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In Defense of a Quantificational Account of Definite DPs

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Two types of arguments support a quantificational view of definite DPs. First, definite DPs share properties with other quantified expressions. In particular, they pattern together in antecedent-contained deletion constructions, they show weak crossover effects, and at least some of them interact scopally with other quantified expressions. Second, the apparent failure of (some) definite DPs to interact scopally with other quantified expressions and to exhibit island effects stems from two properties of definite DPs: they are all principal filters, and the witness set of singular definite DPs is a singleton. These two properties have the effect of rendering the wide and narrow scope readings of definite DPs indistinguishable.

Keywords: quantificational definite DPs, principal filters, singletons

Two types of accounts have been proposed in the literature for the wide scope interpretation of definite DPs: (a) quantificational accounts, which assume that definite DPs undergo Quantifier Raising (QR) at LF to a wide scope position, and (b) referential approaches, which assume that definite DPs behave like proper names and are interpreted in situ, without moving at LF. The former view originated with Russell (1905) and was adopted by Milsark (1974), Barwise and Cooper (1981), May (1985), Chierchia and McConnell-Ginet (1990), and others. The latter view was initially proposed by Frege (1892) and then defended by Strawson (1950), Kaplan (1972), Hornstein (1984), and others.

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One way to defend the quantificational view is to test whether definites exhibit scope flexibility in contexts containing the definite DP itself and a clearly quantificational expression. In addition, one can test whether constraints on syntactic movement, such as island constraints, are observed. With each of these tests, the proponents of the quantificational theory are faced with problems. First, definite DPs generally fail to exhibit scope flexibility in contexts containing the definite DP itself and a quantified expression. In (1), the definite DP is interpreted as in (1a), and (1b) is not a possible reading.

(1) Every student read the book.
  a. [there is a book] such that [every student] read it
  b. *[for every student] [there is a book] such that he read it

Second, definite DPs do not show island effects. In (2a), adapted from Reinhart 1997, the definite DP appears to have wide scope even if it is embedded within an adjunct island.

(2) Somebody will be offended [if we don't invite the philosopher].
  [there is a philosopher]$_i$ such that if we don't invite him$_i$ [there is somebody] who will be offended

In this article, I show how these problems can be overcome and thus how one can maintain a raising, quantificational account of definite DPs.

1 Scope Ambiguities

As is well known, the ambiguity of sentences containing two quantified (Q) expressions can be accounted for by positing two different orders of the Qs at LF. Each order potentially gives rise to a different ''pattern of variation.'' In (3), from Beghelli, Ben-Shalom, and Szabolcsi (BBSS) 1997, if *a fireman* takes scope over *every building*, as in (3a), the firemen do not vary with the buildings; that is, the same fireman checks every building. On the other hand, when *every building* takes scope over *a fireman*, as in (3b), firemen can vary with buildings; that is, different firemen can check different buildings.

(3) A fireman checks every building.
  a. [there is a fireman] such that [for every building], he checks it/them
  b. [for every building] [there is a fireman] such that he checks it

The notion of variation is crucial for understanding why certain sentences with two quantified expressions are ambiguous while others are not. As discussed in BBSS 1997, the possible orderings of the two quantifiers lead to two different interpretations only when the two orders give rise to two different patterns of variation. In (3), this condition is met: under one order—(3a)—firemen do not vary with buildings; under the other order—(3b)—they do. These two patterns of variation are different from each other and therefore (3) is ambiguous. On the other hand, if the two possible orders do not give rise to two different patterns of variation, then only one interpretation is available and there is no ambiguity. I propose that this is what happens in (1); the two potential

orders of the definite DP [|*the book*|] and [|*every student*|] do not give rise to two different patterns of variation, and therefore there is only one possible reading. The reason why no ambiguity arises in (1) is that the two expected interpretations are indistinguishable from each other. Let us see how this works.

The notion of variation can be formalized by using witness sets, as defined in (4).

(4) a. A set W is a witness of a GQ [generalized quantifier] iff $W \in GQ$ and $W \subseteq SL(GQ)$, where SL(GQ) is the smallest set the GQ lives on.
b. A GQ lives on a set of individuals A if, for any set of individuals X, $X \in GQ$ iff $(X \cap A) \in GQ$.
(BBSS 1997:30)

(4) says that a GQ lives on a set A, (i.e., the set of individuals having property A) if all the sets that make up the denotation of that GQ contain individuals having property A. Let us consider a universe that contains four individuals—say, {a,b,c,d}—and suppose that some of its subsets are {a,b,c} = man; {d} = dog; {b,c,d} = jump; {a,b,c,d} = fat; {a,b} = Frenchmen; {b,d} = laugh. The set of elements of [|*two men*|] will be {{a,b}, {a,c}, {b,c}, {a,b,c}, {a,b,d}, {b,c,d}, {a,c,d}, {a,b,c,d}}. An example of a live-on set for *two men* is the set of men, since all the sets in the denotation of [|*two men*|] contain individuals that are men. Similarly, [|*two men*|] lives on the set of humans, or on the set of existents, because all the sets in the denotation of [|*two men*|] contain individuals that are humans or existents. However, [|*two men*|] does not live on the set of Frenchmen, since not all the sets in the denotation of [|*two men*|] contain individuals that are Frenchmen. Notice that the set of men is the smallest set that [|*two men*|] lives on, and the sets of humans and existents are supersets of the latter. Intuitively, it is this smaller set that is genuinely characteristic of the GQ; all the other (live-on) sets include irrelevant elements. The idea is to discard irrelevant individuals and to focus on the individuals that are men—in other words, on the individuals that are in the smallest live-on set of a GQ. In general, the smallest live-on set of a GQ is the set denoted by its restrictor. Witness sets are defined on the smallest live-on set in the sense that they contain only elements that are also in the smallest live-on set, that is, only entities drawn from the determiner's restriction.

In (3), a witness set of [|*every building*|] is any set that contains every building and no nonbuilding, and a witness set of [|*a fireman*|] is any set that contains at least one fireman and no nonfiremen.

Given witness sets, variation arises if the following procedure can be applied:

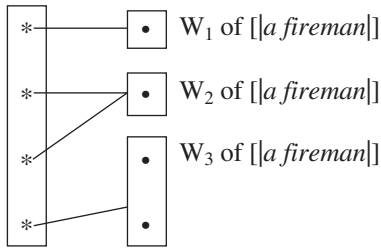
(5) Pick a witness W_i of the wide scope quantifier F. Using the relation denoted by the predicate, associate with each element of W_i a possibly different witness W_j of the narrow scope quantifier G.
(BBSS 1997:31)

Notice that in (5) the mapping goes from elements to witness sets, and not from sets to sets. This will turn out to be important in the discussion that follows. Notice also that the mapping is to a ''*possibly* different witness set of the narrow scope quantifier,'' which means that (5) describes

a function. This allows for the possibility of having multiple elements of W_i associated with one and the same W_j, but requires that each element of W_i be associated with a single W_j.

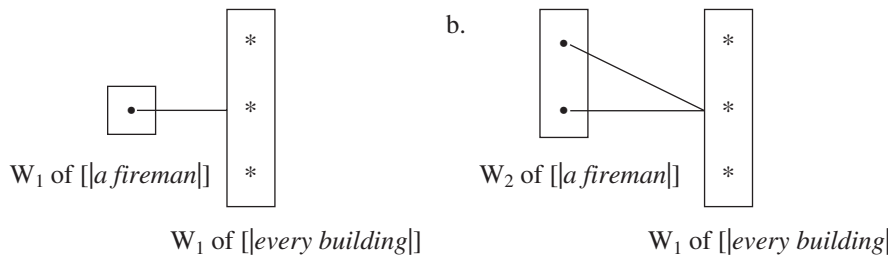
Given the procedure in (5), there are two different patterns of variation that arise from the two possible orders of quantifiers in (3). If *every building* has wide scope over *a fireman*, the pattern of variation that obtains is the one illustrated in (6), where the instances of * represent the buildings and the instances of • the firemen. (6) shows that firemen could vary with the buildings, and thus that different buildings could be checked by different firemen.

(6)



If, on the other hand, *a fireman* has wide scope over *every building*, a different pattern of variation results. Suppose we pick W_1 of [|*a fireman*|]. Then the mapping from the elements of the wide scope quantifier to the witness sets of the narrow scope quantifier is as illustrated in (7a). On the other hand, if we pick W_2 of [|*a fireman*|], the mapping is as illustrated in (7b). Both (7a) and (7b) can be subsumed under the same pattern: when *a fireman* has wide scope over *every building*, there is no variation of firemen with buildings, and all the buildings are checked by the same fireman. Even though under the order *a fireman* > *every building* there is no variation, what is important is that this pattern is clearly different from the one in (6), which illustrates the order *every building* > *a fireman*. This difference makes (3) ambiguous.

(7) a. b.



Given the procedure in (5), two types of quantified expressions are predicted to be unable to allow variation in particular LF configurations:

1. *Principal filters*. These are GQs that are associated with a unique witness set, such as [|*every building*|], [|*the (two) men*|], [|*Andy and Carl*|]. These GQs cannot exhibit variation (referential dependency) in narrow scope position. Recall from (5) that in narrow scope position, the mapping does not ''look inside'' the witness sets. Therefore, elements from the wide scope GQ can only associate with the unique witness set. To illustrate: In (3), [|*every building*|] cannot allow variation

when it has narrow scope, because there is only one witness set associated with it. There can be only one set that contains every building and no nonbuilding: the set of buildings itself. No variation arises because there is no possibly different witness set of the narrow scope quantifier [|*every building*|] that can be associated with different elements of a witness set of the wide scope quantifier [|*a fireman*|]. This is represented in (7).

2. *Singletons*. These GQs are unable to allow variation in wide scope position, even if the narrow scope quantifier itself might be capable of allowing variation.

(8) John read a book.
(BBSS 1997:31)

[|*John*|] in (8) has a singleton witness: the smallest set [|*John*|] lives on is {john}. One cannot associate possibly different witness sets of the narrow scope quantifier [|*a book*|] with each element of the witness set of the wide scope GQ [|*John*|], simply because [|*John*|] has only one element in its witness set.

I propose that BBSS's (1997) framework offers a way of accounting for the lack of scopal flexibility of the definite DP in (1). Remember that the LF order of the two quantifiers is relevant for interpretation only if the two orders give rise to different patterns of variation. Given that definite DPs are principal filters, they cannot allow variation when in narrow scope position. On the other hand, the witness set of the definite DP in (1) is also a singleton, and so it cannot allow variation when in wide scope position, either. Since neither of the two orders allows variation, the two emerging patterns of variation are basically indistinguishable and (1) has a single interpretation. The lack of ambiguity of (1) is thus due not to the fact that the definite DP does not undergo raising at LF, but to the particular semantic properties of definite DPs that inhibit variation and make the narrow scope reading equivalent to the wide scope one.[1]

Notice that this view of variation makes a prediction about plural definite DPs: they should be able to allow variation in wide scope position, since they are not associated with witness sets that are singletons. Of course, the expected variation actually arises only if the other quantified expression in the sentence does not block it, that is, if the other quantified expression is not a principal filter.[2] Sentence (9), which contains a plural definite DP ([|*the students*|]) and a nonfilter ([|*a beer*|]), is ambiguous, as expected.

[1] An anonymous reviewer points out that if (1) is preceded by *The teacher assigned each student a book*, the supposedly missing reading in which *the book* is dependent on *each student* ('For each student there is a book such that he read it') is in fact quite easy to get. Crucially, though, in order for this interpretation to arise, the context must have provided information about the association of books to students. (1) has an interpretation comparable to 'Each student read the book assigned to him by the teacher'. Following a suggestion by Martin Honcoop (pers. comm. to BBSS (1997)), I will assume that *the book* in (1) contains a phonetically null bound variable pronoun (corresponding to *him* in 'Each student read the book assigned to him by the teacher'). Notice, in this respect, that for some speakers (1) is not a felicitous continuation of *The teacher assigned each student a book*. For these speakers, the modifier of *the book* containing the bound variable pronoun must be overt. The existence of such a (null) bound variable pronoun turns *the book* in (1) into a ''relative principal filter'' instead of an absolute one. This allows for a reading under which *the book* covaries with *each student*. This kind of evidence ultimately supports the quantificational view of definites.

[2] The phenomenon of scope cannot be reduced to variation, though. As shown by BBSS (1997), scope needs to be broken down at least into variation and distributivity. The scope of a plural DP can thus be factored into the scope of

(9) The students drank a beer.
  a. the students drank a unique beer
  b. the students drank a beer each (several beers are involved)

If [|*the students*|] has wider scope than [|*a beer*|], we have the best case for variation: [|*the students*|] can allow variation (because it has a nonsingleton minimal witness set) and [|*a beer*|] can also allow variation (because it has more than one witness set). If the order of [|*the students*|] and [|*a beer*|] is reversed, we have the worst case for variation: [|*a beer*|] cannot allow variation because it has a singleton minimal witness set, and [|*the students*|] cannot vary, either, because it is a principal filter and it has only one witness set. Since the two orders induce different patterns of variation (one pattern under which beers vary with students, and one in which all students drank the same beer), the sentence is ambiguous.

To sum up so far, definite DPs do interact scopally with other quantifiers, which is consistent with the view that they undergo raising at LF. This interaction is visible in sentences containing a plural definite DP and another quantified expression. The cases in which such interaction does not lead to two different interpretations can be accounted for by the semantic properties of definite DPs. Singular definite DPs are principal filters and have minimal witness sets that are singletons. These two properties make them incapable of inducing variation in both wide scope and narrow scope position. Since there is no variation under either of the two orders, sentences containing a singular definite DP and another quantifier have a single interpretation.

2 Island Effects

A second major problem for the quantificational view of definite DPs is the apparent lack of island effects. As illustrated in (2), definite DPs can have wide scope even when they are embedded within islands. Under the ''in-situ,'' referential view, this is not a problem, because definite DPs are not assumed to raise at LF.

I propose that definite DPs do in fact exhibit island sensitivity, and that actually the definite DP escapes the island only apparently. The apparent wide scope reading arises because it is indistinguishable from the narrow scope reading, in which the definite DP raises only to the edge of the island. The apparent insensitivity to islands is due to the same semantic properties of definite DPs discussed in section 1. The two possible LF orders of the two quantified expressions [|*somebody*|] and [|*the philosopher*|] in (2) do not give rise to two different patterns of variation (since singular definite DPs do not allow variation when in narrow scope position or in wide scope position), and hence there is only one interpretation corresponding to the two orders.

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the existential closure applied to the set (or plural individual) variable introduced by the DP and the scope of a distributivity operator. Thus, even though the definite plural in (i) has difficulty taking distributive inverse scope, as pointed out by an anonymous reviewer, this doesn't mean that it doesn't take scope at all. Distributivity can be factored out and *the tables* can take wide scope, but not distributive wide scope.

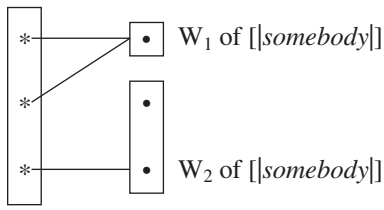
(i) a. At least one vase graced the tables.
  b. ??On each of the tables there was a (different) vase.

In the preceding section, we saw that plural definites differ from singular ones in that they do allow variation when taking wide scope given that, unlike singulars, they do not have minimal witness sets that are singletons. The plural definite [|*the philosophers*|] is thus expected to be able to acquire wide scope in (10a) and to raise out of the adjunct island.

(10) a. Somebody will be offended [if we don't invite the philosophers].
b. [there is a group of philosophers]$_i$ such that if we don't invite them$_i$ [there is somebody] who will be offended

Indeed, (10a) is interpreted as in (10b), where [|*the philosophers*|] seems to have wide scope over [|*somebody*|] and seems to have escaped the adjunct island. This creates a problem for the quantificational view of definite DPs: if definite DPs raise at LF, they are expected to obey island constraints at LF, and (10b) seems to show that they do not. To solve this problem, notice that the reading that is expected if [|*the philosophers*|] did take wide scope and if the procedure in (5) were applied is as illustrated in (11).

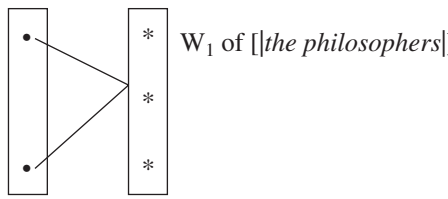
(11)



W_1 of [|*the philosophers*|]

What (11) says is that for each noninvited philosopher, there is potentially a different person who will be offended. However, this is clearly not a possible interpretation for (10a). In other words, if we apply the procedure in (5), with [|*the philosophers*|] having wide scope, we get a pattern of variation that does not correspond to the actual interpretation of (10a). The procedure in (5) thus indicates that [|*the philosophers*|] cannot actually take wide scope over [|*somebody*|], that it cannot in fact escape the adjunct island, and ultimately that (10a) is unambiguous, since it has only one interpretation: the one corresponding to [|*the philosophers*|] taking narrow scope, as in (12).

(12)

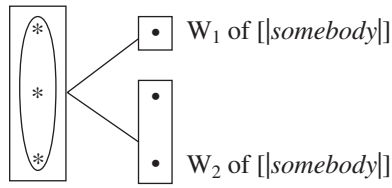


W_1 of [|*somebody*|]

Why do we get the interpretation in (10b), then, which looks like a wide scope reading of [|*the philosophers*|] over [|*somebody*|]? Notice that in (10b), [|*the philosophers*|] gets a collective reading: the plurality of individuals in the witness set of [|*the philosophers*|] is seen as an indivisible

group, that is, as one (plural) individual. In this respect, the plural DP [|*the philosophers*|] in (10b) is like a singleton. (10b) can be represented as in (13).

(13)



W_1 of [|*the philosophers*|]

(13) cannot be obtained by applying the procedure in (5), but it illustrates the observed reading. This reading is possible because the pattern of variation illustrated in (13) is indistinguishable from the one corresponding to the reverse order of quantified expressions, that is, the one in which [|*the philosphers*|] takes narrow scope, as in (12). In other words, the wide scope interpretation available for [|*the philosophers*|] is only apparent. It cannot be derived by applying the procedure in (5), but arises by virtue of expressing a pattern of variation that is indistinguishable from the narrow scope interpretation, that is, from (12).[3] (11), on the other hand, is not a possible interpretation, because the pattern of variation in (11) is different from the one in (12). This is exactly what we expect in an unambiguous sentence.

To sum up, plural definites do not actually escape islands; the lack of island effects is only apparent, and it is due to the fact that the two orders of quantifiers give rise to two indistinguishable patterns of variation, just as in the case of singular definite DPs. The only ''wide scope'' reading that is possible for definites (singular or plural) embedded within islands is the reading that is equivalent to the narrow scope one.

3 Further Arguments

There are other phenomena that can help determine whether definites are quantificational. In what follows, I briefly discuss antecedent-contained deletion (ACD) and weak crossover (WCO).

3.1 Antecedent-Contained Deletion

The standard assumption about the interpretation of ACD is that it involves a process of ''reconstruction'' (May 1985, Hornstein 1994). However, in (14b), a copy of the elided VP is contained in the reconstruction, since the VP that replaces *did* itself contains *did*.

(14) a. Janet [$_{VP}$ flunked every student that Robert did].
b. Janet [$_{VP}$ flunked every student that Robert [$_{VP}$ flunked every student that Robert did]].
c. [$_{IP}$[$_{DP}$ every student that Robert did [$_{VP}$ e]$_i$]$_j$ [$_{IP}$ Janet [$_{VP}$ flunked t$_j$]$_i$]]

[3] The only difference between (12) and (13) is the directionality of mapping and, correlatively, whether the mapping relates individuals or witness sets of the two quantifiers involved.

This problem can be solved by assuming that expressions like *every student* undergo QR. QR results in a structure along the lines of (14c), where the offending DP is no longer contained within its antecedent.[4] In contrast, ACD constructions that involve nonquantificational expressions like proper names cannot be repaired by QR.

(15) *Janet flunked Holmes, who Robert did.
(King 2001:18n16)

If this is so, the quantificational nature of an expression can be tested by inserting the expression into an ACD configuration. Applying this test to definites yields a grammatical result; hence, definites pattern with quantified expressions, rather than with proper names.

(16) Janet flunked the student that Robert did.

Moreover, as shown by Harley (2002), definites containing ACD trigger a WCO violation, as shown in (17), which reinforces the same conclusion, namely, that definites undergo QR.

(17) *His$_i$ teacher [$_{VP}$ flunked [the student that Robert did [$_{VP}$ e$_j$]]$_i$]$_j$.

3.2 Weak Crossover

Ever since Lasnik and Saito 1991, WCO has been considered a distinctive characteristic of Ā-relations involving genuine quantification. Disappointingly, the definite DPs in (18) do not induce WCO effects.

(18) a. Her$_i$ mother loves [the girl that Sue dislikes]$_i$.
(Harley 2002:661)
b. [This book]$_i$ I would never ask its$_i$ author to read.
(Lasnik and Stowell 1991:697)

This has led to the conclusion that definite DPs in general do not show WCO. However, the following examples attest that at least some definite DPs do show WCO:

(19) a. ???Her$_i$ mother loves [the girl]$_i$.
b. ???[The book]$_i$ I will never ask its$_i$ author to read.

The same kind of split with respect to WCO can be noted with other types of (quantified) expressions, such as *wh*-phrases.

(20) a. Which book$_i$ would you never ask its$_i$ author to read?
b. *What$_i$ would you never ask its$_i$ author to read?

[4] Hornstein (1994) proposes an alternative account of ACD repair, according to which the elimination of the containment structure is produced not by quantifier movement of the DP to an Ā-position, but by movement of the object DP outside the VP to check Case (either in Spec,Agr$_O$ or, under more recent assumptions, by adjunction to vP). However, as shown by Harley (2002), the movement that repairs ACD examples induces a WCO violation, and as a result it must be quantificational.

Semantically, the contrast in (20) correlates with the distinction between D-linked expressions (i.e., expressions for which a particular set is presupposed by both speaker and hearer) and non-D-linked ones (Pesetsky 1987). Thus, D-linked phrases bind variables, fail to induce WCO, and can be clitic-doubled (in languages that allow clitic doubling); whereas non-D-linked phrases do not bind variables, do show WCO, and cannot be clitic-doubled.

This semantic difference is matched by a syntactic one. Essentially, what matters is whether the lexical item bearing quantificational features (i.e., the *wh*-word) is in a syntactic position that allows percolation or transmission of these features to the phrasal DP node or not. Bare quantifiers like *what* in (20b) or *who*, which are exhaustively dominated by the NP node, as proposed by Cinque (1990), percolate their quantificational features to the phrasal DP node and can bind variables outside the respective DP. In contrast, quantifiers like *which* in (20a) are merged in a specifier position, do not project their quantificational features to the relevant DP, and do not bind variables outside the DP. The latter saturate their quantificational features within the DP where they occur (see also Pesetsky 1987, Dobrovie-Sorin 1990, 1994, Erteschik-Shir 1997). D-linked quantifiers are thus restricted, in the sense that their domain of quantification is limited to the XP to which they belong.

I propose that a similar distinction can be made within the class of definite DPs: some definite DPs bind variables and induce WCO, whereas others do not bind variables and do not show WCO effects. Semantically, the latter are D-linked, while the former are not. Syntactically, the definite DPs that do not show WCO effects seem to be of two types: either they contain a modifier or a relative clause, as in (18a), or they include a demonstrative, as in (18b). I propose that in both cases the quantificational feature of the definite D is prevented from percolating to the dominating DP node.

Under the assumption that nominal modifiers (phrasal or clausal, in the guise of a relative clause) have operator properties and hence raise to the edge of the DP at LF, the quantificational features of the definite D are blocked inside the DP whenever a modifier is present, since the latter will induce a relativized minimality effect.

(21) the [$_{DP}$ that Sue dislikes [$_{DP}$ ~~the~~ girl [~~that Sue dislikes~~]]]

As to definite DPs containing demonstratives, I follow Cornilescu (1992), Giusti (1993, 2002), Dimitrova-Vulchanova and Giusti (1998), and Brugè (2002), among others, and assume that demonstratives are merged in the specifier position of a projection that is lower than the highest DP projection headed by the definite article.[5] Definite DPs with demonstratives are thus similar

[5] This analysis gains support from the fact that the definite article and the demonstrative can cooccur in some languages.

(i) pianul acesta (Romanian)
piano-the this

(ii) ezeket a könyveket (Hungarian)
these-ACC the books-ACC

to *which*-phrases, mentioned above. Since demonstratives are merged in a specifier positon, and since there is no percolation or transmission of features from the specifier position to the whole DP, the quantificational domain of a demonstrative will be restricted to its respective DP, just as in the case of *which*-phrases.

Notice that the above distinction applies to definite DPs and not to definite determiners. I assume that definite Ds are always quantificational. What can vary is the size of the domain of quantification: the whole sentence or just the DP. If the quantificational features of the definite D can raise or percolate to the DP node, then the whole DP acquires quantificational features and the DP will raise at LF and take scope over the whole sentence. If the quantificational features of the definite D cannot raise or percolate to the DP node, their scope will be restricted to the DP.

To sum up this section, I have presented evidence from ACD and WCO that definites do have a quantificational nature. Unlike the previous sections, which accounted for the absence of certain properties normally associated with quantified expressions, this section has shown positive evidence supporting a quantificational view of definites. The WCO facts showed that definite DPs are similar to *wh*-expressions in being split into two types: D-linked definite DPs, which do not show WCO, and non-D-linked ones, which do show WCO. I accounted for this split by relating it to the fact that D-linked definites include modifiers or demonstratives, which preclude percolation or transmission of the quantificational features of definite Ds to the DP level.[6]

4 Optionality

Before concluding, I would like to stress that the point I am making here is that definites are always quantificational; I am not adopting the weaker stand that definites *can* optionally be quantificational. An anonymous reviewer points out that this stronger view must deal with the challenge of accounting for the so-called cumulative readings of definites, which are assumed to be nonscopal (Scha 1981, Landman 2000).

Let me first illustrate cumulative readings. Cumulativity results if two or more plural NPs simultaneously act as arguments of the verb. Typically, the two plural NPs are indefinites headed by a numeral as in (22), but cumulative readings also arise with definites.

[6] A reviewer points out that in the following examples the definite DPs do not induce WCO, even though they contain no modifiers or demonstratives.

(i) Six children fell into a cave. Her mother$_i$ pulled out the girl$_i$, but the boys remained trapped for hours.

(ii) His mother$_i$ loves the president$_i$.

Notice, however, that the definite *the girl* in (i) is clearly D-linked and is interpreted as 'the girl that fell into the cave'. In other words, the difference between examples like (18a) and (i) is that in (18a), the modifier is overtly included within the definite DP, whereas in (i), the modifier is expressed overtly not within the definite DP, but in the previous discourse. Although I do not know how to formalize this distinction, what is of interest for the proposal defended here is that (i) and (18a) illustrate two ways in which definite DPs can be linked to the discourse and that they thus share this property of being D-linked.

In (ii), the definite DP *the president* refers to a unique individual in a manner very similar to the way proper names establish their reference. Other similar definite descriptions are *the British Museum*, *the Empire State Building*, *the White House*, *the Tower of London*, and so on. Although I do not have a detailed account of such expressions, descriptively speaking, such definite DPs seem to share the referential properties of proper names, rather than being quantificational.

(22) Three students read two books.

The cumulative interpretation of (22) is something like 'There is a set A of three students, and there is a set B of two books, and every member of A read at least one member of B, and every member of B was read by at least one member of A'. This is clearly not a scoped distributive reading: it's not two books per student, it's two books distributed over three students. With distributive readings, one quantifier takes scope over the other and full connection between the two sets A and B is automatic. With cumulative readings, the connection between the sets is weaker: it is enough for every element of X to be connected to some element of Y, and for every element of Y to be connected to some element of X.

The stand I adopt here is that cumulative readings are not generated by the grammar; instead, they are the product of contextual entailments. Even though cumulative readings are different from distributive ones, some distribution does take place even in cumulative readings, as Dowty (1986) points out. Sentence (23), for instance, does not normally mean that every journalist asked questions. Still, (23) does mean that some journalists asked questions and thus suggests that some distribution did take place. However, this kind of distributivity is not related to the meaning of the two quantifiers and to the way in which the two sets over which the two quantifiers operate interact. Rather, cumulative distributivity in (23) is entailed by the context and by the meaning of the predicate *to ask*.

(23) At the press conference, the journalists asked questions.
(Dowty 1986:103)

More generally, with cumulative readings, it is the context and the lexical meaning of the predicate that provide the relation between a collection and its parts. Dowty (1986) calls these ''distributive subentailments.'' I will assume, together with Roberts (1987) and Landman (1989), that cumulative readings are just instances of double collective readings and that the context generates all the distributive subentailments that create the cumulative effect.

This view goes against the view expressed by Landman (2000), who argues that cumulative interpretations are real; that is, they are part of the grammar. Very briefly, Landman's account is based on a scalar mechanism that defines maximality effects. The point is that the scale of a statement is built from the scale of a trigger, following the compositional semantics of the statement. Since Landman takes grammar to be ''the theory of the compositional mechanisms involved in language'' (2000:228), he takes cumulative readings to be part of the grammar, since the implicature of cumulative statements is the output of compositional rules, that is, of the grammar.

The fact that the implicature of the statement is computed by means of compositional rules raises interesting questions about the interaction between semantics and pragmatics and might point toward a phase-based model, or a model in which the pragmatic derivation proceeds in a fashion parallel to the semantic one. However, it does not prove the point that cumulative readings are part of the grammar. Scales are definitely contextual objects, and so is the overall implicature of a cumulative statement. Since both the input and the output of the mechanism that derives the implicature are pragmatic objects, this tells us something about the ''location'' of these mechanisms.

5 Conclusions

Definite DPs have some of the properties that can be used as tests for raising at LF, but not all. In particular, plural definite DPs and DPs that contain a (null) bound variable pronoun (see footnote 1) interact scopally with other quantifiers. Moreover, definite DPs pattern with quantified expressions in ACD constructions, and they show WCO effects. I have taken these properties to indicate a raising analysis for definite DPs. I have accounted for the failure of definite DPs to exhibit island effects and to interact scopally with other quantifiers when they are singular by showing that the wide scope reading that definite DPs get is indistinguishable from the narrow scope reading. This in turn stems from two important semantic properties that definite DPs have: all definite DPs are principal filters (so they do not allow variation when in narrow scope position), and the witness set of singular definite DPs is a singleton (so singular definite DPs cannot allow variation when in wide scope position, either). These arguments together allow us to reject the referential, in-situ theory of definite DPs in favor of a quantificational, raising account.

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