

## SOME OBSERVATIONS ABOUT THE QUANTIFIER *CADA*<sup>1</sup>

ANTÓNIO JOSÉ RODRIGUES LEAL

*Centro de Linguística da Universidade do Porto*

### 1. INTRODUCTION

The aim of this communication is to make a brief characterization of the quantifier *cada* in European Portuguese and to analyse some problematic cases involving one aspect of this characterization from a semantic point of view. The analysed examples are, in most cases, from a corpus (see references) and from the consulted bibliography.

We will start with a brief characterization of the quantifier *cada*; secondly, we will make an analysis of the problematic cases in which *cada* does not always operate over a pre-constructed set (*em cada*; *por cada*); finally, we will make a synthesis of the main aspects discussed.

### 2. BRIEF CHARACTERIZATION OF THE QUANTIFIER *CADA*

The quantification operator *cada* is an operator that can be logically interpreted by the universal quantifier and it operates over a set considered in its entirety. In European Portuguese, the most common linguistic expression for the universal quantifier (*todos os*)

---

<sup>1</sup> This work was supported by Fundação para a Ciência e a Tecnologia (POS\_C-Desenvolver Competências – Medida 1.2).

can normally have a distributive or a collective reading. In the former reading, a given property is ascribed to each and every element of the set; in the later reading, the property is ascribed to the whole set.

The operator *cada* is usually considered to have always a distributive reading. Lopes (1971:90) says that *cada* is used in phrases with distributive value to make the correspondence between the elements of two sets (element-element; element-set; set-element). Beghelli and Stowell (1997) propose a typology of the quantifier phrases and the existence of a connection between those phrases and fixed scope positions in functional categories. They analyse those English words that can be translated by the Portuguese *cada*, *each* and *every*, and verified that *each* is not a mere variant of *every* that requires a wide scope construction. Instead, they show a different behaviour. This different behaviour leads Beghelli and Stowell (1997) to defend that *each* is a truly distributive quantifier that bears a feature [+ Distributive] always verified, in Logic Form, in the position of Specifier of a functional category Distributive Phrase. On the other hand, *every* is only optionally distributive and shows quantificational variability. That is why *every* phrases are not specified whit respect to the [Distributive] feature.

Comparing the behaviour of *each* and *every* with *cada*, we can verify a match between the occurrences of *each* and *cada*. The following examples in English are from Beghelli e Stowell (1997).

1º- Quantifier floating: it is possible only when the quantifier affects the subject (with *each* and *cada*). See (1).

- (1) a. Cada menino atirou um pau ao gato.  
Each boy threw a stick to-the cat.  
*Each boy threw a stick to the cat.*
- b. Os meninos atiraram um pau cada ao gato.  
The boys threw a stick each to-the cat.  
*The boys threw a stick each to the cat.*

2º- Collective reading availability: it is not possible with the quantifier *each*, as well as with *cada*. See (2) and (3).

- (2) a. It took all the boys to lift the piano. (collective reading)  
 b. It took every boy to lift the piano. (collective reading)  
 c. \*It took each boy to lift the piano.
- (3) a. Foram precisos todos os homens para levantar o piano.  
 (collective reading)  
 Were needed all the men to lift the piano.  
*It took all the men to lift the piano.*  
 b. \*Foi preciso cada homem para levantar o piano.  
 Was needed each man to lift the piano.  
*It took each man to lift the piano.*

3º- Impossibility of combination of *each* with *almost*: we can not combine *cada* with *quase* (*almost*) in the relevant interpretation. See (4) and (5).

- (4) a. One boy ate almost all the apples.  
 b. One boy ate almost every apple.  
 c. \*One boy ate almost each apple.
- (5) a. Um rapaz comeu quase todas as maçãs.  
 A boy ate almost all the apples.  
*A boy ate almost all the apples.*  
 b. #Um rapaz comeu quase cada maçã.  
 A boy ate almost each apple.  
*A boy ate almost each one of the apples.*

(5b) is odd with the relevant interpretation of *to eat almost the totality of the apples set*. However, this sentence is perfectly acceptable if we consider that *cada* operates distributively over each element of the apples set: in this interpretation, the boy ate almost each one of the apples in its entirety, but there was not even a single apple which the boy ate entirely.

4º- Impossibility of combination of *each* with a negative polarity item: *cada* can not occur together with the negative polarity item *nem*. See (6) and (7).

- (6) a. Not all the boys ate an ice-cream cone.  
 b. Not every boy ate an ice-cream cone.  
 c. \*Not each boy ate an ice-cream cone.

- (7) a. Nem todos os rapazes comeram um gelado.  
Not all the boys ate an ice-cream.  
*Not all the boys ate an ice-cream.*
- b. \*Nem cada rapaz comeu um gelado.  
Not each boy ate an ice-cream.  
*Not each boy ate an ice-cream.*

This examples show that the quantifier *cada*, in European Portuguese, occurs in the same contexts of *each* and with the same behaviour. We will assume, then, that *cada*, as *each*, bears a feature [+ Distributive].

Duarte and Oliveira (2003) notice that *cada* presupposes a pre-constructed set and it can not operate over a virtual set, and that is why we can not have, in an expression with *cada*, a relative clause with the verb in the subjunctive mood. See (8) and (9) (examples from Duarte and Oliveira 2003:231).

- (8) Cada aluno –o João, o Pedro, o Luís...– teve uma boa nota.  
Each student –the-John, the-Peter, the-Louis...– had a good mark.  
*Each student –John, Peter, Louis...– had a good mark.*
- (9) \*/??Cada teoria que sustente essa hipótese é absurda.  
Each theory which support-Subj that hypothesis is absurd.  
*Each theory supporting that hypothesis is absurd.*

The *cada* phrases can not have a generic interpretation, since these phrases represent nominal species, and not individuals or groups of individuals connected to certain spaces and time intervals. See (10).

- (10) a. \*Cada pinguim é uma ave.  
Each penguin is a bird.  
*Each penguin is a bird.*
- b. Cada pinguim mereceu um cuidado especial por parte dos tratadores.  
Each penguin deserved a treatment special from-the caretakers.  
*Each penguin deserved a special treatment from its caretakers.*

*Cada* combines, in most cases, with simple names in singular (unlike other universal quantification operators, like *todos os* and *ambos*, that combine with definite noun phrases) or plural names preceded by cardinal (*cada três alunos*) and can not occur in contexts that require indefinite phrases (a feature in common with other universal quantifier operators); for instance, it can not occur as the complement of *haver*, as in (11a).

- (11) a. \*Há cada aluno na sala.  
Is each student in-the classroom.  
*There is each student in the classroom.*
- b. Há alguns alunos na sala.  
Are some students in-the classroom.  
*There are some students in the classroom.*

Notice that, in some cases, we can find a noun phrase with *cada* as a complement of *haver*; however, in these cases, this noun phrase has an intensive value. See (12).

- (12) Há cada aluno na sala!  
Is each student in-the classroom!  
*Fine students I have in the classroom!*

*Cada* can not also occur with a non count name (massive or non massive), as in (13a). There are apparent counter-examples, but, in these cases, the names are re-categorized as count names. In (13b), we are considering *delimited portions of the stuff iron (ferro)*.

- (13) a. \*Cada ferro era pesado.  
Each iron was heavy.  
*Each iron was heavy.*
- b. Cada ferro que trouxeste tinha um tamanho diferente.  
Each iron that brought had a size different.  
*Each piece of iron that you brought had a different size.*

The quantifier operator *cada* in Spanish is classified, in Sánchez López (1999), as an intrinsic quantifier, since it has an obligatory quantitative interpretation and it extends its scope beyond the element it directly modifies. This operator affects or can affect arguments that are entities (quantified phrases or pronominal phrases) or eventualities (predicates). This means that the predicate properties in the scope of a quantifier must be compatible with the quantifier

properties. The same thing happens with the *cada* Portuguese. For instance, it is not compatible with predicates with an obligatory collective reading (14a), unless the modified name is a semantic plural, like a collective name, as in (14b).

- (14) a. \*Cada familiar reuniu-se.  
Each relative gathered.  
*Each relative gathered.*
- b. Cada família reuniu-se.  
Each family gathered.  
*Each family gathered.*

### 3. PROBLEMATIC CASES TO *CADA* CHARACTERIZATION

#### 3.1. *Em cada*

The brief characterization we have made of *cada* must consider some peculiar constructions. There is a small number of contexts of occurrence of *cada* in which, apparently, the occurrence of *cada* does not imply the existence of a pre-constructed set in the discourse. Consider the following example:

- (15) Dois em cada três portugueses que foram às urnas votaram em partidos de esquerda.  
Two in each three Portuguese that went to-the polls voted in parties of left.  
*Two in each three Portuguese that went to the polls voted in left parties.*

In this construction, the noun phrase with *cada*, *dois em cada três portugueses que foram às urnas*, includes a relative clause in the indicative mood. The replacement by a relative in the subjunctive mood is odd. See (16).

- (16) ?Dois em cada três portugueses que tenham ido às urnas votaram em partidos de esquerda.  
Two in each three Portuguese that had gone-Subj to-the polls voted in parties of left.  
*Two in each three Portuguese that went to the polls voted in left parties.*

However, the subjunctive mood can occur without problems, with a small change in the constituents order. See (17).

- (17) Em cada 3 portugueses que tenham ido às urnas, dois votaram em partidos de esquerda.  
 In each three Portuguese that had gone-Subj to-the polls, two voted in parties of left.  
*In each three Portuguese that went to the polls, two voted in left parties.*

The fact that we can use the subjunctive mood in a phrase with *cada* seems to contradict the presupposition that *cada* always operate over a pre-constructed set, and can not operate over a virtual set. Nevertheless, this construction can be paraphrased by a partitive structure, which expresses some part (uncertain or accurate) of a previously established entity.

- (18) a. Dois terços dos portugueses que foram às urnas votaram em partidos de esquerda.  
 Two third of-the Portuguese that went to-the polls voted in parties of left.  
*Two third of the Portuguese that went to the polls voted in left parties.*
- b. \*Dois terços de portugueses que foram às urnas votaram em partidos de esquerda.  
 Two third of Portuguese that went to-the polls voted in parties of left.  
*Two third of Portuguese that went to the polls voted in left parties.*

In (18a), we can see the typical partitive construction (see Sánchez López 1999): the first part, the *head*, is filled out by the combination of two numerals, a cardinal number and a fractional number (*dois terços*), and the second part, the *coda*, is filled out by a prepositional phrase which has, as its complement, a definite noun phrase. The *head* denotes a proper subset of the *coda* (*dois terços dos portugueses* denotes a proper subset of the set *os portugueses que foram às urnas*). In (18b), we can see the pseudo-partitive construction, in which the *coda* introduces an indefinite noun phrase with an intensional value stipulating the properties of the elements forming the set denoted by the construction's *head*. Apparently, this is a contradiction: *dois em cada três portugueses* accepts the

occurrence of a relative in the subjunctive mood, which indicates the introduction of a noun phrase with an intensional value; on the other hand, it can be paraphrased by the partitive construction, which introduces a definite noun phrase, but not by the pseudo-partitive construction, which introduces a noun phrase with an intensional value.

We believe, however, that the paraphrase of one construction by another is just by chance, since both constructions have distinct truth conditions. We can see that by analysing the following examples and by considering the typical constitution of a football team:

- (19) a. Dez dos onze jogadores da equipa inicial são jogadores de campo.  
 Ten of-the eleven players of-the team initial are players of field.  
*Ten of the eleven players of the initial team are field players.*
- b. Dez em cada onze jogadores da equipa inicial são jogadores de campo.  
 Ten in each eleven players of-the team initial are players of field.  
*Ten in each eleven players of the initial team are field players.*

In (19a), we are considering ten specific players, without the goal-keeper. The sentence is true if *ten* denotes all and only all the players of the initial team without the goal-keeper. The meaning of (19b) is different: take any ten players of the initial team, formed by eleven players, and those ten players will be field players, which means that none of them is a goal-keeper. Well, we can have, in fact, a correspondence between these ten players, selected at random, and the ten field players, but we can also have a group formed by nine field players and the goal-keeper. The constituent *dez dos onze jogadores* in (19a) has an evident definite value. The constituent *dez em cada onze jogadores* in (19b) has an intensional value.

*Cada*, in (19b) has a very close or even the same value of one of the quantifier *qualquer* values in European Portuguese. See (20).



- (20) Dez de entre quaisquer onze jogadores da equipa inicial são jogadores de campo.  
 Ten from any eleven players of the team initial are players of field.  
*Ten from any eleven players of the initial team are field players.*

(20) is a paraphrase of (19b). *Qualquer* (*quaisquer* in the plural) can have, according to Mória (1992), several values. Among these values, there is the value of null modifier: in certain circumstances, *qualquer* can have the information that none of the qualities of the name it applies to is relevant, that is, *qualquer* functions as a modifier that blocks any other kind of modification, but it does not restrict, as it was expected, the nominal expression's reference. See (21).

- (21) a. Quando está doente, a Patrícia vai a um hospital qualquer.  
 When is sick, the-Patricia goes to a hospital any.  
*When Patricia is sick, she goes to any hospital.*
- b. Quando está doente, a Patrícia vai a qualquer hospital.  
 When is sick, the-Patricia goes to any hospital.  
*When Patricia is sick, she goes to any hospital.*

The information transmitted by *qualquer*, in both cases, is that none of the hospital's qualities is relevant (Patricia goes to a hospital among all the available hospitals, without exception). Consider the following contrast to a sharper distinction of this value, proposed in Mória (1992): we can make the question *which hospital?* regarding (22), but not regarding (21).

- (22) Quando está doente, a Patrícia vai a um hospital.  
 When is sick, the-Patricia goes to a hospital.  
*When Patricia is sick, she goes to a hospital.*

It is precisely this value of *no quality is relevant* that exists, in certain circumstances, in *qualquer*, that we can find in the constituent introduced by *em cada*.

In short, in spite of, in certain circumstances, the construction *em cada* can be paraphrased by a partitive construction, these constructions are not equivalent, since their truth conditions are different.

When we partially analyse a construction like (15), we can consider *cada* as an universal quantifier that does not operate over the atomic individuals that constitute the initial set *portugueses que foram às urnas*, but operates over ontologically distinct individuals –no longer the atomic individuals, but collective individuals (groups of three atomic individuals), and this collective individual constitutes the minimum unit–. *Cada* will have scope (will quantify) over these minimum units.

Can these group entities occur outside this construction? Apparently not. See (23).

- (23) \*Cada três portugueses foram às urnas.  
 Each three Portuguese went to-the polls.  
*Each three Portuguese went to the polls.*

However, consider the following example:

- (24) O nome de Rabin aparece contando *cada* 4772 letras.  
 The name of Rabin shows-up counting each 4772 letters.  
*The name of Rabin shows up counting each 4772 letters.*

In this case, the group individual is formed by *4772 letras* and *cada* operates over this individual by quantifying it (the distributive quantification is made over each group of letters, not over each letter). Therefore, in spite of not being frequent, a group individual designation can be made without the construction *em cada*.

Now back to the question of the universal quantification value of the *em cada* construction. See (19b) again.

- (19) b. Dez em cada onze jogadores da equipa inicial são jogadores de campo.  
 Ten in each eleven players of-the team initial are players of field.  
*Ten in each eleven players of the initial team are field players.*

We could paraphrase this sentence as follows: *to every x, if x is a subset of ten elements of the set jogadores da equipa inicial, those ten elements of the subset are field players*. As we have seen before, this reasoning leads to the wrong conclusion that, if we take a subset of any ten players of the initial team from the set *jogadores da equipa*

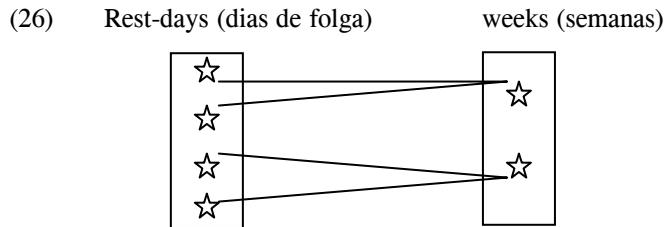
*inicial*, these ten players will be obligatorily field players, while the remaining player will not be a field player. However, this is not true, because we can find a subset constituted by nine field players and a goal-keeper. Therefore, this construction can not have underlying a universal quantifier operation.

Another hypothesis is to consider this construction a kind of noun phrase with an intensional value. Consider again example (15). Starting from the properties of the initial set (*os portugueses que foram às urnas*), considered in its entirety, namely its proportional mathematical property of one third voted in right parties and two thirds voted in left parties, we can form a group element representing proportionally the initial set in its entirety, in other words, an expression with an intensional value. This group element representing the initial set in its entirety is constituted by three elements: two elements describing *portugueses que foram às urnas e votaram em partidos de esquerda* and one element describing *portugueses que foram às urnas e não votaram em partidos de esquerda*. The relevant property to the characteristic element formation concerns the number of entities of the initial set that voted in left parties or not. The typical group element, which has a mere intensional value, has, in this case, the property of represent proportionally the initial set, so that we can eventually consider, in an extensional fashion, the initial set as formed by group individuals, constituted by three atomic individuals, and verify the existence of groups of three atomic individuals that voted in left parties, or groups of three atomic individuals that voted in right parties, and other possible combinations.

The construction *em cada* does not always occur with this value. In fact, in most cases, this construction relates the elements of two sets, establishing scope relations, just as noun phrases related at the clause level. Consider the following example:

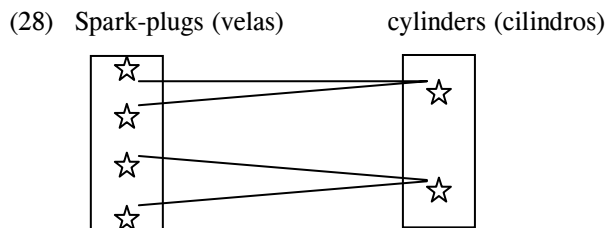
- (25) Os operários trabalham oito horas por dia, com dois dias de folga em cada semana.  
 The workers work eight hours a day, with two days of rest in each week.  
*The workers work eight hours a day, with two rest-days in each week.*

In this example, *cada semana* has scope over *dois dias de folga*, so that the denotation of the latter is multiplied. See the schema in (26).

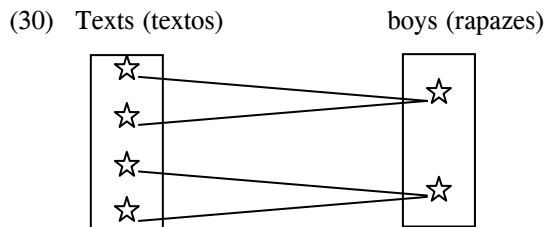


The same thing happens at the clause level. Consider the following examples and respective schemata:

- (27) O motor utiliza duas velas em cada cilindro.  
 The engine uses two spark-plugs in each cylinder.  
*The engine uses two spark-plugs in each cylinder.*

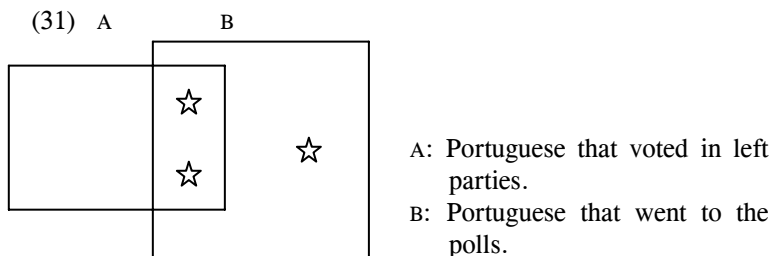


- (29) Cada rapaz leu dois textos. (*dois textos* is interpreted without referential dependency)  
 Each boy read two texts.  
*Each boy read two texts.*



The relations established in *dois em cada três portugueses* (and in similar constructions) can never be represented this way, due to a fundamental difference: the set of two Portuguese is included in the

set of three Portuguese. There are no two disjoint sets so we can't establish scope relations. The expression *dois em cada três portuguesas* can be represented as follows:



Using the set theory concepts, we can say that, in this case, A is a proper subset of B or it is properly included in B, which means that every member of A is also a member of B, but there is at least one element of B that does not belong to A. The scope relations require two sets, A and B, to be disjoint, which means that they have no members in common.

Notice that it is not mandatory that the A set denotes a proper subset of the B set. There are cases, less frequent, in which A is just a subset of B, since A, in these cases, is equal to B. See (32a).

- (32) a. Dez em cada dez estádios do Euro 2004 custaram uma fortuna.  
Ten in each ten stadiums of-the Euro 2004 cost a fortune.  
*Ten in each ten stadiums of the Euro 2004 cost a fortune.*
- b. Todos os dez estádios do Euro 2004 custaram uma fortuna.  
All the ten stadiums of-the Euro 2004 cost a fortune.  
*All ten stadiums of the Euro 2004 cost a fortune.*

This use of the construction has a clearly emphasis discursive function, thus justifying its occurrence, instead of (32b).

Also notice that, in this second *em cada* construction, the occurrence of the subjunctive mood is odd, indicating that we are dealing with a pre-constructed set. See the following example:

- (33) ??Os operários trabalham oito horas por dia, com dois dias de folga em cada semana em que trabalhem.  
 The workers work eight hours a day, with two days of rest in each week in which work-Subj.  
*The workers work eight hours a day, with two rest-days in each week they work.*

In short: the *em cada* construction can be semantically characterized in two distinct ways:

- (i) It is established a relation between two sets, A and B; A is a (typically proper) subset of B; there are no scope relations between the two sets. The whole construction has an intensional value; *cada* is operating over a virtual set. There can be relative clauses in the subjunctive mood in the interior of the construction.
- (ii) It is established a relation between two disjoint sets, A and B. There are scope relations between the two sets. *Cada* operates over a pre-constructed set (which is in agreement with *cada* general characterization). There can not be relative clauses in the subjunctive mood in the interior of the construction.

### 3.2. *Por cada*

The *por cada* construction seems to be clearly distributive. It establishes a distributive relation between the elements of a set A preceding the expression *por cada* and the elements of a set B, introduced by *por cada*.

The B set can be expressed by a syntactic constituent of the A set expression or, in option, both A and B sets are expressed by two distinct constituents belonging to the same clause. We will begin with the second case. Consider (34a).

- (34) a. #O João trocou um selo por cada moeda da colecção do Pedro.  
 The-John exchanged one stamp for each coin of the collection-of-the-Peter.  
*John exchanged one stamp for each coin of Peter's collection.*

- b. \*O João trocou um certo selo por cada moeda da coleção do Pedro.  
 The-John exchanged one certain stamp for each coin of the collection of-the-Peter.  
*John exchanged one certain stamp for each coin of Peter's collection.*

This construction requires that the elements of the A set may vary directly as the elements of the B set. In other words, it is necessary that the A set is expressed by an expression that does not refer to a single entity. The example (34a) is odd if *um selo* refers to a single object, that is, a specific reading. This is confirmed by example (34b): the introduction of *certo* in the sentence forces the *single object* interpretation.

However, example (34a) is grammatical if *um selo* does not refer to a single entity, that is, a non specific or intensional reading.

As we said before, the B set can be expressed by a syntactic constituent of the A set expression. See example (35a).

- (35) a. A taxa mantém-se nos 278 escudos por cada lar.  
 The tax keeps on-the 278 escudos for each home.  
*The tax keeps on 278 escudos for each home.*
- b. A taxa mantém-se lá.  
 The tax keeps there.  
*The tax keeps there.*
- c. \*A taxa mantém-se lá por cada lar.  
 The tax keeps there for each home.  
*The tax keeps there for each home.*

A simple substitution test confirms that *nos 278 escudos por cada lar* forms a single constituent. See (35b and 35c).

This structure requires the elements of both sets to be numerically expressed. In other words, it must be clear if the relation between sets is between: element-element; group of elements-element; element-group of elements; group of elements-group of elements. Therefore, the names are typically introduced by numerals (36), names without determiners (37) and names expressing the semantic notion of quantity (38).

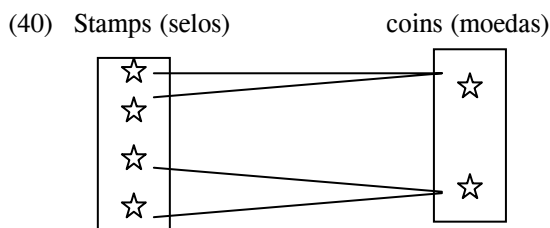
- (36) Por cada 40 novos seres humanos, nascem 700 milhões de formigas.  
 For each 40 new beings human, are born 700 million of ants.  
*For each 40 new human beings, 700 million ants are born.*

- (37) A nova lei permite que as mães destas crianças gozem de mais 30 dias de licença de parto por cada *gêmeo nascido*.  
The new law let that the mothers of-these children enjoy of more 30 days of license of childbirth for each twin born.  
*The new law let the mothers of these children to have 30 days of childbirth’s license more for each twin born.*
- (38) *as verbas pedidas por cada casa*  
the amounts requested for each house  
*the amounts requested for each house*

Notice that the lexical item *um* in this construction is a numeral, not a determiner. See (39), based on (34a).

- (39) a. O João trocou dois selos por cada moeda da coleção do Pedro.  
John exchanged two stamps for each coin of-the collection of-the-Peter.  
*John exchanged two stamps for each coin of Peter’s collection.*
- b. ?/\*O João trocou alguns selos por cada moeda da coleção do Pedro.  
John exchanged some stamps for each coin of-the collection of-the-Peter.  
*John exchanged some stamps for each coin of Peter’s collection.*

In this construction, there are scope relations between the elements of the A set and the elements of the B set. The number of elements of A varies directly as the number of elements of B. This characteristic approximates the *por cada* construction of the second type of the *em cada* construction. We can represent the scope relations of (39a) as follows.



Notice also that the expression that introduces the A set loses its non specific value if *cada* is removed from the expression introducing the B set.



- (41) O João trocou um certo selo por {uma moeda/pela moeda (mais valiosa)/muitas moedas/todas as moedas/moedas} da colecção do Pedro.

John exchanged one certain stamp for {a coin/for-the coin (most valuable)/many coins/all the coins/coins} of-the-collection of-the-Peter.

*John exchanged one certain stamp for {a coin/for the (most valuable) coin/many coins/all the coins/coins} of Peter's collection.*

In short, we saw another construction in which the quantifier *cada* seems to induce an intensional value, this time not in the expression that *cada* introduces, but in the antecedent expression. *A por cada B* seems to be a distributive construction, establishing a relation between every element of the A set (atomic or group individuals) and every element of the B set (atomic or group individuals) introduced by *cada*.

#### 4. CONCLUSIONS

Let's now summarize the main conclusions. Our goal was to identify some aspects that escape to the canonical characterization of the quantifier operator *cada*. We saw that, typically, *cada*: it is an universal quantifier; it has distributive readings; it presupposes a pre-constructed set and it can not operate over a virtual set; it can not occur in contexts that require indefinite phrases; it combines with simple names in singular or names in the plural preceded by cardinal; it can not occur with a non count name (massive or non massive). However, we saw that:

- i) in the *em cada* construction, when the first set (A) is a subset of the second set (B), *cada* does not operate over a pre-constructed set, but over a virtual set; the noun phrase introduced by *cada* has an intensional value;
- ii) in the *por cada* construction, the A set, the antecedent of the expression *por cada* (that introduces the B set) has an intensional value that it is lost if *cada* is removed<sup>2</sup>.

---

<sup>2</sup> I would like to thank Fátima Oliveira, Luís Cunha, Joaquim Barbosa, Idalina Ferreira, Purificação Silvano and Fátima Silva, of the DisSema project (I&D unit, 22), for useful comments and suggestions. Needless to say, all errors are mine.

## REFERENCES

- ALVES, A. T. (1993): “Introdução à Teoria dos Quantificadores Generalizados”, *Discursos. Estudos de Língua e Cultura Portuguesa*, nº4/Maio, 65-82.
- BEGHELLI, F. & STOWELL, T. (1997): “Distributivity and Negation: The Syntax of *Each* and *Every*”, en A. Szabolcsi (ed.), *Ways of Scope Taking*, Dordrecht: Kluwer Academia Publishers, 71-107.
- BOSQUE, I & DEMONTE, V. (dirs.) (1999): *Gramática Descriptiva de la Lengua Española*, Madrid: Espasa.
- CHIERCHIA, G. & MCCONNELL-GINET, S. (1992 [1990]): *Meaning and Grammar: an Introduction to Semantics*, Cambridge, Massachussets: The MIT Press.
- DUARTE, I. & OLIVEIRA, F. (2003 [1983]): “Referência Nominal”, en M. H. Mateus *et al.*, *Gramática da Língua Portuguesa*, Lisboa: Ed. Caminho, 205-242.
- LOPES, O. (1971): *Gramática Simbólica do Português*, Lisboa: Fundação Calouste Gulbenkian.
- MATEUS, M. H. *et al.* (2003 [1983]): *Gramática da Língua Portuguesa*, Lisboa: Ed. Caminho.
- MÓIA, T. (1992): *Aspectos da Semântica do Quantificador “Qualquer”*, Cadernos de Semântica 5, Lisboa: F.L.U.L.
- PERES, J. A. (1992): *Questões de Semântica Nominal*, Cadernos de Semântica 1, Lisboa: F.L.U.L.
- PERES, J. A. (1993): “Esboço de uma Semântica das Estruturas Nominais”, *Discursos. Estudos de Língua e Cultura Portuguesa*, nº4/Maio, 15-36.
- SÁNCHEZ LÓPEZ, C. (1999): “Los Cuantificadores: Clases de Cuantificadores y Estructuras Cuantificativas”, en I. Bosque & V. Demonte (dirs.), *Gramática Descriptiva de la Lengua Española*, Madrid: Espasa, 1025-1127.
- SZABOLCSI, A. (ed.) (1997): *Ways of Scope Taking*, Dordrecht: Kluwer Academia Publishers.
- Corpus *CETEMPúblico* 1.7 anotado 2.0. Available in <http://www.linguateca.pt>.