



Interpreting quantifiers in subject position

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Abstract

In this paper we argue that collective readings of quantified NPs in subject position involve a form of hidden distributivity (Dowty 1987). We argue that there are two different types of collective predicates, and that the best way to model this contrast is by means of two separate syntactic structures corresponding to different *aktionsarten* (Taub 1989, Brisson 1998). Borrowing the basic mechanism to exploit this idea from Brisson (2003), we argue instead that a semantics without covers (Schwarzschild 1996) is both empirically more adequate and conceptually more appealing.

Keywords: *Aktionsart*, distributivity, quantification, event semantics

1 Introduction¹

This paper investigates the interaction, first noted by Vendler (1957), between the *aktionsart* of a verb and its availability to get collective interpretations. Concretely, we will concentrate on examples like the following:

- (1) a. The boys are a nice group
- b. *All the boys are a nice group

On the basis of contrasts like the one in (1), we will argue that we have to distinguish at least two ways of collective predication, one of which involves covert distributive quantification (cf. Brisson 1998, 2003). The resulting picture is one where there seems to be a difference between the mechanisms by which quantified expressions, on the one hand, and non-quantified expressions, on the other, arrive at collective interpretations.

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2 Collective & distributive interpretations

Since the seminal work by Vendler (1957), it is common to assume that there are at least three kinds of predicates with respect to their ability to generate collective/distributive interpretations:

- (2) John and Mary {
 - a. met.
 - b. woke up.
 - c. lifted a piano.

Example (2) above shows a case of a collective interpretation of a sentence, where the conjoined subject can only be true of both *John and Mary* together. In contrast, the predicate *woke up* in (2) can only be true of each of the members denoted by the subject NP, no modifier can make *wake up* be interpreted collectively.² Finally, the sentence in (2) has the property of being ambiguous between both interpretations and, for this reason, predicates of this kind are usually referred to as ‘mixed’ predicates: they can be true in a collective as well as in a distributive interpretation.

However intuitive it may look, the distinction between the three types of predicates is hard to state formally. Spelling out a definition that discriminates each type from the others is difficult because often the interpretation of the predicates changes depending on the subject. The remainder of this section is devoted to clarify the typology of predicates that will be relevant for the present paper with respect to the collective/distributive distinction.

2.1 Two types of collective predicates

As it has been previously noticed in the literature (Dowty 1987; Winter 2001), the quantifier *all* can be used to signal the difference between two types of collective predicates:

- (3) a. All the girls gathered in the hall.
- b. *All the girls are a good team.

The difference between both types of collective predicates amounts to the grammaticality of *all* in subject position. Verbs like *gather* can host the universal quantifier *all* in subject position, whereas predicates like *be a good team* cannot.

²That is, *wake up* is ‘lexically distributive’ (Winter 2001). Consider the fact that sentences like *John and Mary woke up together* or *John and Mary woke up at the same time* are still distributive. The question about what predicates qualify as collective is a difficult, however. For the purposes of this paper, I will concentrate only on lexical predicates, setting aside the case of other types of predicates that may also be interpreted collectively—like, for example, reflexives (*resemble, see each other, VP themselves*) or predicates modified by adverbials (*together, as a group, at the same time*).



It is important to note that the difference, then, is stated in terms of grammaticality: (3b) is plainly ungrammatical, and not merely odd or weird. Indeed, when *all* modifies a plural DP in subject position three outcomes are possible, depending on the predicate at hand: (3a) and (3b) show two of them, namely, that the sentence may be grammatical or not. The third possible outcome is that where, in the presence of *all*, a sentence that would otherwise be ambiguous between a collective and a distributive interpretation loses the collective interpretation (examples from Dowty 1987, attributed to B. H. Partee and B. Ladusaw, respectively).

- (4) a. The trees are denser in the middle of the forest.
- b. The trees are all denser in the middle of the forest.

- (5) a. The students voted in favor of the proposal.
- b. The students all voted in favor of the proposal.

The sentences in (4a)/(5a) above without *all* are ambiguous. In the case of (4a), it can mean two things: under the distributive reading, it means that the individual trees in the middle of the forest are thicker than those in the outskirts; under the collective reading, it means that in the middle of the forest the trees are closer to each other than they are at the outside. Similarly, (5a) without *all* has a collective reading similar to *pass the proposal*, but in (5b) that reading is no longer available; the sentence can only be distributive, with a meaning that can be paraphrased as *to cast an individual vote in favor*.

The effect of this meaning shift can also be observed with predicates that are only acceptable in the collective reading because the distributive reading is in conflict with world knowledge. Consider the following examples:

- (6) a. The senators passed the pay raise.
- b. #All the senators passed the pay raise.

- (7) a. The short athletes won the relay race.
- b. #All the short athletes won the relay race.

The sentences in (6a)/(7a) above are only acceptable in the collective reading; in the case of (6a) because we know that single senators do not have the legal power to pass a pay raise by themselves. Similarly, we know that relay races are run in teams, and so the only adequate interpretation for (7a) is a collective one, where the short athletes form a single team. The observation, then, is that with *all* in subject position—as in (6b) and (7b)—the collective reading is no longer available and the distributive reading is enforced, resulting in pragmatic oddness.



This is something we do not expect, not at least if collectivity were a homogeneous property of predicates: on the one hand, some collective predicates cannot be interpreted with *all*, even if *all*, *per se*, does not disallow collective readings, as illustrated by the contrast between (3a) and (3b) above. On the other hand, some mixed predicates lose their collective reading with *all* in subject position, even if, again, this effect cannot be attributed to *all* alone, as observed in (4) through (7). We know that *all* is not the sole responsible for this meaning shift because there are indeed mixed predicates that remain ambiguous despite the presence of *all*, as illustrated by the two ambiguous examples in (8).

- (8) a. All the students built a raft.
- b. All the artists painted a horse.

This discussion suggests that there are at least two types of collective predicates. So far, it is evident that the collective vs. distributive distinction is not as well-behaved as expected, even if we accept the existence of lexically distributive or collective predicates (Winter 2001).³ Moreover, note that the presence of *all* has an interesting effect: whenever it affects the meaning of a predicate and triggers a meaning shift with respect to the relevant collective/distributive distinction, the effect is always to the detriment of the collective interpretation. That is, there are no cases where an otherwise ambiguous predicate loses the distributive interpretation in the presence of *all*, and this suggests that the collective reading may be more complex than the distributive reading.

2.2 A pervasive contrast

The differences between the two types of collective predicates in the previous section were claimed on the basis of the behavior that some predicates show when they combine with *all*. But, in fact, the observed pattern is not exclusive of *all*: there is a wide variety of quantified NPs (QNPs henceforth) that pattern alike.

- | | | | |
|-----|---|---|--------------------------------|
| (9) | <ul style="list-style-type: none"> a. All the b. Exactly four c. More less than four d. At least / at most four e. Few / many f. Most of the g. Some | } | students gathered in the hall. |
|-----|---|---|--------------------------------|

³By 'lexical' here we mean predicates like *breath* and *be a group*. For instance, if several people breath, no matter how this is expressed, it is entailed that each of them breathes. Similarly, *be a group* can never be true of a simple atomic individual (setting aside 'group-denoting' NPs, which might be considered atomic individuals. I will not discuss here, but see Lasersohn (1995); Schwarzschild (1996); Landman (2000); a.o.)



- (10) a. *All the
 - b. *Exactly four
 - c. *More / less than four
 - d. *At least / at most four
 - e. *Few / many
 - f. *Most of the
 - g. *Some
- } students are a good team.

The examples in (9) and (10) show how the attested pattern is reproduced with a variety of different QNPs. Interestingly, this state of affairs holds not only for English, but also for Romance and Basque.⁴

- (11) a. Todos los
 all.PL D.PL
 - b. Exactamente cuatro
 exactly four
 - c. Más / menos de cuatro
 more less of four
 - d. Al menos / como mucho dos
 at least at most two
 - e. Muchos / pocos
 many few
 - f. La mayoría de
 D.PL most of
 - g. algunos
 some
- } estudiantes se reunieron en el
student.PL refl. meet.PL in the
vestíbulo.
hall

- (12) a. *Todos los
 - b. *Exactamente cuatro
 - c. *Más / *menos de cuatro
 - d. *Al menos / *como mucho cuatro
 - e. *Muchos / *pocos
 - f. *La mayoría de
 - g. *Algunos
- } estudiantes son un buen grupo.
student.PL be.PL one good team

⁴In general, the situation is the same for more Germanic (German, Dutch) as well as Romance (French, Italian, Portuguese, Romanian, Catalan) languages.



- (13)
- | | | |
|--|---|--|
| <ul style="list-style-type: none"> a. Ikasle guztiak
student all.D.ABS b. Zehazki lau ikasle
exactly four student c. Lau ikasle baino gehiago / gutxiago
four student than more less d. Gutxienez / gehienez lau ikasle
at least at most four student e. Ikasle gutxi / asko
student few many f. Ikasle gehienak
student most.D.ABS g. Ikasle batzuk
student some | } | <p>atondoan bildu ziren.
hall.INE meet AUX</p> |
|--|---|--|

- (14)
- | | | |
|--|---|---|
| <ul style="list-style-type: none"> a. *Ikasle guztiak b. *Zehazki lau ikasle c. *Lau ikasle baino gehiago / *gutxiago d. *Gutxienez / *gehienez lau ikasle e. *Ikasle gutxi / *asko f. *Ikasle gehienak g. *Ikasle batzuk | } | <p>talde on bat dira.
team good one.ABS AUX</p> |
|--|---|---|

Moreover, Spanish and Basque also show exactly the same shift in meaning we observe with mixed predicates in English (see examples (4) and (5) above): certain kind of mixed predicates lose their collective meaning with *all* in subject position. This is illustrated below: examples (15a)/(16a) below are both ambiguous, whereas the examples in (15b)/(16b) lack the collective interpretation.

- (15) a. Los melones de la cesta pesan mucho.
D.PL.MASC watermelon.PL of D.SG.F basket weigh.PL a-lot
'The watermelons of the basket weigh a lot.'
- b. Todos los / algunos melones de la cesta pesan mucho
all.PL D.PL some.PL watermelon.PL of D.SG.F basket weigh.PL a-lot
'All the / some watermelons of the basket weigh a lot.'

- (16) a. Saskiko meloiek asko pisatzen dute.
 basket.GEN-LOC.SG watermelon.D.ERG.PL a-lot weigh AUX
 ‘The watermelons of the basket weigh a lot.’
- b. Saskiko meloi guztiek / batzuk asko
 basket.GEN-LOC.SG watermelon all.D.ERG.PL some.ERG.PL a-lot
 pisatzen dute.
 weigh AUX
 ‘All the / some watermelons of the basket weigh a lot.’

So, summing up, in the light of the data presented here, it becomes apparent that there is a difference between collective predicates, which, consequently, do not constitute a homogeneous kind. The difference can be tracked by combining QNPs of all sorts with the relevant predicates: the classical collective predicates are either grammatical or ungrammatical, whereas the classical mixed predicates either lose or maintain the collective interpretation. Moreover, the fact that this very same difference holds in both English and Spanish, but also in a typologically isolated language such as Basque, suggests that it may be a reflect of some pervasive feature of natural language.

In the next section, we will review some of the most influential proposals that have focused on this puzzle.

3 Previous proposals

3.1 Dowty’s observation

Taking into consideration the contrast between the so-called collective predicates for English, Dowty (1987) suggested that there are two distinct kinds of collective predicates:

- (17) Collective Predicates from Dowty (1987):
- a. Pure Collective: *meet, gather, see each other, disperse ...*
 - b. Pure Cardinal: *be a team, be numerous, be a majority, be a nice group ...*

The difference between both types is that Pure Collective predicates have an (implicit) entailment about the subject that Pure Cardinals lack: a Distributive Sub-entailment (DS henceforth). Now, what is a DS? Consider what is required of individual students for the sentence *the students gathered in the hall* to be true. Clearly, every student in the group referred to by the NP *the students* (or, at least, almost every student) must come into the hall and remain long enough so that they are all in that place at a common time. Thus, *gather* entails the distribution of



some property of the members of its subject (namely, that each of them undergoes a change of location), but ‘gathering’ itself can only be true of the group *qua* group (Dowty 1987, pp. 101). Another way to express this more complex meaning is by the following conjunction:

- (18) All the girls gathered
 ≈ [The girls gathered] & [Every girl contributed to the gathering]

By virtue of making *all* sensible to the presence of DS, Dowty can use *all* to test what class a collective predicate belongs to. According to him, *all* is a universal quantifier that distributes over the DS down to every individual in the denotation of the subject that *all* is modifying (akin to the suggestion in Link 1983 that *all* introduces a ‘part-take’ operator). Pure Cardinal predicates lack DS and therefore *all* does not have anything to operate on, and so the ungrammaticality of sentences like *all the children are a big group* is explained.

Dowty did not provide a formal account of this distinction, and so it difficult to imagine what the DS of some predicates may be. For example, consider *paint a building*: could *mixed the paint* count as a DS? And *calculate the amounts of paint*? Those are tasks that someone could very well perform in a collaborative effort to paint a big building.

In addition, it is a mystery why these DS are only relevant for *all* and not for, say, plural definites, demonstratives or coordinated NPs; all these DPs behave differently from *all* QNPs in the relevant respect, as illustrated below.

- (19) a. The students are a nice group.
- b. Those students are a nice group.
- c. Mary and John are a nice couple.
- d. *All the students are a nice group.

Dowty did not acknowledge either that the same difference can be observed with quantifiers other than *all*, even though the contrast is pervasive (recall the data in section 2.2).

Moreover, even though Dowty notes the existence of the meaning shift effect triggered by *all* (that is, the loss of the collective reading when QNPs combine with some mixed predicates), he acknowledges that an explanation in terms of DS is not sufficient to account for it. For instance, if sentences like (20) below had DS, the collective reading should still be available with *all*, but it is not.

- (20) (All) the bottles are too heavy to carry



In general, the argumentation for the existence of DS is somehow circular: the proof of the existence of DS is the distribution of *all*, and the distribution of *all* with respect to collective predicates is explained in terms of DS. Thus, a better insight is needed to shed some light on the distribution of *all* with respect to the collective/distributive predicate distinction.

3.2 Taub’s Generalization

Building on the observations by Dowty (1987), Taub (1989) investigates further the properties of DS and makes the following generalization:

- (21) **TAUB’S GENERALIZATION**
The collective predicates that disallow *all* are the collective predicates denoting states and achievements.

In order to support the generalization, Taub provides the following examples:

- (22) **Collective States:**
 - a. * All the boys are a big group.
 - b. * All the students are numerous.
- (23) **Collective Achievements:**
 - a. * All the senators passed the pay raise.
 - b. * All the students elected a president.
- (24) **Collective Activities:**
 - a. All the boys carried the piano around for an hour.
- (25) **Collective Accomplishments:**
 - a. All the students gathered in the hallway.
 - b. All the girls built a raft.

Taub’s Generalization is superior to Dowty’s observation in terms of DS in two respects. First, Cardinal Predicates fall directly into the generalization, since they are all states. Second, the generalization predicts that collective states and achievements will be ungrammatical with *all* in subject position, whereas mixed states and achievements (like *be too heavy* and *elect*) will lack the collective reading if they combine with *all*. Thus, Taub’s generalization provides a desirable description of the phenomena by reducing the availability of *all* to the kind of *aktionsart* of the predicate and, as shown in examples (22) through (25), the observation seems



to be on the right track. The generalization, however, is just that, a generalization, and no formal analysis of why this happens to be the case is provided. In addition, no notice is taken about the fact that multiple QNPs pattern alike as the generalization is formulated exclusively for *all*.

3.3 Brisson (1998, 2003)

Brisson suggests a general analysis of *all* claiming that *all* is not a quantifier, but an exhaustivity modifier; the analysis aims at explaining the semantic contribution of *all* and it is articulated within a neo-davidsonian semantic framework (Higginbotham 1985; Parsons 1990; Landman 2000). The fundamental components of her proposal are the following.

First, the author assumes a structural (syntactic) difference between states/achievements, on the one hand, and activities/accomplishments, on the other: only the former are syntactically decomposed in two verbal layers (cf. Dowty 1979; Mittwoch 1982; Pustejovsky 1991, a.o.). The first one is a lower VP denoting a state and the second is a higher VP headed by an abstract ‘activity’ or ‘process’ component: following Dowty (1979) she dubs it ‘DO’ and she takes it to be an aspectual predicate (and, therefore, independent from VP).⁵

Second, the author assumes the existence of a Distributive Operator *D* (cf. Link 1983; Lasersohn 1998) which has the property of restricting pragmatically its domain with a covert variable over individuals, *Cov* (see Schwarzschild 1996⁶). Crucially, the lexical item *all* requires to have *D* on its scope.⁷ Moreover, there is an economy condition that rules out the insertion of *D* in those environments where it cannot affect the meaning of the predicate (following ideas by Fox 2000).

- (26) *C* is a cover of *P* iff (i) *C* is a set of nonempty subsets of *P*, and (ii) every member of *P* belongs to some set in *C*.

The classical definition of the *D* operator provided by Link (1983) is then modified so as to make reference to covers. Compare:

- (27) a. Classical *D*
 $[[D]] = \lambda P \lambda x \forall y [y \in x \rightarrow P(y)]$
b. Schwarzschild’s *D*
 $[[D]] = \lambda P \lambda x \forall y [y \in Cov_i \ \& \ y \subseteq x \rightarrow P(x)]$

⁵The definition of DO is slippery, as Dowty himself acknowledges. See Dowty (1979, pp. 110–132) for discussion.

⁶Although Schwarzschild refers to *D* as *Part*.

⁷Recently, Champollion (2011) has developed a semantic proposal for quantificational elements in which it follows naturally that *D* must be in the scope of *all*. We will not consider that proposal in this work.



Note that in the classical definition of *D* there is only one condition for the relation $P(y)$ to obtain (namely $y \in x$), whereas the adoption of the variable *Cov* adds an extra condition for the relevant relation (of type $P(x)$) to hold: for every y , y must be a (proper) subset of x and a member of the contextually determined cover *Cov*.

Finally, Brisson proposes that the meaning of *all* is that of an exhaustive modifier: it signals the presence of *D* through an exhaustivity constraint on the range of covers that *D* may take as its restrictor. Concretely, it requires that the cover be a ‘good-fit’ cover. In essence, a good-fit cover is one where no exceptions are allowed and so every member in the extension of the NP that *all* is modifying must be considered.

- (28) Good Fit: for a variable *Cov* over a domain U and a NP denotation X , *Cov* is a good fit with respect to X iff

$$\forall y [y \in X \rightarrow \exists Z [Z \in Cov \ \& \ y \in Z \ \& \ Z \subseteq X]]$$

The most interesting part of this proposal is how *all* manages to get the correct interpretations. Let us first begin considering plural definites. Assume, for example, a context where $U = \{a, b, c, d, e, f\}$, but $\llbracket \text{the-girls} \rrbracket = \{a, b, c, d\}$. Consider now sentence (29) and the possible cover definitions in (30)

- (29) The girls built a raft

- (30) a. $Cov1 = \{\{a\}, \{b\}, \{c\}, \{d\}, \{e, f\}\}$ DIST & MAX
- b. $Cov2 = \{\{a\}, \{b\}, \{c\}, \{d, e, f\}\}$ DIST & NON-MAX
- c. $Cov3 = \{\{a, b, c, d\}, \{e, f\}\}$ COL

The cover in (30a) for (29) yields the prototypical distributive interpretation, where all the elements within the denotation of the NP participate in an event of building a raft. One of the advantages of using *D* with a *Cov* variable is that it accounts straightforwardly for the non-maximal readings of plural definites, as in (30b); in this case, the semantics cannot ‘see’ the individual $\{d\}$. This is so because, although $\{d\}$ is a member of the denotation of the NP, and a member of a cell, the cell in which $\{d\}$ lives in is not a proper subset of the denotation of the NP, so it does not count for the denotation of *build a raft*. However, the result is still acceptable, even if the cover is not a good-fit.⁸

One would think that the collective reading is achieved by means of *Cov3*, but this is not the case. Given Brisson’s assumptions, if the value assigned to any

⁸The issue of which degree of illness do plural definites accept for the definition of their covers is far beyond the scope of the present paper, but see Lasersohn (1999) on non-maximality with plural DPs.



given *Cov* contains a set that is equal to the denotation of \llbracket the-girls \rrbracket , then the truth conditions of (29) are the same as the truth conditions of this same sentence without a *D* operator. This would mean that the *D* is vacuous, and to rule out this situation Brisson formulates the following principle of economy.

(31) **Economy condition on *D*:**

A *D* operator is licensed for a predicate *P* taking a plural argument *Y* if *Y* has at least two and as many as *n* contextually relevant distinct subparts $x_1 \dots x_n$, and $P(x_1)$ or $P(x_2)$ or $\dots P(x_n)$ are possibilities in the discourse. (Atomic individuals are always available as contextually relevant distinct subparts.)

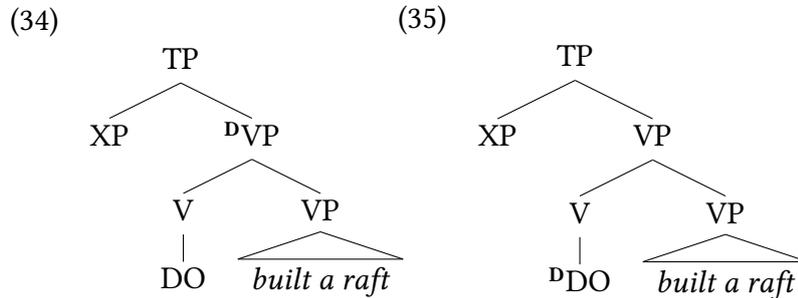
This economy principle disallows the insertion of *D* in those cases where \llbracket the-girls \rrbracket is equal to the only subset containing girls in *Cov*, as it happens to be the case with *Cov3*, where there is a subset that is equal to \llbracket the-girls \rrbracket .⁹ Consider now the same sentence with *all*:

(32) All the girls built a raft

- (33) a. $Cov1 = \{\{a\}, \{b\}, \{c\}, \{d\}, \{e, f\}\}$ DIST & MAX
- b. $\cancel{Cov2} = \{\{a\}, \{b\}, \{e\}, \{d, e, f\}\}$ DIST & NON-MAX
- c. $Cov3 = \{\{a, b, c, d\}, \{e, f\}\}$ COL

The presence of *all* in (32) rules out the possibility of having an ill fitting cover and rules out *Cov2*, exactly for the same reasons that (30b) could receive a non-maximal interpretation. Therefore, the only covers that are allowed by *all* are those where the good fit requirement is preserved, in this case *Cov1* and *Cov3*. This, however, does not yet derive Taub's generalization: why is it that *all* is compatible only with collective activities and accomplishments? Brisson suggests that the reason is because *D* may be applied either to the whole VP or to the DO predicate (e.g., for the predicate *built a raft*):

⁹Following Link (1983), Brisson takes singular and plural to be definite descriptions like *the girl(s)* to be of the same semantics type $\langle e \rangle$, and thus they do not constitute generalized quantifiers, as in the Montagovian tradition.



When D is applied to the whole VP as in (34) it creates a plural event e , such that each subpart of e holds for every member of the denotation of the subject. Moreover, since *all* forces a good-fit cover, non-maximal readings on the subject are ruled out.

- (36) Distributive Interpretation of (32):
 $\exists e \forall x \exists e'' [x \subseteq \llbracket \text{the girls} \rrbracket \ \& \ x \in \llbracket \text{Cov}_i^{gf} \rrbracket \rightarrow \text{build}'(e'') \ \& \ \text{theme}'(e'', \text{a raft}) \ \& \ \exists e' [\text{DO}(e') \ \& \ \text{agent}'(e', x) \ \& \ e' \leq e'' \ \& \ e'' \leq e]]$

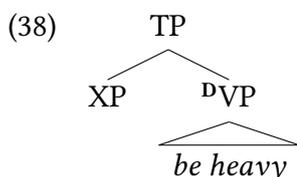
When D is applied to the predicate DO, there is no plural event created, but a complex singular event. It is 'complex' because it decomposes in two sub-events: (i) a plural sub-event with the meaning of 'activity' (plural due to D), and (ii) a singular result state. Now, what is entailed of each member of the group is agenthood in an event of 'DO-ing' that is part of the collective activity. Note that the condition on the maximality of the subject is still present.¹⁰

- (37) Collective Interpretation of (32):
 $\exists e [\text{lift}'(e) \ \& \ \text{theme}'(e, \text{the piano}) \ \& \ \exists e' \forall x \exists e'' [x \subseteq \llbracket \text{the girls} \rrbracket \ \& \ x \in \llbracket \text{Cov}_{i, gf} \rrbracket \rightarrow \text{DO}(e'') \ \& \ \text{agent}'(e'', x) \ \& \ e'' \leq e' \ \& \ e' \leq e]]$

The approach advocated by Brisson is very appealing in that it correctly predicts that collective state predicates, such as *be a big group* or *be numerous* can never be combined with subjects headed by *all*, since there is no DO predicate for D to distribute over. It can also explain the meaning shift with mixed achievements when they take a subject headed by *all*; by assumption, achievements lack

¹⁰In order to make the system work, Brisson needs a complex ontology of events and individuals: following Link (1983), plural individuals and plural events have subparts, and this relation is expressed by an ordering part-of relation \leq , where: $a \leq \{a \oplus b \oplus c\}$: a is part of the plural individual $\{a \oplus b \oplus c\}$; and $e \leq \{e1 \oplus e2 \oplus e3\}$: e is a part of the plural event $\{e1 \oplus e2 \oplus e3\}$.

the DO predicate, and so *D* can only apply to VP, resulting in a distributive interpretation:¹¹



For the same reason, mixed achievements such as *elect a president* or *pass a pay raise* that require a collective interpretation on the subject are predicted to be pragmatically anomalous, as it happens to be the case (recall the examples in (6b) and (7b) above).

Summing up, in this section we have reviewed the main works that make reference to the facts concerning the interactions between the *aktionsart* of predicates and the availability of collective *all* in subject position. The only account so far that provides an explicit account is Brisson’s, but it does so at the cost of giving up on the quantificational nature of *all*, which is treated as a mere pragmatic (non-truth-conditional) modifier with an ‘anti-weakening’ effect. In the next section we point out some problems that such an approach must face, both empirical and conceptual.

4 Do we need covers?

Several questions arise from Brisson’s proposal. First, there are some collective states and achievements that can combine not only with *all*, but with a wide variety of QNPs. Second, it is unclear how to accommodate the proposal so that it predicts all and only those readings available for *all*. Concretely, we will consider cases of intermediate readings in order to illustrate this point. Third, we will discuss some conceptual overlapping that Brisson’s theory undergoes between the labor of all possible covers and its interaction with her account of *D*. Finally, we will consider the fact that, as suggested in section 2, *all* is not the only quantifier that patterns according to Taub’s Generalization. In the following sections we will consider each of these potential problems in more detail.

4.1 Derived states and achievements

Although we will not work out these cases here, it is worth noting that there is a variety of stative predicates which systematically contradict Brisson’s predictions. The author acknowledges that with some predicates denoting possession, the relevant collective readings are still available (examples from Brisson 2003).

¹¹Regardless of the structure we adopt for small clauses like *be heavy*, the important point for the proposal to work is that there is no component similar to DO.



- (39) a. The students all own that house.
- b. The grandchildren all inherited that house.

Nevertheless, note that judgments about the availability of the collective reading decreases significantly if we change the demonstrative DP for an indefinite:

- (40) a. The students all own a house.
- b. The grandchildren all inherited a house.

There seems to be independent reasons for this contrast: it is impossible to distribute over an NP if we know that there is just one entity in its extension. Very likely, this is the case for the examples in (39) with *that house*, where the collective reading is the only possible one. On the contrary, indefinites do allow more than one entity in their extension, and as a result, the distributive reading is again available. Nevertheless, the examples in (40) do allow a reading in which there is just one house, and thus they are still problematic for Brisson’s theory. In addition, in Spanish and Basque the equivalent sentences to these examples only have a distributive reading.¹²

- (41) a. Todos los estudiantes { poseen / tienen } una casa.
all.PL D.PL.M students.PL own have a.SG.F house
 - b. Ikasle guztiek etxe bat daukate.
student all-D.PL.ERG house a.SG.ABS have.3PL
- ‘All the students { have / own } a house.’

Spanish and Basque participles pose a more intriguing problem: they can form derived states combining participles with the copula, and in those cases collective readings are always available.

- (42) a. Todos los chicos están { reunidos / pegados / atados }.
all.PL.MASC D.PL.MASC boy.PL be.PL meet.PTP glue.PTP tie.PTP
 - b. Mutil guztiak { bilduta / itsatsita / lotuta } daude.
boy all.D.ABS meet.PTP glue.PTP tie.PTP AUX
- ‘All the boys are { met / glued / tied }.’

¹²A reviewer points out that these verbs can indeed get collective readings with other expressions like *en conjunto* (‘together’, ‘as a group’). I agree with the observation, and I take it to suggest that the limiting factor here is not the verb itself, but the presence of *all*.



Moreover, these facts are true of virtually every type of QNP, and not only of those headed by *all*.

(43)	<p>Todos los all.PL D.PL Exactamente cuatro exactly four Más / menos de cuatro more less of four Al menos / como mucho cuatro at least at most four Muchos / pocos many few la mayoría de D.SG most of Algunos some</p>	} estudiantes están students be	} reunidos. meet.PTP.PL agrupados. group.PTP.PL juntos. together.PL unidos. unit.PTP.PL pegados. glue.PTP.PL atados. tie.PTP.PL
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(44)	<p>Ikasle guztiak student all.D.ABS Zehazki lau ikasle exactly four student Lau ikasle baino gehiago / gutxiago four student than more less Gutxienez / gehienez lau at least at most four Ikasle gutxi / asko student few many Ikasle gehienak student most.ABS Ikasle batzuk student some</p>	} taldekatuta group.PTP bilduta meet.PTP elkartuta together.PTP batuta unit.PTP itsatsita glue.PTP lotuta tie.PTP	} daude. LOC-be
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In a system relying on structural differential between predicates, these contrasts cannot be straightforwardly accounted for. In fact, Dowty (1979) explicitly rejects the idea of having a DO predicate as part of the meaning of stative predicates. Here I will just sketch two ways of thinking about these cases. Note first that all the predicates considered above are ‘derived’, in the sense that they all involve a participial expression. In fact, all of the examples involve predicates that usually denote activities (like *atar* (‘tie’), *pegar*, ‘glue’, etc.) and so, by assumption, they



must have a DO component in their meaning. In some syntactic frameworks, like the neo-constructionist approaches to grammar, the structure of any derived form must include the non-derived form (see, for example, the proposals in Borer 2005; Ramchand 2008, a.o.). Thus, in these frameworks, it should be possible to access the DO component of verbs like ‘tie’ and ‘glue’ in Spanish before they combine with the copula and turn into states.

In any case, a putative integration of such neo-constructionist frameworks with Brisson’s approach raises a number of question. Whether these predicates are construed along the syntactic derivation or are rather inserted as a whole lexical unit is something that is still debated. And even if we argue for the former approach, it is not straightforward how semantic operations, such as the insertion of *D*, can be applied to morphological units below the ‘word level’. In Spanish there is another set of examples that seem to point in this direction: collective achievement verbs with the morphological prefix *co(n)-* are usually good with QNPs in subject position, and also allow for collective readings:¹³

- (45) a. Todos los ríos confluyen más adelante.
all.PL D.PL.MASC river.PL meet.PL more ahead
‘All the rivers join ahead.’
- b. Todas las líneas convergen en el mismo punto.
all.PL D.PL.F line.PL converge.PL in D.SG.MASC same point
‘All the lines converge on the same place.’

The examples in (45) do not involve derived predicates nor participial constructions and the only interpretation they have is collective, in spite of being achievements. Thus, one could think that the prefix *co(n)-* is responsible for the licensing the collective reading. Furthermore, given that this is the only interpretation possible, it could be that that *co(n)-* is some sort of overt *D* operating on verbal roots.¹⁴

On the other hand, it may be that collective readings in (43) / (44) and (45) are licensed by different means. Thus, a second way of thinking about the examples in (43) and (44) is to take seriously the difference between the two kinds of copulas. All the examples mentioned in Basque and Spanish are composed with the locative copula *stare*, which is believed to bear some aspectual meaning that the plain

¹³The prefix *co(n)-* stems from the preposition *con* (‘with’) and its meaning is similar to *together*. Consider also the English pairs *operate* vs. *cooperate*, *author* vs. *coauthor*, *variation* vs. *covariation*, and so on.

¹⁴It may be helpful to think about the differences between *join* and *conjoin* in English. While both predicates need to be related to a plurality of some sort, only *conjoin* is obligatorily collective: *the kid joined the two dots and formed a line* vs. *#the kid conjoined the two dots and formed a line*.



copula *essere* lacks; hence, it is believed to be more complex. Within the Spanish linguistic tradition there is a long standing debate about the precise nature of [*estar* + participle] constructions. For some researchers, constructions of this type are passives in disguise, whereas for others they are not. The point about which both views agree is the acceptance of an aspectual difference between [*ser* + participle] and [*estar* + participle] (see Mendikoetxea 1999, pp. 1623).

On the basis of this difference, it could be the copula *estar* which introduces the DO head.¹⁵ The fact that the *estar* participial structures considered here all have a resultative meaning—as opposed to *ser* participials, which never do—points in this direction. But note, however, that whatever the meaning of this DO would be, it couldn't be the same as the one advocated by Dowty (1979) or Brisson (1998), for it could non-agentive and the resulting derived predicate would still be stative.

The take away message from this has been to point out the existence of a particular set of predicates that, on the surface, do not fall under Taub's generalization and hence are problematic for Brisson's approach. We will have not much more to say about these cases and we will set the issue aside for further research. In the remainder of the paper we concentrate on pointing out more pressing problems that follow from the non-quantificational approach to the semantics of *all*.

4.2 Intermediate readings

The lack of intermediate readings with QNPs headed by *all* poses a problem for the cover-based analysis of *all*. In order to understand better what a intermediate reading is, consider the following example by Schwarzschild (1996, pp. 67):

Two merchants are attempting to price some vegetables. The vegetables are sitting before the merchants, piled up in several baskets. To determine their price, the vegetables need to be weighed. Unfortunately, the merchants do not have an appropriate scale. Their grey retail scale is too fine, meant to weigh only a few vegetables at a time, and their black wholesale is coarse, meant to weigh huge truckloads. Realizing this, one of the merchants says:

- (46) The vegetables are too heavy for the grey scale and too light for the black scale.

If the sentence in (46) were uttered out of the blue it could have, at least, the following readings:

¹⁵I am thankful to an anonymous reviewer for pointing out this possibility.

- (47) a. DISTRIBUTIVE: each of the vegetables is too heavy ...
 b. COLLECTIVE: all the vegetables together are too heavy ...
 c. NON-MAXIMAL: this consist of two (groups of) readings, non-maximal distributive and non-maximal collective.¹⁶
 d. INTERMEDIATE: its both distributive and collective, as it distributes over groups of vegetables.

Sentence (46) is false in the context if we consider either individual vegetables or the whole vegetable pile; it can only be true if we consider sub-pluralities. That is, instead of going down to every member of the denotation of the NP, or building a plural entity like a ‘group’ for all the vegetables together, the sentence takes junks or piles of vegetables into account, baskets of vegetables in this case. This signals that the distribution is made over sub-pluralities of the NP. With this example, Schwarzschild shows the existence of intermediate readings with plural definites. Observe that, crucially, this reading is impossible for the same sentence with *all*, and so (48) is odd in the context described above.

- (48) All the vegetables are too heavy for the grey scale and too light for the black scale.

In general, intermediate readings are absent with quantified subjects. However, nothing in the definition of good-fit cover that Brisson (1998, 2003) provides for the interpretation of *all* rules out the intermediate reading. Imagine a context where $\llbracket \text{vegetables} \rrbracket = \{a, b, c, d, e, f\}$. According to her definition, repeated below for convenience, in order to be a good-fit cover every member of the denotation of the NP must be (i) a member of a cell such that this cell is a member of the cover, and (ii) a subset of the denotation of the NP.

- (49) Good Fit: for a variable *Cov* of *U* and a NP denotation *X*, *Cov* is a good-fit with respect to *X* iff
 $\forall y [y \in X \rightarrow \exists Z [Z \in Cov \ \& \ y \in Z \ \& \ Z \subseteq X]]$

- (50) a. $Cov1 = \{\{a\}, \{b\}, \{c\}, \{d\}, \{e\}, \{f\}, \{g, h\}\}$
 b. $Cov2 = \{\{a, b, c, d, e, f\}, \{g, h\}\}$
 c. $Cov3 = \{\{a, b, c, \}, \{d, e, f\}, \{g, h\}\}$

¹⁶In the first case, the sentence is true for all the vegetables but one, two, three ... In the second case, the sentence is true in a collective reading even if do not compute the vegetables very accurately (if there are 10, for example, then we take 8 into account).



Thus, *Cov3* is also a good-fit cover for the NP *vegetables*, but there is no interpretation that corresponds to that cover. In fact, the theory allows intermediate readings for any sentence that allows *all* in subject position, even though these readings are not always available.

4.2.1 A possible solution for *Covers*

How can an account with covers rule out undesired interpretations like (48)? Given that *be heavy* in (48) is a stative predicate and, therefore, it has no DO predicate, we could argue that in those cases some economy condition bans the insertion of *D*. The rationale would be the following: in the presence of *all*, *D* mediates between two possible readings, collective and distributive, and for doing so it crucially depends on the presence of the head DO. Since states and achievements lack DO, *D* can only apply to the VP node and thus only a collective reading is possible. In other words, with states and achievements *D* is doing no disambiguating labor whatsoever, and on this grounds some economy condition bans it from applying.

This way of thinking seems to fit well within Brisson’s analysis; in fact, with these cases in mind, Brisson follows Fox 2000 in adopting an economy condition that bans the insertion of an operator–*D* in this case—in those places where it does not affect the meaning of the predicate (the definition was introduced above in (31); see Brisson 2003, pp. 172–174 for discussion). This would not prevent the theory from generating intermediate readings, but from generating them with state and achievement predicates. Nevertheless, such a proposal makes strong predictions:

1. It predicts the absence of collective and intermediate readings with achievements in the presence of *all*, due to the lack of the head DO.
2. It predicts intermediate readings for collective (or mixed) activities and accomplishments, since they both have a DO predicate.

In the following subsections I will consider each of the predictions in more detail, and conclude that each of these predictions is too strong and is not supported by the data.

4.2.2 Collective achievements

Assume then that *D* is not allowed with states and achievements because of some economy condition and thus neither collective nor intermediate readings will be allowed with *all*. However, Brisson (2003, pp. 173) acknowledges the existence of intermediate readings with achievements:

For example, suppose we are teachers at Wading River Elementary School. The students are holding elections for class president, so each grade will elect its own president. In this context, it is possible to say the following.



(51) All the students elected a president.

This sentence does not mean that each individual student elected a president. It means that the third graders elected a president, the fourth graders elected a president, and so on.

Examples of this kind constitute a real problem for the proposal. Her solution is to admit that in these cases *D* can be inserted in the VP and thus it distributes over the contextually salient sub-pluralities that are grouped by the different cells of the cover. But it poses a serious conceptual weakening of the proposal, since it opens the possibility for predicates without a DO component to have collective readings with *all* in subject position. This is something we want to avoid, given examples like (48). Why is it then that (51) can have an intermediate reading and (48) above cannot? According to this explanation, there is no principled answer.

4.2.3 Activities and accomplishments

An economy condition banning *D* from states and achievements would obviously not affect mixed activities and accomplishments, and so the prediction is that they should have intermediate readings. However, it seems that intermediate readings with *all* are impossible also in these cases. In order to illustrate the point, consider the following example (adapted from Landman 2000):

- (52) a. The boys are touching the ceiling.
- b. All the boys are touching the ceiling.

According to Landman, the sentence in (52a) is true in a context in which the boys form a pyramid and just the boy on the top of the pyramid touches the ceiling with the tip of his finger. An appropriate situation can be that of a human pyramid building contest between girls and boys. As expected, the same meaning is absent for the example in (52b).

Consider now the same contest with other participants: it is different several groups of boys, girls and teachers that compete against each other. The sentence in (52a) can still mean that every group of boys managed to build a pyramid and touch the ceiling, but the same meaning is absent from (52b). Again, nothing in the definition of good-fit cover prevents us from building subsets that exhaust the denotation of the NP and, since the predicate has a DO predicate by assumption, nothing precludes the intermediate reading. However, this interpretation is absent or at least very hard to obtain.¹⁷

¹⁷In this example the collective reading is also absent, possibly due to the lexical properties of the verb *touch*. So, it may be tempting to conclude that that the unavailability of the collective



The discussion in the last subsections has tried to rescue an analysis of *all* as related to covers by imposing an economy condition that bans the insertion of *D* in those predicates where it can only apply to one constituent—namely, to the VP. There are two major problems with this amendment: the presence of intermediate readings with some achievements and the lack of intermediate readings with mixed activities and accomplishments. Maintaining the current definition for good-fit cover opens the door for intermediate readings. Since it is the definition of good-fit that provides us with the best empirical results for interpreting *all*, it must be that we rule out intermediate readings by other means. In the previous sections we have explored the consequences of not allowing the insertion of *D* with neither states nor achievements, and concluded that such an approach is untenable. In the next section I will point out a further conceptual problem of analyzing *all* as a modifier operating over covers.

4.3 Overlapping

The need for an economy condition on *D* uncovers an obscure point in Brisson’s theory: there is some degree of overlapping in the theory between the work done by the values of the covers, on the one hand, and the place where *D* is inserted, on the other. In the economy condition defined above in (31) that precludes *D* from quantifying over a singleton domain, and so covers of the form $\{a, b, c, d\}$ would be unavailable. That is, inserting *D* on VP and selecting a cover over a singleton domain of the form $\{a, b, c, d\}$ is not allowed. While this is expected in cases like *the boys are a big group*, it is not clear that the same condition should hold for *all*. Note that, by assumption, *all* is associated with *D*—it always requires *D*— (cf. Link 1983) and so no economy condition should be able to ban *D* in its presence.

In addition, as a consequence of this ban, the theory of covers allows two

reading correlates with the lack of an intermediate reading as well. This does not seem to be the case: sentences with mixed predicates also lack the intermediate reading. Consider the following example:

- (i) *Context*: A football tournament is going to take place in the elementary school of Amurrio, were students and professors will play against each other. The school is really small and there will be only three teams: two teams formed by students and another team formed by professors. Given that professors are lazier than students ...
 - a. The students will play first against each other.
 - b. #All the students will play first against each other.

In that context only the intermediate reading is available, since only groups of students can form a team and play against each other. The example shows that the relevant reading is absence from the *all* variant even in this kind of rigid contexts.



different ways of obtaining collective interpretations. On the one side, there is the strategy of choosing a cover of the form $\{a, b, c, d\}$, where all the relevant individuals form a single set; this is the strategy employed by plural NPs with states and achievements. Alternatively, D can be inserted on DO—when it is present in the structure—and then take a cover of type $\{\{a\}, \{b\}, \{c\}, \{d\}\}$, where DO is interpreted distributively, and this results in the collective interpretation of the big VP. This is because every individual x in $\{\{a\}, \{b\}, \{c\}, \{d\}\}$ will be the agent of a DO-ing event. The distinction is accounted for by the aforementioned economy condition ban the insertion of D in those environments were its effects would otherwise be vacuous (as it is the case of collective states and achievements).

But the resulting picture is still problematic on empirical grounds. By banning the insertion of covers with collective states and achievements we are no longer in a position to allow for exceptions, which is probably the greatest achievement of cover-based theories. As an illustration, consider the following examples, were $\llbracket \text{girls} \rrbracket = \{a, b, c, d\}$.

- (53) a. The girls built a raft. $Cover_1 = \{\{a, b, c\}, \{d, e, f\}\}$
- b. The girls are a nice team.

The sentence (53a) is good in a context were all the girls but one collaborated in the building of the raft (simply imagine that the missing girl was sick and could not join her peers). To render the (53a) true in such a context, a cover like $Cover_1$ is necessary, a cover that will left out an element that would otherwise be withing the denotation of $\llbracket \text{girls} \rrbracket$ (the girl d in this case). By the same reasoning, one can utter a statement like (53b) to express admiration for a team of girls, even though there is some girl among them, namely d , that is not a member of the team. However, in this case, the economy condition on D precludes us to insert it here, and hence no covers can be selected, and so $\llbracket \text{girls} \rrbracket$ has to be interpreted maximally. The prediction, then, is that a non-maximal reading should be absent from sentences like (53b), contrary to fact.

This problem weakens significantly the conceptual and empirical grounds over which this particular implementation of D and covers is stated. Even though the basic idea of linking the interpretation of *all* with the *aktionsart* of verbs seems to be appealing, the details of Brisson’s account lead to some undesired empirical predictions, in addition to the theory internal issues we just considered.

4.4 The case of different QNPs

Lastly, we would like to point out what is probably the most problematic consequence of excluding *all* from the rest of QNPs. As we saw in section 2, the same pattern that *all* displays holds also for many other QNPs. Since the behavior of all the QNPs seems to persist, we expect that the rest of QNPs will show



the same behavior of *all* in the same relevant environments. Moreover, whatever effect the presence of *all* may have with respect to the collective and distributive interpretation of the predicate, there is no reason to believe that it should extend to other kind of QNPs, because only *all* involves covers.

This observation alone is already problematic, given the data in section 2: it seems unlikely that all the QNPs in question behave as pragmatic modifiers and that they are not contributing to the truth-conditions of the sentence. In addition, the identical distribution of *all* and the rest of QNPs as a robust cross-linguistic pattern clearly speaks for a unified account. Moreover, consider the examples in (54) in the scenario we depicted for (51), where only an intermediate reading is available.

- (54) a. Some of the students elected Leah (... and some others elected Bill).
- b. Ten students elected a representative.
- c. ??Most students elected Leah.

The example in (54a) is acceptable in this context, where different classes elect their own class presidents. Sentences in (54b)/(54c), however, do not allow this interpretation.¹⁸ This is a remarkable fact, since it shows that the intermediate reading, which under Brisson’s account is generated only with *all*, is also present with *some*: in this case, *all* and *some* pattern together, but not *most*. But this begs for explanation, since by assumption *some* is not related to *D*.¹⁹

The important fact to be noted here is that, if accept that *all* is not a quantifier, we are loosing an apparently interesting generalization: all the QNPs we con-

¹⁸In the case of *most*, the reason may be that it is obligatorily distributive (as suggested by Reinhart 1997). The case of (54b) is more controversial, and judgements vary. The collective reading is fully available, but speakers struggle with the intermediate reading.

¹⁹As pointed out by Seth Cable (p.c.), there are cases where *all* does differ from other QNPs:

- (i) a. Some of the boys are touching the ceiling.
- b. All the boys are touching the ceiling.
- (ii) a. Most of the boys built a raft.
- b. All the boys built a raft.

The example in (i-a) allows collective and possibly intermediate readings more easily than (i-b); on the other hand, (ii-a) is preferable under its distributive reading, whereas in (ii-b) there seems to be no preference for any of the interpretations. This shows that, contrary to what the data in section 2 suggests, all QNPs do not pattern alike with respect to the distributive–collective (and intermediate; see section 4.2 below) readings they allow. A fine grained analysis of these differences is out of the scope of the present paper, and so I will stick to the picture outlined in 2, and bear these considerations in mind for further research.

sidered in this paper behave similarly in three typologically different languages so far. In the next section we argue that retaining the traditional analysis of *all* as a Generalized Quantifier (Barwise & Cooper 1981, Keenan & Stavi 1986) avoids most of these problems.

5 No covers

In the previous section we have seen that a version of *D* with covers as spelled out by Brisson (1998, 2003) makes some undesirable predictions. On the one hand, it overgenerates intermediate readings in contexts in which they are impossible, and, on the other hand, we lose an interesting generalization that concerns the behavior of more QNPs besides *all*. Finally, the theory is redundant in that there is some degree of overlapping between the means by which it generates collective interpretations.

From this point of view, it is interesting to provide the system with a mechanism to treat all QNPs in a way that they all get the same interpretations in the relevant contexts. For that, we have two main possibilities: either we provide a sort of good-fit definition for each QNP and continue using covers to interpret them, or we get rid of covers for the semantics of QNPs.

An alternative then is to provide a good-fit definition for each different quantifier, where a good-fit is simply a relation between a cover and a definite DP denotation. Consider, for example, the following definition for *most* (based on Nakanishi & Romero 2004):

- (55) **Good Fit_{most}**: For some cover of the universe of discourse *Cov* and some NP denotation *X*, *Cov* is a good-fit_{most} with respect to *X* iff:

$$|\cup\{x : x \in X \wedge x \in Y \wedge Y \subseteq X\}| > 1/2|X|$$

According to (55), the quantifier *most* requires a cover where the cardinality of the union of all the cells containing just members of $[[NP]]$ will be greater than the cardinality of the set denoted by the DP divided by two. This definition, however, will not help with the problem of intermediate readings pointed out in the previous section. It seems that getting rid of covers and providing some other denotation for QNPs seems a step worth considering. Ideally, we would avoid intermediate readings and, at the same time, retain some consistency in the semantics of QNPs.

5.1 QNPs as Generalized Quantifiers

The most straightforward theory available for interpreting QNPs is that of Generalized Quantifiers (GQ henceforth; Barwise & Cooper 1981), where quantifier-determiners denote properties of properties:



- (56) a. $all\ N = \{X : X \subseteq D_e \ \& \ \llbracket N \rrbracket \cap X = \llbracket N \rrbracket\}$
- b. $some\ N = \{X : X \subseteq D_e \ \& \ \llbracket N \rrbracket \cap X \neq \emptyset\}$
- c. $most\ N = \{X : X \subseteq D_e \ \& \ |\llbracket N \rrbracket \cap X| > \frac{\llbracket N \rrbracket}{2}\}$

An analysis that takes QNPs to denote GQs is can maintain the truth-conditions that Brisson (1998, 2003) assigned to the relevant sentences, but without the risk of allowing intermediate readings.

(57) **Distributive interpretation**

- a. $[_{TP}\ All\ the\ boys\ [_{DVP}\ DO\ [_{VP}\ lifted\ a\ piano\]]]]$
- b. $\exists e\ [\forall x : x \subseteq \llbracket the\ boys \rrbracket \ \& \ \forall z : z \subseteq x \rightarrow \exists e' [e' \leq e \ \& \ lift(e')] \ \& \ Th(e',\ the\ piano) \ \& \ \exists e'' [e'' \leq e' \ \& \ DO(e'') \ \& \ Ag(e'', z)]]]$

All the other things remain equal, that is, we assume together with Brisson that the relevant factor for the availability of the different readings is the presence of a the sub-predicate DO. So, the semantic representation of above predicates the existence of a plural event which consist of (i) several singular ‘complex’ sub-events e' of ‘lifting a piano’ for each member of $\llbracket NP \rrbracket$ and (ii) one sub-event of ‘DO-ing’ e'' for each of the sub-events e' . Assuming the same eventive composition, it is also possible to interpret collective readings:

(58) **Collective interpretation**

- a. $[_{TP}\ All\ the\ boys\ [_{VP}\ ^D DO\ [_{VP}\ lifted\ a\ piano\]]]]$
- b. $\exists e\ [\forall x : x \subseteq \llbracket the\ boys \rrbracket \ \& \ lift(e) \ \& \ Th(e,\ the\ piano) \ \& \ \exists e' [e' \leq e \ \& \ \forall z : z \subseteq x \rightarrow \exists e'' [e'' \leq e' \ \& \ DO(e'') \ \& \ Ag(e'', z)]]]$

The meaning of the expression has changed radically as a result of applying D to DO: now there is a complex singular event e of ‘lifting a piano’ composed by an abstract plural sub-event e' which is composed by multiple singular sub-events e'' of ‘DO-ing’ whose agents are the elements z that are members of $\llbracket NP \rrbracket$. Exactly the same results obtain if we adopt the present proposal for Spanish and Basque.

5.2 Consequences and discussion

There are various welcome consequences of not taking covers as a requirement for the interpretation of *all*:

First, we can understand why *all* is not different from the rest of quantifiers: because the are all interpreted as GQs.²⁰

²⁰Recall: this holds according to the data presented in 2, but see footnote 22 and section 5.2.1 below.

Second, provided that all the languages have GQs, we predict that the analysis can be applied to any language in which Taub's Generalization holds.

Third, eliminating covers we predict that intermediate readings will not arise systematically with QNPs, as it seems to be the case. Those cases in which intermediate readings are still available should be explained otherwise (recall examples (51) and (54a)).

Fourth, it is conceptually desirable to reduce the complexity of any particular element of grammar. Eliminating covers from the interpretation of QNPs not only decreases their semantic complexity, but it also widens the empirical coverage of the analysis, so the advantage is both conceptual and empirical.

Fifth, this simplification also solves the conceptual overlapping in Brisson's theory between the labour of covers and the application of *D* to DO.

And sixth, the more restrictive approach also makes better predictions in the case of (non-derived) stative predicates. Consider the following pair, which is problematic for the cover approach:

- (59) a. All the bottles are too heavy to carry.
 b. *All the boys are a big group.

The problem with the contrast in (59) is that the solution seems rather *ad hoc*: it is a consequence of the fact that the predicate in (59a) is ambiguous, whereas the predicate in (59b) is only collective. Therefore, as *all* depends on the presence of the distributive operator *D*, (59a) can only be distributive, whereas (59b) is bad. But, why is it that (59a) is collective and (59b) is not? Both predicates share the same *aktionsart* and VP structure, so the explanation is rather stipulated as lexical difference in meaning.

We agree that there is some significant difference between predicates like *be heavy* and *be a group*. But this assumption results more problematic for an approach with covers. For an approach that dispenses with covers, the only interpretation we expect for stative predicates is the distributive. In this line, (59b) is not ruled out because of the requirement of the predicate to be interpreted collectively, but because of the inability of the individual boys within $[[NP]]$ to denote a 'group'. Compare (59b) with the following example:

- (60) All the teams are a big group.

Here, the approach without covers correctly expects (60) to be good only on the distributive reading. The cover approach instead should be amended somehow to allow this kind of variations between (59b) and (60). First, in the light of (59b), the author has to assume that a predicate like *be a big group* is 'only collective'. But thereafter, because of (60), she would have to make the VP available again for



distributive predication. Getting rid of covers allows us to avoid all this unwanted systematic ambiguity.²¹

The amendment we have presented here to capture Taub’s Generalization is also welcome insofar it does not affect the interpretation of plural definites or conjunctions. Thus, the availability of intermediate and non-maximal readings for non-quantificational plurals remains intact (e.g., interpreting them *à la* Brisson 1998, 2003).

5.2.1 Some problematic cases and further considerations

Although the present approach to the problem of collective predication covers a wider variety of cases, there are still important puzzles that remain unsolved. First, there are some predicates that do not behave according to Taub’s Generalization (see section 4.1). This examples include (i) predicates of possession, (ii) derived stative predicates formed with a participle and (iii) some Spanish collective achievements (exactly those that use the morphological prefix *co(n)-*).

In addition, we have proposed that the theory of GQ does a better job insofar it explains why the same phenomenon reproduces with many different QNPs. But, in recent years, claims about the non-uniformity of QNP interpretation have increased and, these also includes claims against GQ theory. For example, in the case of Basque, Etxeberria (2005) has proposed that (i) *guzti* (‘all’) is ambiguous between a GQ reading and an exhaustivity modifier (very much in the line of Brisson 2003); (ii) *gehien* (‘most’) is not a quantifier but the superlative form of *gehio* (‘more’) (following Moltmann 2005); and (iii) numerals only compose GQs in their partitive form. Similarly, Krifka (1999) argues that *at least*, *at most* and modified numerals in general are not quantifiers, but focus-affected particles that introduce semantic alternatives (in the sense of Rooth 1992).

Moreover, although the cases affected by focus are beyond the scope of the present work, it is worth noting that there is a significant interaction between information structure and the collective / distributive distinction. As Irurtzun & Etxeberria (2004) show, the focalization of the universal quantifier cancels the collective interpretation with mixed predicates:

²¹This is so because getting rid of covers has the important consequence of changing the locus of the problem. In our approach we locate the problem within the NP, so that when (59b) fails it does so because, the predicate still being distributive, each boy cannot individually satisfy the requirement of being a group. For this reason, (60) is acceptable, but only on its distributive reading. On Brisson’s account, on the other hand, all the space for variability is limited to the Aktionsart of the VP and, consequently, all the stative predicates are expected to show the same behaviour with *all* in subject position. Of course, one could think that covers would do the job, for example if we allow for the whole variety of good-fit covers to interact with *D* (indeed, this is what Brisson 2003 suggests for intermediate readings in examples like *all the students elected a president*). But then we inherit all the problems we discussed in section 4.2 through section 4.4.

- (61) a. Todas las chicas cantaron una canción. DIST & COL
 all.PL D.PL girl.PL sing.PL one song
 ‘All the girls sang one song.’
- b. [TODAS]_F las chicas cantaron una canción. DIST
 all.PL D.PL girl.PL sing.P one song
 ‘ALL the girls sang one song.’

Irurtzun & Etxeberria conduct a production and comprehension experiment and show that the collective reading is absent in sentences like (61b). Assuming a semantic analysis of focus *à la* Rooth (1985, 1992), the authors explain this effect of focus as a maximality effect resulting from a mismatch between the covers allowed by the Ordinary Semantic Value and the Focus Semantic Value of the sentence. This is an observation that requires further research, specially with other kinds of predicates and QNPs of different sorts.

Finally, consider the following interesting examples with their corresponding judgements, provided by Seth Cable in personal communication:

- (62) a. The boys will, without exception, gather in the yard. DIST & COL
 b. The boys, without exception, painted the house. DIST & COL
 c. Those players are, without exception, the best I’ve ever seen. DIST
 d. Those boys will, without exception, win the tournament. DIST
 e. The boys are, without exception, touching the ceiling. DIST
 f. *Those players are, without exception, one of the best teams I’ve ever seen.

In Brisson’s view, the way that *all* serves to rule out ‘exceptions’ is that it is tied to a covert *D* operator, and it is the possible placements of *D* that explains the interactions between *all* and the *aktionsart* of the predicate. However, as Cable observes, the basic facts noted by Dowty (1987) and Taub (1989) hold for any expression that serves to limit exceptions, even the English phrase *without exception*. The problem is that it seems doubtful that an expression like *without exception* has the complex syntax and semantics proposed by Brisson (2003) for *all*. Rather, it should in some direct way simply serve to signal that no boy is being excepted from [the-boys].

If this insightful observation is on the right track, as we believe it is, then those facts originally observed by Dowty and Taub should somehow follow from

this aspect of the meaning of *all*, and not from any covert distributive operator and its implicit cover arguments.²²

5.2.2 Is *all* a quantifier?

Brisson's main argument for her semantic analysis of *all* is the different behavior that it displays in comparison with *every*. Since *every* is considered to be the prototypical GQ, she concludes that *all* cannot be a GQ. So, any proposal that argues for the quantificational nature of *all* should say something to this respect. Is *all* a true quantifier?

It is not our aim to review all the evidence that has been mentioned in the literature to support one or other view, but to show that the debate is not closed. Brisson (2003, pp. 6) first notes that *all* cannot appear in subject position of episodic sentences if it appears together with a plural NP, but only if it combines directly with the NP.

- (63) a. Every / Most / The girls went to the gym.
 b. *All girls went to the gym.
 c. All the girls went to the gym.

However, there are dissenting voices that do accept [*all* + NP] in episodic sentences (Gamut 1990, pp. 228–232):

- (64) a. All men sleep.
 b. All men walked rapidly.

Another case concerns quantifier variable binding. According to Brisson (1998, pp. 8–9), QNPs can bind discourse variables in very few contexts, whereas plural definites can bind them freely. She presents the following evidence:

- (65) a. The girls came in. They sat down.
 b. All the girls came in. They sat down.
 c. Every girl came in. ??They/*She sat down.²³

The reason for which the argument may not hold is the following: whatever precludes (65c) above from being grammatical, it cannot be the fact that *every* is a

²²More interestingly, note also that the parallels between *all* and 'without exception' suggest that the analysis of *all*'s interactions with *aktionsart* should not extend to all QNPs.

²³I am blindly following Brisson's judgements here, although many speakers allow felicitously sentences like *Every girl came in. They sat down.* According to these judgements, *every* should pattern with the quantifiers in (66). I thank Seth Cable for bringing this fact into my attention.



quantifier and *the* and *all* are not. If so, we would expect that the rest of quantifiers pattern together with *every* but, in fact, they show the same behaviour as *all*:

- (66) a. Most of the girls came in. They sat down.
- b. Five girls came in. They sat down.
- c. Some (of the) girls came in. They sat down.
- d. Half of the girls came in. They sat down.

Of course, it may be that eventually *every* is the only true quantifier. However, this does not seem to be the point that Brisson is trying to make. Something similar happens with the following argument: interrogative sentences with QNPs can have three types of answers, one of them being the ‘pair-list’ reading (cf. Groenendijk & Stokhof 1984). According to Brisson (2003, pp. 9), pair-list readings are only possible with QNPs:

- (67) Which woman did every boy kiss?
 - a. His mother.
 - b. Judith.
 - c. John kissed Mary, Bill kissed Sue ...

- (68) Which woman did all the boys kiss?
 - a. His mother.
 - b. Judith.
 - c. #John kissed Mary, Bill kissed Sue ...

However, for some authors the relevant pair-list reading is unavailable with a variety of QNPs:

- (69) a. Which man did more than two dogs bite? [Szabolcsi 1997, pp. 322]
- b. *Fido bit X, King bit Y, Spot bit Z ...

- (70) Which dish did most/several/a few/no guests make? [Krifka 2001, pp. 2]
- a. Pasta.
- b. Their favorite dish.
- c. #Al the pasta, and Bill the salad.

Moreover, there is an important factor that must be taken into account: the availability of the pair-list reading varies depending on the type of quantificational subject (examples from Szabolcsi 1997).

- (71) a. Which/what boy did two dogs bite?
b. ??Fido bit X and King bit Y.
- (72) a. Who did two dogs bite?
b. Fido bit X and King bit Y.
- (73) a. Who did the dogs bite?
b. Fido bit X and King bit Y.

From this discussion we can conclude that, indeed, there are some differences between *all* and the rest of quantifiers.²⁴ However, it does not seem that there is conclusive evidence against the quantificational status of *all*. Brisson centers the gist of her argument on the differences between *every* and *all*, but we have seen that these differences are not exclusive of *all*, but hold for the rest of quantifiers too.²⁵

6 Conclusion

From the results obtained in this work, we can conclude that there are at least four types of different predicates with respect to the collective/distributive distinction:

- (74) **Collective predicates**²⁶
 - a. BAD with subject QNPs: *be many, be a good team, be a family ...*
 - b. OK with subject QNPs: *meet, be together, gather ...*

²⁴Note that we have skipped from the discussion some more obvious differences, like the fact that *all* can float, or that it can combine with plural definites.

²⁵As we mentioned above, it may be true that *all* is not a true quantifier after all. But then, either we need more evidence than the one provided here, or there might be a wide variety of what we call ‘QNPs’ that are not quantificational, in the sense that they show the same kind of differences with *every* and other ‘well-behaved’ quantifier-determiners.

²⁶The former correspond to correspond to Dowty’s pure ‘cardinal’ predicates, whereas the latter correspond to pure ‘collective’ predicates.

(75) **Mixed predicates**

- a. OK with subject QNPs: *lift a piano, build a raft ...*
- b. BAD with subject QNPs: *elect a president, win a relay race ...*

Using covers to interpret QNPs has a series of undesired consequences that can be overcome if we adhere to the classic version of Generalized Quantifier Theory. In this paper we have pointed out a number of problems that previous proposals have to face and we have concluded that covers can be dispensed with at no cost, and with the additional benefit of (i) precluding systematic intermediate readings with QNPs in subject position and (ii) simplifying the semantics of QNPs.

If correct, the proposal uncovers a difference between the mechanisms that allow collective readings for non-quantificational versus quantificational NPs: the latter depend on specific syntactic environments, whereas the former do not. Moreover, the differences have been shown to hold for English, Spanish and Basque; nevertheless, since the relevant differences are grounded on strong cross-linguistic generalizations, it is expected that more languages pattern similarly.

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