcsi 1996. So the QV data argue that there are no multiple questions.

(17) a. What did two kids drink?
b. {what did C and D drink, what did E and F drink, …}

(18) a. For the most part, Al wonders what two kids drank.
b. ≠ For most q, $q \in$ (17b): Al wonders q.

5. An attractive generality

Lahiri's theory allows the assimilation of QV to a general pattern of adverbial quantification over argument positions. Notice that (19a) can be read as synonymous with the (19b), with quantification over the atoms of the plural NPs. Given just this, we should expect QV to obtain, inasmuch as interrogatives under verbs like *know* or *sure about* effectively denote pluralities of propositions.

(19) a. For the most part, Al hates his colleagues.
b. = Al hates most of his colleagues.

We also expect (hence explain) the noted locality of QV, since adverbial quantification over definite NPs is strongly local. As shown in (20) and (21), it is apparently clause-bounded. Thus we expect the same of quantification over interrogatives.

(20) a. For the most part, Bob figured that Al hated his colleagues.
b. ≠ Bob figured that Al hated most of his colleagues.

(21) a. For the most part, Al tried to love his colleagues.
b. ≠ Al tried to love most of his colleagues.

Lahiri himself makes little of this analogy between NP- and interrogative-arguments, but I would urge that it be considered central. The linguistic generalization it discovers seems to me the greatest theoretical virtue of his basic theory. Unfortunately, full discussion of its ramifications must await another paper.[4]

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4. One thing the analogy immediately suggests is an explanation of why (ia) can't mean (ib). (ia) can't mean (ib) for the same reason that (ii) is bad: for whatever reason, quantifiers cannot take conjoined phrases as arguments.

(i) a. For the most part, Al knows that Carl drank absinthe, Dan drank bourbon, and Ely drank cognac.
b. ≠ Al knows most of these propositions: Carl drank absinthe, Dan drank bourbon, Ely drank cognac.

(ii) * Most of Carl, Dan and Ely are drunk.

This is an advantage of Lahiri's theory over that in Ginzburg 1995 (see Lahiri 1998: 268), who takes QV to result from modification of the embedding *verb* by the quantificational adverb. A theory like this cannot explain (23) as elegantly as

6. Plurals and the need for pragmatic partition

I have argued that QV readings reflect quantification over a complete set of distinct partial answers to the embedded question. There are of course many dimensions along which a total answer could be partitioned (see Groenendijk and Stokhof 1985, Higginbotham and May 1981). What the literature has called 'QV readings' are those where the dimension of partition is the value of an NP argument position, or of a covarying tuple of NP argument positions, in the denotation of the interrogative. In all the cases Lahiri discusses, the arguments whose variation determines the domain of partial answers are occupied by either quantifiers or WH phrases. Thus the domain can be generated by varying *just* the assignment of values to bound variables, with each partial answer corresponding uniquely to a distinct assignment. That is, the domain is always equivalent to (or at least mechanically derivable from) the presumed semantic value of the interrogative, what above I called the answer set. In this section, I will introduce two cases where this is not true, and where the domain of quantification must be constructed in the pragmatics.

First consider (22a); it can mean what (22b) does. Casting this reading in Lahiri's terms will require a logical form something like (22c), which uses the answer set in (22d). How is this set to be derived from the interrogative *where the kids are hiding,* in the QV context of (22a)?

(22) a. For the most part, Al knows where the kids are hiding.
b. = For most x, x is one of the kids, and there is y, x is hiding in y: Al knows that x is hiding in y.
c. = For most p, $p \in$ {Carl is hiding in room 1, Dan is hiding in room 2, Ely is hiding in room 3}: Al knows p.
d. {C is hiding in 1, D is hiding in 2, E. is hiding in 3}

Krifka (1992) argues persuasively that definite descriptions are not quantificational: they do not interact with other expressions as uncontroversial quantifiers characteristically do. For example (Krifka 1992: ex. (7)), while (23a) can mean that each movie was rented by a different boy, (23b) can only mean that some unspecified boy rented all the movies.

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one like Lahiri's, where quantification is over the denotation of the interrogative itself. Only such a theory predicts *directly* that the quantifier will impose on the interrogative whatever restrictions it generally imposes on the shape of its arguments.

(23) a. Some boy or other rented every movie.
b. Some boy or other rented the movies.

Thus it follows that (22d) cannot be generated by cycling through substitution values for bound variables, since *the kids* is not a quantifier binding a variable. Krifka goes on to offer an explanation of why questions like (24a) may elicit pair-list answers, (24b), a fact that might otherwise be explained by letting the definite denote a wide-scope universal.

(24) a. Where are the kids hiding?
b. Carl is hiding in room 1, Dan is hiding in room 2, and Ely is hiding in room 3.
c. The kids are hiding in rooms 1, 2 and 3.

According to Krifka, (24a) does not denote a family of questions, one for each kid. Rather, it asks: What is the (group of places) *P* such that the kids are hiding in *P*. (24c) identifies *P*, giving a minimal answer. What the answer means is: some of the kids are hiding in each of the rooms named, and none are hiding elsewhere; this is a "cumulative" interpretation (Scha 1984). (24b), in saying which kids are hiding where, gives more information than the question semantically requires, presumably in response to demands of the practical context. Thus (c) more directly reflects the logical form of (a), and (b) is just a helpful articulation of the simple answer in (c).

Krifka's arguments are convincing, but their conclusion alerts us to a delicate situation. The fact is, answers like (24b) are the input to quantification in sentences like (22a). This is something we might hope to model in the semantics, to some extent. But according to Krifka the question/answer relation between (24a) and (24b) is mediated by pragmatics, in a certain narrow way. It follows that pragmatics also mediates—in precisely the same narrow way—the determination of what, for the purposes of quantification, will be counted as the minimal parts of an answer. The domain generated by varying only assignments to bound variables (i.e. the Hamblin/Karttunen answer set given semantically) represents the simplest case.

It remains to fully characterize the most general case. Certainly the domain of partial answers must be complete (entail the total answer) and non-redundant (not contain any elements entailed by some conjunction of others);[5] but are these constraints alone sufficient to model the range of attested QV interpretations? Before addressing this question briefly in section 7, I want to introduce a second, stronger argument for the involvement of inference in the construction of domains for QV.

One accessible reading of (25a) is (25b). In a Lahirian theory, this reading might have an analysis like (25c), which takes the domain of quantification in (a) to be something like (d). This set of answers is isomorphic to the set of soldiers. The property distributed over the soldiers, however, is not the collective property of surrounding the fort—which none of them could have individually—but the property of being among those who jointly surrounded the fort.

(25) a. For the most part Al knows which soldiers surrounded the fort.
b. = For most *x*, soldier *x* was among those who surrounded the fort: Al knows that soldier *x* was among those who surrounded the fort.
c. = For most *p*, $p \in \{q \mid \exists x$: *x* is a soldier & $q =$ *x* was among those who surrounded the fort$\}$: Al knows that *p*.
d. {Hank was among those who surrounded the fort, Ian was among those who surrounded the fort, ...}

Certainly this property is not a generally available alternative meaning for *surround the fort*. Otherwise *Hank surrounded the fort* could be true even when Hank was just one of a thousand participating soldiers. But then how is (25d) to be derived from the embedded interrogative in (25a)?

One possibility is that *which* is ambiguous. Besides meaning something like (26a), it can also mean something like (26b). Using the latter interpretation, *which soldiers surrounded the fort* means (26c), which will generate an answer set roughly as in (25d).

(26) a. $\lambda P \lambda Q$ **WH** x [P(x)] [Q(x)]
b. $\lambda P \lambda Q$ **WH** x [P(x)] [$\exists y$: x is an atomic part of y & Q(y)]
c. **WH** x [SOLDIER(x)] [$\exists y$: x is an atomic part of y & SURROUNDED-THE-FORT(y)]

5. Here these requirements should be understood as applying to the *extensions* of the answers, interpreted against the relevant context. Otherwise, *the jerk is drunk* and *the moron is drunk* could count as distinct answers, even when the jerk *is* the moron. See Kratzer 1989 on difficulties associated with partition and counting.

With (26b) then, (25d) can be derived simply, just by cycling through assignments to bound variables. But the proposed ambiguity is unattractively *ad hoc*. Why isn't the ambiguity general to all determiners? Why, for instance, can't (27a) mean (27b), thereby saving itself from absurdity?

(27) a. # Every soldier surrounded the fort.
b. ≠ Every soldier was among those who surrounded the fort.

This concern is not lethal, but it does give reason to prefer an alternative explanation, not dependent on a dubious ambiguity.

I suggest that the property distributed across soldiers in (25d) is derived pragmatically. The speaker of (25a) purports to measure how much he knows of the answer to *which soldiers surrounded the fort*. The interpretive task, therefore, is to decompose the total answer into a complete and non-redundant set of parts. One sort of partition, the sort underlying QV readings, carves the answer along joints defined by a particular group of participants in the event it describes—say, those associated with the WH or with the subject NP. Each of these participants is assigned a property, yielding one partial answer per participant; the property assigned must be such that the propositions resulting from its distribution jointly entail the total answer. The event described by *which soldiers surrounded the fort* has a group of soldiers among its participants. The semantic value of the interrogative, however, contains no property that can be distributed over these soldiers. In interpreting (25a), then, we are forced to construct a property that can be, and which will, when so distributed, produce a complete set of answers. One such property is *being among those who surrounded the fort.*

7. An apparent constraint on the pragmatic partition of answers

The theoretical points having been made, it is worth describing the phenomena somewhat more thoroughly. In particular, I want to describe more precisely how the subgroups of a plural may be apportioned among the partial answers in cases like (22a), repeated below as (28). Based on the observed patterns, I will tentatively suggest a requirement on domains for QV quantification beyond those of completeness and non-redundancy.

(28) For the most part, Al knows where the kids are hiding.

In the (pragmatically built) answer set for (28) given in (22d), the definite contributes to each partial answer an atomic element of its denotation.[6] This is always an option. Thus, if the facts are as in (29), and Al knows only the locations of Frank and Greg, one can plausibly judge (28) false. (29) is a complete and non-redundant set of partial answers to *where the kids are hiding*, and it is not true that Al knows most of its five members. This might be judgment of the kids' mothers, each of whom wants to locate her child.

(29) {Carl is hiding in 1, Dan is hiding in 1, Ely is hiding in 1,
Frank is hiding in 2, Greg is hiding in 3}

But (28) true can also be judged true, if all we want from Al is information about which rooms have kids in them. This judgment depends on dividing the total answer to *where the kids are hiding* into three partial answers, one for each value of *where*. One such division is in (30).

(30) {C, D and E are hiding in 1, F is hiding in 2, G is hiding in 3}

Al knows two of these three propositions, so (28) is true. Here the plural contributes to each partial answer subgroups of the plural, not necessarily atomic, which jointly sum to the total group of kids. Notably, these subgroups needn't be specific: (28) can be true, on this latter reading, without Al knowing which kids are where. It is sufficient that he know, for example, that some are in room 2 and some in room 3. A set something like (31), therefore, is also an admissible partition of the total answer.[7]

(31) {some of the kids are hiding in 1, some of the kids are hiding in 2,
some of the kids are hiding in 3}

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6. My terminology and basic understanding of plurals derives very loosely from Link 1983. See also Scha 1984.

7. Significantly, the readings associated with (30) and (31) are unavailable to (i), below, which replaces the definite in (28) with a universal quantifier. (i) cannot mean that Al knows most of the rooms with kids in them. This is more evidence against assimilating definites to universals.

(i) For the most part, Al knows where every kid is hiding.

Of course domains like (31) must be understood against a requirement that division of a plural among partial answers be complete, i.e. the parts should sum to the whole. Without this premise, the partial answers in (31) will not entail the total answer, as they must.[8]

Now, the answer sets in both (29) and (30)/(31), if we abstract from what is common to their members, define very particular sorts of functions. (29) defines a function from the atoms of the plural to (sets of) values for the WH, whose graph is (32a). (Here the sets in the range of the function happen to be singletons, simply because one cannot be hiding in more than one place at one time.) (30) defines a function from the individual values of the WH to sets of atoms (subgroups) of the plural, (32b), and (31) is basically like (30).[9]

(32) a. {<C,{1}>,<D,{1}>,<E,{1}>,<F,{2}>,<G,{3}>}.
b. {<1,{C,D,E}>, <2,{F}>, <3,{G}>}

It is not clear that other arrangements are ever motivated. Consider the hypothetical answer sets in (33).

(33) a. {C, D and E are hiding in 1, F and G are hiding in 2 and 3}
b. {C and D are in 1, E is in 1, F is in 2, G is in 3}

Neither defines a function over either of the two relevant domains, the atoms of the plural or the individual values of the WH. And both produce odd results if used as answer sets for *where the kids are hiding*. It would be absurd, I think, to deem (28) false on the grounds that Al knows only half (not most) of the propositions in (33a). Likewise for (33b). Perhaps, then, the dependency between covarying terms among the partial answers *must* describe a function, necessarily. If this is correct, then the pragmatic construction of answer sets is actually quite tightly restricted.

8. Concluding remarks

This paper has defended Lahiri's (1991, 1998) conception of QV: QV readings express quantification over a partition on the total answer to the embedded question. I have also shown, *pace* Lahiri, that domains for QV

8. As far as I have been able to tell, the same range of interpretations is available—context permitting and modulo the semantics of the verb—when the definite is not the subject of the interrogative, and the WH is.

9. Since the function is derived from a *complete* set of partial answers, it inevitably exhausts both the atoms of the plural and those values of the WH that occur in the total answer, whether in its domain or in the union of its range.

quantification cannot generally be constructed in the semantics proper; certain QV readings exploit domains which cannot be derived without the involvement of pragmatics. In this as elsewhere, QV parallels local adverbial quantification over definite NPs. (34a) can mean (34b), and here the set quantified over is presumably expressed in the denotation of *his colleagues*. But so can (35a) mean (35b), and surely the denotation of *O Canada* says nothing about what parts the song has, such that we know what counts as most of it (see Lahiri 1998: 89). The partition here is constructed pragmatically.

(34) a. For the most part, Al hates his colleagues.
b. = Al hates most of his colleagues.

(35) a. For the most part, I know *O Canada* by heart.
b. = I know most of *O Canada* by heart.

Of course the theory of the pragmatic construction of domains for QV is at this stage only a sketch. Further development will require that the points made above be articulated within a more formal semantics for interrogatives and a more principled understanding of the semantics/pragmatics relation.

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