Todo in Brazilian Portuguese: *all* or *every* or neither?

Ana Müller[a], Esmeralda V. Negrão[b] & Ana P. Quadros Gomes[c]
University of São Paulo, Brazil
anamuler@usp.br[a]; evnegrao@usp.br[b]; anapaulaqg@globo.com[c]

Abstract

Todo-sentences in BP are a challenge to current views on the behavior of quantifiers like *all. Todo* selects not only plural and singular definite descriptions, but also noun phrases for its restriction, and it occurs with both distributive and collective predicates. Our thesis is that it is a distributive universal quantifier, which operates both over its nominal argument and over its predicate, being able to quantify over partitions of both its restriction and its nuclear scope.

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1. Introduction

Distributive universal quantifiers are supposed to yield ungrammatical sentences with collective predicates (cf. Link 1983; Dowty 1986; Taub 1989). The English quantifier *all* is not well behaved in this respect and nor is the Brazilian Portuguese (BP) quantifier *todo*. *Todo*-sentences in BP are a challenge to current views on the behavior of quantifiers like *all. Todo* selects not only plural and singular Determiner Phrases (DPs), but also Noun Phrases (NPs) for its restriction, and it occurs with both distributive and collective predicates. Our thesis is that it is a distributive universal quantifier, which operates both over its nominal argument and over its predicate, being able to quantify over partitions of both its restriction and its nuclear scope.

2. The behavior of *todo* with distributive and collective predicates

The quantifier *todo/-a* in BP may take a bare NP (1), a singular (2) and a plural (3) definite description (DD) as its argument. Sentence (1), with *todo*+NP*,* has only a distributive reading where there is one raft-building event per family. A collective reading where one gets a unique raft-building event for the group made up of all families is absent. The sentence with *todo*+*singular*DD (2), has both a collective reading (one raft for the whole family) and a distributive reading. Sentence (3), with *todo*+*plural*DD*,* is also ambiguous between a distributive reading (each family built a raft) and a collective reading (the families together built a single raft).

(1) Toda família construiu uma jangada.
all family built a raft
'Every family built a raft.'
(2) Toda a família construiu uma jangada.
all the family built a raft
'All of the family built a raft.'
(3) Todas as famílias construíram uma jangada.
all the families built a raft

'All the families built a raft.'

Todo+NP is always distributive. The meaning of sentence (4a) is consistently expressed by the 'classical' logical form for universal quantification (4b). *Todo* quantifies over the members of the set denoted by the predicate *família*. However, there is no straightforward way of translating sentences with *todo*+*singular*DD ((5)-(6)) into 'classical' logical forms because there is no constituent in these sentences that could fill in the first part of the implication. There is no predicate the quantifier *todo* may be said to take as its argument. DDs denote entities, not sets — they are not predicates. *A família* ('the family') in sentence (5) denotes a (collective) atomic entity. And *o sofá* ('the sofa') in (6) denotes an atomic entity.

The distributivity of *todo*+*singular*DD only emerges if one looks beyond the immediate denotation of the DDs that are the arguments of *todo*. Intuitively, (5a) and (6a) can be paraphrased as 'every member of the family sleeps well' and 'every part of the sofa became wet', respectively. The corresponding logical forms are represented in (5b) and (6b). The same point can be made about sentences where *todo* takes a plural DD as its argument (see the logical form (7b) of sentence (7a)).

(4a) Toda família dorme bem.
all family sleeps well
'Every family sleeps well.'
(4b) $\forall x$ (family' x $\rightarrow$ sleeps.well' x)
(5a) Toda a família dorme bem.
all the family sleeps well
'All of the family sleeps well.'
(5b) $\forall x$ (member.of.the.family' x $\rightarrow$ sleep.well' x)
(6a) Todo o sofá ficou molhado.
all the sofa got wet
'All of the sofa got wet.'
(6b) $\forall x$ (part.of.the.sofa' x $\rightarrow$ got.wet' x)
(7a) Todas as famílias dormem bem.
all the families sleep well
'All the families sleep well.'
(7b) $\forall x$ (member.of.the.group.of.families' x $\rightarrow$ sleep.well' x)

Syntactically, *todo* selects different kinds of arguments – either an NP or a DP. Semantically, it seems to be able to turn the entity it takes as its DP argument into a predicate (a set) made of parts or members of that entity.

3. Current accounts

In this section we discuss Link's (1983), Dowty's (1986), Taub's (1989) and Brisson's (2003) proposals. For Link (1983), collective predicates are inherently incompatible with atomic subjects. Therefore, any operation which simply distributes a given collective predicate over atoms should lead to ungrammatical results. To deal with the fact that *all* can combine with some collective predicates, Link proposes the operator 'partake in', which is part of the lexical meaning of *all* and derives an atomic predicate from each collective predicate.

Link does not mention the occurrence of *all* with singular definite descriptions, but, with appropriate changes, his analysis carries over to *todo*+*singular*DDs in collective

predication sentences such as (8a). The corresponding Linkian logical form in (8b) says that the family built the raft, and that every individual member of the family took part in the building of the raft. The problem with (8b) is that the members of the family denoted by the DD *a família* in (8a) are not atoms in Link's sense. The DD *a família* denotes an atom by itself, so that, the members of *a família* are, if we are to carry over the atomic metaphor, sub-atomic, so to speak.

(8a) Toda a família construiu a jangada.
all the family built the raft
'All of the family built the raft.'
(8b) built.the.raft' (the.family') $\wedge$ $\forall$x (member.of.the.family' x $\rightarrow$
took.part.in.building.the.raft' x)

Can Link's analysis explain the ungrammaticality of *todo*+NP with collective predicates? Sentence (9a) cannot be understood as there being one single event of the building of a unique raft by a single family[1]. We could follow Matthewson (2001) in proposing that the bare nominal *família* could be taken to denote the kind 'family'. Sentence (9a) would then quantify over members of the kind family. Nevertheless, this move wouldn't work because (9a) does not have a collective reading. Consequently, (9b) is not a logical form for (9a).

(9a) *Toda família construiu a jangada. *collective reading*
all family built the raft
'Every family build the raft'
(9b) build.the.raft' (family' x) $\wedge\forall$x (member.of.the.kind.family' x$\rightarrow$
takes.part.in.building.the.raft' x)

On the other hand, if we take *família* to denote an NP, there is no entity so that its parts (or members) can be said to take part in the eventuality denoted by the predicate. There is no individual that could perform the collective action – the argument of *todo* is a predicate. The impossibility of collective readings for *todo*+NP can be argued to stem from the fact that there is not an appropriate argument for the distributive predicate, since common nouns do not denote entities, but sets.

Dowty (1986) agrees with Link in that *all* is a distributive universal quantifier, and that it introduces a Maximizing Effect, that is, it tolerates no exceptions. Nevertheless, he does not attribute the grammaticality of *all* with collective predicates to its lexical meaning, but to the fact that some of these predicates have distributive sub-entailments as parts of their meanings. Dowty points out that some collective predicates have entailments that apply to the individuals involved in the collective activity ('distributive sub-entailments') even though their primary entailment is collective. These predicates are compatible with *all*. He also points out some cases of collective predication that are not compatible with *all*. His examples carry over to *todo*+*plural*DD in BP (see (10)-(11)).

(10) *Todos os coalas são numerosos na Austrália.
all the koalas are numerous in-the Australia
'All the koalas are numerous in Australia.'

[1] (9a) has an iterative distributive reading where the same raft was (re-)built over and over again.

(11) #Todos os eleitores elegeram por unanimidade um presidente.
all the voters elected by unanimity a president
'All the voters elected a president unanimously[2].'

Collective predicates that lack sub-entailments are ungrammatical with *all*. The major drawback of Dowty's account is that it does not offer a principled way of telling us whether a predicate does or does not have sub-entailments.

Taub (1989) makes use of Vendler's (1967) predicate categories in order to explain the incompatibility of some collective predicates with *all*. She shows that collective predicates which fail to allow *all* are in fact members of either the *state* or the *achievement* class. In contrast, collective predicates which are compatible with *all* are *activities* or *accomplishments*. These are predicates that have an activity component, or, in Dowty's terms, which have sub-entailments.

Todo+*plural*DD sentences with collective predicates show the same behavior in BP. They are ungrammatical with collective states and achievements (see (10)-(11)), but are grammatical with activities and accomplishments (see (12)-(13)).

(12) Todos os estudantes se reúnem no hall.
all the students self gather in-the hall
'All the students gather in the hall.'
(13) Todas as crianças construíram a jangada.
all the children built the raft
'All the children built the raft.'

The same findings hold of *todo*+*singular*DD. Collective *states* are incompatible with *todo* (14). Collective *activities* and a*ccomplishments* are fine ((15)-(16)). Finally, collective *achievements* are ungrammatical with *todo* (17).

(14) *Toda a alcatéia é numerosa no Alaska. *state*
all the wolf-pack is numerous in-the Alaska
'All of the wolf pack is numerous in Alaska.'
(15) Toda a família se reúne no hall. *activity*
all the family self meets in-the hall
'All of the family gathers in the hall.'
(16) Toda a família construíu a jangada. *accomplishment*
all the family built the raft
'All of the family built the raft.'
(17) *Todo o Senado aprovou por unanimidade a emenda. *achievement*
all the Senate approved by unanimity the amendment
'All of the Senate passed the amendment unanimously.'

Nevertheless, in sentences with *todo*+NP, there is no effect of the *aktionsarten* on the licensing of collective predicates (see (18)-(21)). A collective reading is never possible.

(18) *Todo coala é numeroso na Austrália. *state*
all koala is numerous in-the Australia
'Every koala is numerous in Australia.'

[2] Sentence (11) may have a distributive reading: each person casts individually his or her vote, and all the votes turn out to be, by chance, for the same candidate. The collective reading, namely the one in which a candidate was acclaimed president at once by the whole group of voters, is not available.

(19) *Todo estudante se reúne no hall. *activity*
all student self gathers in-the hall
'Every student gather in the hallway.'

(20) #Toda criança construiu a jangada. *accomplishment*
all child built the raft
'Every child built the raft[3].'

(21) *Todo eleitor elegeu por unanimidade um presidente. *achievement*
all voter elected by unanimity a president
'Every voter elected a president unanimously.'

Let us summarize what we have seen so far. Link (1983) proposes a lexical meaning for *all* that amounts to adding to the same sentence without *all* a statement that everyone in the denotation of the subject must partake in the eventuality denoted by the predicate. Link's proposal fails to explain the ungrammaticality of *all* with some collective predicates. Dowty and Taub unravel the reasons of why some predicates are ungrammatical with *all* while others aren't. All accounts fare well with *todo*+DD, but fail to explain the behavior of *todo*+NP.

Brisson (2003) has a different proposal for the semantics of *all*. She claims that *all* is not a quantifier[4]. Distributive readings depend on the occurrence of a D(istributive)-operator, which distributes the predicate to each atomic member in the denotation of the subject. The occurrence of *all* is licensed by the D-operator, and its effect is to add the presupposition that the domain of quantification must be maximal (the Maximality Effect). Consequently, sentences with or without *all* have exactly the same truth conditions. They only differ in that *all* contributes a domain-adjusting, non-truth conditional meaning.

In the literature on plurals, it has been widely observed that a sentence with plural subjects allows for exceptions (see Landman 1989, 1996; Lasersohn 1995, among others). In order to explain the tolerance of exceptions, Brisson follows Schwarzchild (1996) and claims that the D-operator is always accompanied by a context-dependent domain selection variable Cov_i[5]. This variable adjusts the domain of quantification so that it may ignore non-relevant exceptions. The logical form for sentence (22a) in (22b) incorporates the variable Cov_i. Sentence (23) with *all* has exactly the same logical form plus the presupposition that amounts to the Maximality Effect.

(22a) As famílias construíram a jangada.
the families built the raft
'The families built the raft.'

(22b) ^{D}built.the.raft' (the.families') = $\forall x\,[Cov_i\ x \wedge x \leq$ the.families' $\rightarrow x \leq$ built.the.raft']

(23) Todas as famílias construíram a jangada.
all the families built the raft
'All the families built the raft.'
Instruction: Select cover that includes all members in the denotation of the subject.

[3] Sentence (20) has only a distributive reading: each person built the raft in turns, one after the other; the same raft was re-built over and over again.

[4] See Partee (1995) for a claim along these lines.

[5] The value assigned to *Cov* is a set of subsets of the universe of discourse. *Cov* is indexed because there may be more than one *Cov* per sentence. We won't review the formal definition of *Cov*, but refer the reader to Brisson's paper (2003) and to Schwarzschild (1996). Brisson spells out her proposal within event semantics. Ours is a simplified version of her formal account.

Brisson's general point to account for the ungrammaticality of *all* with collective *states* and *achievements* is that *all* needs distributivity to be licensed, and these predicates do not license any sort of distributivity. Collective *states* and *achievements* cannot be distributed because they do not have a component that entails the participation of the members of the group denoted by the subject in the eventuality denoted by the predicate. For this reason, when one tries to apply the D-operator to them, the result is semantically ill-formed.

Brisson's approach is designed to take care of *all*+*plural*DD sentences and it carries over very well to the corresponding *todo*+*plural*DD in BP. Problems arise when we try to understand the other occurrences of *todo*. Sentences with *todo*+*singular*DD should not license a D-operator because, according to Brisson, the D-operator is only licensed by a plural DP. Sentence (24) should only have a collective reading, where there is only one raft-building event for the whole family. Nevertheless, sentence (24) is ambiguous between a collective reading and an iterative reading, just as its plural counterpart (22a). Where, in Brisson's account, would the distributive reading come from if there is no D-operator available?

(24) Toda a família construiu a jangada.
all the family built the raft
'All of the family built the raft.'

We could, of course, extend the use of the D-operator to singular DPs. But then we would have to explain why only the sentence with *todo* (24), but not the sentence without *todo* has a distributive reading. Another way around the problem would be to claim that there are at least two *todo*s, one that occurs with plural DDs and another that occurs with singular DDs. This would be a very counter-intuitive move because, as we have been arguing, the behavior of *todo*+*singular*DD is exactly parallel to the behavior of *todo*+*plural*DD.

Todo+NP sentences, on their turn, are not supposed to license a D-operator, since their subjects are singular. Therefore, distributivity can only be attributed to the presence of a quantifier - *todo*[6]. We see that Brisson's approach cannot take care of the whole array of data relating to *todo* in BP. It works neither for *todo*+*singular*DD nor for *todo*+NP. It would lead us to postulate three different *todo*s, in fact a very counter-intuitive solution.

4. An alternative account

We start this section by showing that distributivity does not depend on plurality. Next we show that distributivity of collective predicates does not depend on the presence of sub-events or of an activity component on the predicate. Then we argue that *todo* is able to effect sub-atomic partitions in the denotations of both its restriction and of its nuclear scope. Consequently, the grammaticality of *todo*-sentences is shown to depend both on the denotation of its nominal argument and on the denotation of the predicate.

First, we want to point out that what is at stake for the grammaticality of sentences with *todo* is not only the kind of predicate, but both the denotation of the predicate and

[6] This would lead us back to the (counter-intuitive) claim that there are at least two *todo*s, only one of them a quantifier. Even if we decide to treat the bare noun as denoting kinds and at the same time assume that the D-operator can apply to kinds (even if they are singular), we would still be left with the puzzle of the absence of collective readings with kinds. The bare noun argument of *todo* does not denote a DP, but instead behaves as an NP.

the denotation of the nominal that is the argument of *todo*. Sentence (25) with *todo*+*plural*DD is a collective state predication and is correctly predicted to be ungrammatical by Dowty's (1986), Taub's (1989) and Brisson's (2003) approaches. Sentence (26) is the same sentence with a different subject. Surprisingly, it is perfectly grammatical. Note that the only difference between (25) and (26) is that the common noun in (26) is collective. One cannot say of each koala that it is numerous, but one can say of each family that it is numerous.

(25) *Todos os coalas são numerosos na Austrália
all the koalas are numerous in-the Australia
'All the koalas are numerous in Australia.'
(26) Todas as famílias são numerosas na Austrália.
all the families are numerous in-the Australia
'All the families are numerous in Australia.'

The same contrast shows up with *todo*+*singular*DD and *todo*+NP. Sentences (27a) and (28a) with an activity collective predicate are ungrammatical. The same sentences become grammatical if we give them a collective nominal as its restriction ((27b) & (28b)). The explanation for the contrast between (27a) and (27b) is that one cannot say of a child that it gathers in the hall, but one may say of a family that it does so. The contrast between (28a) and (28b) has a similar explanation: one cannot talk about part of a child participating in a gathering event, but this may be said of part of a family (a family member) that he/she takes part in the gathering. Any predicate can be distributed with *todo* provided it has a fitting subject.

(27a) *Toda a criança se reúne no hall.
all the child self meets in-the hall
'All of the child gathers in the hall.'
(27b) Toda a família se reúne no hall.
all the family self gathers in-the hall
'All of the family gathers in the hall.'
(28a) *Toda criança se reúne no hall.
all child self meets in-the hall
'Every child gathers in the hall.'
(28b) Toda família se reúne no hall.
all family self gathers in-the hall
'Every family gathers in the hall.'

This generalization works the other way around as well - not all distributable predicates can be automatically distributed. Sentence (29) says that every part of a sofa is heavy, which does not make sense. Sentence (30), on the other hand, says that all parts of a sofa are wet, and that makes sense. We see that, although it is true that only *activities* and *accomplishments* are able to produce collective readings of sentences with *all*, it is not true that real group predicates cannot be distributed.

(29) *Todo o sofá é pesado.
all the sofa is heavy
'All of the sofa is heavy.'
(30) Todo o sofá está molhado.
all the sofa is wet

'All of the sofa is wet.'

The second point we want to make is that distributivity in *todo*-sentences does not depend on plurality as Brisson claims. While sentence (31) has only a collective reading, sentence (32) is ambiguous between a collective and an iterative reading, in which the same raft is re-built over and over again by each member of the family. One must conclude that distributivity is introduced by *todo*.

(31) A família construiu a jangada.
the family built the raft
'The family built the raft.'
(32) Toda a família construiu a jangada.
all the family built the raft
'All of the family built the raft.'

Our third point is that *todo* is always distributive: it establishes a one-to-one universal relation in all the contexts it occurs in. What distinguishes it from quantifiers like *every* or *each* is that it is able to distribute both subparts of its nominal argument and of its predicate. Because of this, many combinations are possible. Ambiguities arise when more than one type of distributive relation is possible. In sentence (33), one can distribute families either per building events or per building sub-events of a single building event. Correspondingly, in sentence (34), members of *the family* may be paired with different building events or with distinct sub-events of a unique raft-building event. Sentence (35), however, has only one possible reading: one raft-building event per family.

(33) Todas as famílias construíram uma jangada.
all the families built a raft
'All the families built a raft.'
Possible readings:
a. *one family per raft-building event*
b. *one family per raft-buiding sub-event*
(34) Toda a família construiu uma jangada.
all the family built a raft
'All of the family built a raft.'
Possible readings:
a. *one member of the denotation of 'the family' per raft-building event*
b. *one member of the denotation of 'the family' per raft-building sub-event*
(35) Toda família constrói uma jangada.
all family builds a raft
'Every family builds a raft.'
Reading: *Each family in the denotation of 'family' per raft-building event.*

We conclude that *todo*-sentences are always distributive, and that collective readings of *todo*+DD are brought about by the possibility of distributing both sub-parts of the denotation of the subject and sub-parts of the denotation of the predicate. These possibilities do not seem to be available to other distributive quantifiers. The large array of possible combinations is due to the fact that *todo* can partition both the denotation of its nominal argument and of its predicate argument, plus the fact that it may take both

singular and plural DDs, as well as NPs as its nominal arguments. DDs denote entities that can be taken as agents of collective predications.

5. Conclusions

Todo-sentences are always distributive. Their distributivity does not depend on the existence of a plural nominal argument, or, for collective predicates, on the presence of sub-events or of an activity component in the meaning of the verb. The grammaticality of *todo*-sentences depends on the compatibility of their nominal arguments and their predicates. *Todo* is a distributive universal quantifier, and the Maximality Effect is just a by-product of its universality.

'Collective' readings are never available for *todo*+NP because NPs never denote atomic or group entities, but denote sets of entities (or semi-lattices). So there is never an individual to which one could attribute a collective predication. Therefore, it is impossible to partition the restriction of *todo*+NP. DDs, on the other hand, denote atomic or plural entities, and those entities may be interpreted as subjects of collective predications.

Todo in BP performs the same operation in all contexts it occurs in. Its different interpretations follow from the different denotations of the arguments it takes. Being a distributive universal quantifier, *todo* differs from quantifiers like *every* in that it also takes definite descriptions as its arguments, and that it can effect partitions within the atoms or eventualities in the denotations of its restriction and nuclear scope.

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