Inflection of *cada* in Brazilian Portuguese: evidence for silent nouns[*]

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Abstract: This research investigates nominal concord in structures of non-standard Brazilian Portuguese (BP) where *cada* is inflected with the plural morpheme *-s* while the phrases following it do not bear any plural marking. In order to account for this, I will consider that cardinals and silent nouns work as a boundary dividing the DP into two domains such that phrases to their left are marked with the plural morpheme while phrases to their right are unmarked, a pattern found across languages. Additionally, I will argue that DPs with *cadas* have a silent noun and that this silent noun conveys a set reading as well as valued plural features. In this case, *cada* is interpreted as either 'such' or 'every' rather than 'each' and is followed by a noun or a cardinal ≥ 2 (plus a noun). Accordingly, because *cadas* precedes SET, it is marked with *-s*. This plural silent noun is followed by a preposition, which allows its embedded NP to be unmarked.

1.   Introduction

Agreement is a universal that has intrigued studies in generative syntax, such as Chomsky (2001), Augusto et al. (2006), Costa and Figueiredo Silva (2006), Pesetsky and Torrego (2007), Miyagawa (2010, 2017), Danon (2011), Pesetsky (2013), among others that are concerned with explaining the principles that govern feature checking and the parameters languages activate for agreement.

In line with these studies, this research investigates nominal concord in structures like (1) of non-standard Brazilian Portuguese (BP) where *cada* is inflected with the plural morpheme '-s' while the noun that follows it may not bear any plural marking. As opposed to (1), *cada* is not inflected in standard BP (2).

(1)   a.   *cadas* vestido horrível[1]
               each.PL dress horrible
               'such horrible dresses'

        b.   necessidades de *cadas* cliente[2]
               needs   of each.PL customer
               'every customer's needs'

(2)   a.   cada vestido horrível

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[1] Available at: <marianehelenaa.blogspot.com.br/2014/02/os-10-piores-looks.html>. Access on: October 17th, 2017.

[2] Available at: <https://americansolutions.com.br/capa/whmcs-bridge-4/>. Access on: July 12th, 2018.

each.SG dress.SG horrible.SG

'such horrible dresses'

b.   necessidades de cada cliente

needs   of each.SG customer.SG

'each customer's needs'

Several other examples of inflection of *cada* were found at the internet and collected in spontaneous utterances, as indicated in (3):

(3)   a.   "Em três tábuas eu não piso, *cadas* três mais arriscada"[3]

In three board   I not step   each-PL three more dangerous

'In three wooden boards, I do not step in. Every three is more dangerous (than one another)'.

b.   "*cadas* coisa linda que não cabe no bolso"[4]

each-PL thing wonderful that not fit in-the pocket

'Such wonderful things that one cannot afford'

c.   "internamento hospitalar, de no mínimo 30 dias, para *cadas* pessoa"[5].

hospitalization   of in-the minimum 30 days for each-PL person

'hospitalization, of at least 30 days, for everyone'

d.   "Está *cadas* vez mais difícil"[6]

Is   each-PL time more difficult

'It is increasingly difficult'

e.   "depende da sensibilidade da tela de *cadas* celular"[7]

depends of-the sentivity   of-the screen of each-PL cell phone

'It depends on the screen sensitivity of every cell phone'.

g.   "pensei em tudo, em *cadas* detalhe"[8].

Thought-1stSG in everything, in each-PL detail

I thought about everything, every detail.

h.   "É *cadas* jogador bonito!" (Customer comment in a beauty salon about the World Cup, Diamantina, MG, June 23rd, 2018)

Is each-PL player handsome

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[3] Available at: <https://books.google.com.br/books?isbn=8520936776>. Access on: October 23rd, 2017.

[4]Available at: <https://m.casamentos.com.br/forum/bom-gosto-a-gente-tem-o-que-falta-e-dinheiro--t252440>. Access on: January 12th, 2018.

[5]Available   at: <http://www.camara.gov.br/proposicoesWeb/prop_mostrarintegra;jsessionid=67123FA38F48A2D7F9C0D1FDC26F4BEB.proposicoesWeb1?codteor=982973&filename=Avulso+-PL+80/1999>. Access on: January 12th, 2018.

[6] Available at: <http://www.cbcloud.com.br/p.php?Atendimento-e-Suporte-ao-Cliente=8>. Access on: January 29th, 2018.

[7] Available at: <https://www.jntelecom.com.br/como-desativar-o-talk-back-do-seu-android/>. Access on: January 29th, 2018.

[8] Available at: <http://happyending.com.br/tag/decoracao-2/>. Access on: February 2nd, 2018.

'*Such handsome players!*'
i.   "*Cadas* falta dura nesse jogo que o juiz não marcou" (Family conversation about the World Cup, Diamantina, MG, June 24th, 2018).
Each-PL foul hard in-this match that the referee not awarded
'*Such hard fouls in this match that the referee did not award!*'
j.   "Quando eu estudava, professor fazia *cadas* coisa..." (Diamantina, July 27th, 2017).
When I studied,   teacher   did   each.PL thing
'*At the time when I was a student, teachers used to do such things*'.

Therefore, this research aims to identify the underlying rule that allows the type of agreement exemplified in (1, 3) and the functional category that comes lexically interpretable and valued into syntax in BP.

In order to carry out this investigation, I will discuss current proposals. Among them, some argues that number features in BP are interpretable in D(eterminer) (Magalhães 2004; Costa & Figueiredo Silva 2006; Cyrino & Espinal 2015). Others argue that they are interpretable in Num(ber) (Augusto et al. 2006; Pereira 2017) or in silent nouns (Kayne 2005; Pereira 2017), in structures that present syntactic or semantic restrictions to the presence of cardinal numerals. In view of this, I will investigate which one accounts for the patter presented in (1,3).

In doing so, this project continues a broader research (Pereira, 2016a, 2016b and 2017) that has already concluded analyses of other structures of BP with apparent "inconsistencies" in nominal agreement. Among the results, it was found that there is no inconsistency, but a coherent and universal pattern that governs agreement, as we will see in the section 2 of this paper. Moreover, under the empirical point of view, this investigation aims to contribute with a formal description of structures with inflection of *cada*, which has not appeared in the literature so far.

Therefore, this paper is organized in the following sections: section 2 presents the theoretical background; section 3, an account on NumP and silent nouns as syntactic boundaries in BP plural marking; and section 4, a proposal for the analysis of structures with inflection of *cada*.

2.   Theoretical Background
This section is divided into three subsections that depict the theoretical basis, discuss current proposals on the issue, and give examples of languages where the cardinal numeral is a boundary for the distribution of number features in the DP as well languages where a silent noun also has this function.

2.1.   Theoretical Basis
Φ-feature is a term used to cover broadly the three main categories that involve agreement, that is: person, gender, and number, which are analyzed under the concepts of valuation and interpretability.

With respect to valuation, according to Pesetsky and Torrego (2007: 263), "Certain features on lexical items appear to come from the lexicon unvalued, and receive their value from a valued instance of the same feature, present on another lexical item". For instance, number in English is

a property of the noun, and comes valued with the noun from the lexicon. However, number is lexically unvalued in D and A, but "gets valued as a result of agreement with N" (Pesetsky & Torrego 2007: 263).

With respect to interpretability, the distinction between interpretable and uninterpretable is related to "whether or not a feature of a particular lexical item makes a semantic contribution to the interpretation of that item" (Pesetsky & Torrego 2007: 264). For instance, the number feature of A does not make any contribution to its meaning. Likewise, while number and person contribute to the interpretation on the DP, they do not contribute to the interpretation on V.

2.2.   Number Features in the DP-Internal Structure

Having made this brief summary on the concepts of valuation and interpretability, it is important to inquire how one can tell whether the noun is lexically valued for number and also how number agreement is triggered inside the DP.

As for the first question, an explanation, following Pesetsky and Torrego (2007), is related to *pluralia tantum* nouns, as 'scissors' in English. These nouns are always plural, which indicates that nouns come lexically valued for number in the derivation; whereas there is no *pluralia tantum* D or A, which means that they cannot be lexically valued for number.

Nevertheless, not every language has *pluraria tantum* nouns. For instance, according to Pesetsky and Torrego (2007: 3), "in Spanish, genuine *pluralia tantum* […] seem not to exist", and this entails a different understanding on the source of number features in this language. This source, as assumed in previous studies, is NumP, a category between D and N.

Henceforth, we still need to know in which category of the DP-internal structure number features are valued in BP. Magalhães (2004), Costa and Figueiredo Silva (2006), Cyrino and Espinal (2015), among other authors, argue that D is the functional category that comes valued with number features. Their main argument for this is based on the fact that, in non-standard BP, the plural morpheme '-s' tends to appear in the determiner only.

In contrast, Augusto et al. (2006) assume that this argument is not enough to indicate the locus of realization of number features, because, even in the absence of determiners or plural morphemes, BP bare nouns can be interpreted as plural. For this reason, based on Deprez (2005), Augusto et al. (2006: 261) conclude that number heads an independent projection NumP and is semantically interpreted in this position rather than in D or N.

In favor of this assumption, as we will see soon, NumP works, in several languages, as a syntactic boundary for the distribution of the plural morpheme in the DP-internal structure, such that phrases to the left of cardinals are marked with the plural morpheme while phrases to the right of it are unmarked (Danon 2011; Norris 2014).

Additionally, it has also been observed that null categories present this same function working as a syntactic boundary in the distribution of plural features inside the DP (Kayne 2005; Pesetsky 2013).

2.3.   NumP and Silent Nouns: The Distribution of Number Features Cross-Linguistically

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As observed by Danon (2011: 301), in many languages, the distribution of plural features is determined by the position of cardinals in the DP-structure. For instance, in Finnish (4), "a (plural) number feature is only available above the position of the numeral" (Danon 2011: 302). In addition, Norris (2014) presents data from Estonian (5) where "material to the left of the numeral is plural, and material to the right is singular" (Norris 2014: 143).

(4)   "Ne   kaksi pien-tä   auto-a   seiso-ivat   tiellä.
            those.PL two.SG small-PART.SG car-PART.SG stand-PAST.3PL road.ADESS
            'Those two small cars stood at the road' (Brattico 2010)" (Danon 2011: 301).

(5)   "nee-d   viis   ilusa-t   maja
            this-PL.NOM   5.NOM beautiful-PAR house.PAR
            'these five beautiful houses' (Erelt et al. 1993b:143)" (Norris 2014: 144).

Additionally, Kayne (2005: 241-242) observes that functional adjectives, like 'few' (6b), "modify a noun distinct from the visible plural 'books' […] The noun in question is a silent counterpart of the overt 'number' seen in:" (6c).

(6)   a.   "*a books"
       b.   "a few books"
       c.   "a small **number of** books"

Thus, in contrast to (6a), which is ungrammatical because 'a' is not compatible with plural nouns, (6b) is grammatical because 'few' modifies a silent singular NUMBER, followed by a preposition 'of', as seen in (6c). This hypothesis is extended, among others, to 'much', "taken to modify AMOUNT", as well as to 'clock/time', taken to modify HOUR.

In sum, similarly to cardinals, silent nouns work as a boundary in the distribution of number features in the DP. Moreover, number features on silent nouns may vary across languages. For instance, in Italian (7a) and French (7b), a plural definite article co-occurs with singular phrases, which indicates that, in these languages, the silent HOUR is plural.

 (7)   a.   "Sono le ore una.
            ('are the(pl.) hours one')" (Kayne 2005: 259).
            'It is one o'clock'.
       b.   "Vers les une heure.
            ('toward the(pl.) one hour' =
            'around one o'clock')" (Kayne 2005: 260).

Additional support for assuming silent nouns as syntactic boundaries in nominal concord is provided by the position of a null feminine morpheme in Russian (8) as well as a null number morpheme in Lebanese Arabic (9) that divide their DPs into two domains for nominal agreement (Pesetsky 2013).

(8)   "U   nas byl-a   očen' xoroš-**aja**   zubn-oj   vrač-ъ…
        by us COP-PST.F.SG very   good-**F**.NOM.SG dental-**M**.NOM.SG doctor-NOM.SG
        'We had a very good (female) dentist.'" (Pesetsky 2013: 38).

(9)   "[tleetiin walad   kesleen-Ø mnazzam-iin] Htajj-u
        thirty   child.SG   lazy-SG   organized-PL complained-PL
        'Thirty organized lazy children complained (e.g., about their grades).'" (Pesetsky 2013: 47).

3.   NumP and Silent Nouns in BP

Below, I will show that the hypotheses on NumP and silent nouns account for the DP-internal distribution of the plural morpheme in BP.

3.1.   NumP

Based on Danon (2011), Pereira (2017) demonstrates that NumP works, in BP, as a syntactic boundary such that constituents to the left of cardinals are marked with the plural morpheme, while constituents to their right are unmarked. This rule is observed in (10), examples of nominal agreement in non-standard PB.

(10)   a.   *os* (dois) outro carro branco
                the-PL (two) other.ϕ[9] car.ϕ white.ϕ
                the other (two) white cars

        b.   *os outros* (dois) carro branco
                the-PL other.PL (two) car.ϕ white.ϕ
                the other (two) white cars

        This rule is also observed in (11), a structure that is productive mainly in the dialect spoken in the state of Minas Gerais (Nunes 2007).

(11)   a.   *Ques* (dois) bichinho chato!
                [Which-PL (two) insect.DIM.ϕ] annoying
                'How annoying these little flies are!'

        b.   [*Ques* (duas) ferramenta] você usou?
                [Which-PL (two) tool.ϕ] you used
                'Which tools did you use?'

3.2.   Silent Nouns

Furthermore, based on Kayne (2005), Pereira (2017) observes that structures with semantic or syntactic (12b) restrictions in relation to the presence of cardinals have another category, a silent noun, with valued plural features.

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[9] The symbol 'ϕ' is used, in this paper, for unmarked plurals.

(12)   a.   Levou umas [$_{XP}$ HOUR $_{of}$] meia hora pra dor passar.

                 Took some-PL   half hour to-the pain pass

                 'It took around half an hour to get some relief from the pain.'

        b. $^{(??)}$Levou umas [$_{NumP}$duas] meia hora pra dor passar.

                 Took   a.PL   two   half.ϕ hour.ϕ to.the pain pass

                 $^{(??)}$*'It took around two halves an hour to get some relief from the pain.'*

This silent noun works as a syntactic boundary in the DP-internal distribution of the plural morpheme in BP. As such, the silent HOUR, in (12a), is followed by a preposition, as 'of' in (6c), which allows its embedded DP (*meia hora*) to be singular, while phrases to its left (*umas*) are plural.

4.   Inflection of *cada* and Silent Nouns

Similarly to (12a), (1a), repeated below, provides evidence for the hypothesis that there is a category, between D and N, and that this category bears valued plural features in BP. Something to be investigated is whether this category is NumP or a silent noun.

(1)   a.   *cadas* vestido horrível

                 each.PL dress.ϕ horrible.ϕ

                 'such horrible dresses'

As observed in (3c') below, the presence of a cardinal in DPs with *cada* changes the propositional content initially conveyed, when compared to (3c).

(3)   c.   "internamento hospitalar, de no mínimo 30 dias, para *cadas* pessoa"[10].

                 hospitalization,   of in-the minimum 30 days for each-PL person.ϕ

                 'hospitalization, of at least 30 days, for everyone'

        c'.   "internamento hospitalar, de no mínimo 30 dias, para *cadas três* pessoa"

                 hospitalization   of in-the minimum for each-PL three person.ϕ

                 'hospitalization, of at least 30 days, for every three people'

Considering this restriction in relation to the presence of cardinals and Kayne's (2005) hypothesis on silent nouns, I argue that the structure in (3c) projects a silent noun of the type SET (3c''), similar to "each (SET of) people", rather than NumP.

 (3)   c''.   *cadas* [SET of] pessoa

                 each.PL   person.ϕ

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[10]Available   at: <http://www.camara.gov.br/proposicoesWeb/prop_mostrarintegra;jsessionid=67123FA38F48A2D7F9C0D1FDC26F4BEB.proposicoesWeb1?codteor=982973&filename=Avulso+-PL+80/1999>. Access on: January 12th, 2018.

'everyone'

Accordingly, in (3c), because *cada* precedes SET, it gets valued with plural features via agreement and it is marked with *-s*. This plural silent noun is also followed by a preposition, which allows its embedded NP *pessoa* to be unmarked.

Additionally, *cada* may co-occur with cardinals, as in (3a) and (13).

(3)   a.   "Em três tábuas eu não piso, *cadas* [$_{XP}$ SET$_{PL\ of}$] *três* mais arriscada"[11].
             In three boards   I not step   each-PL   three more dangerous.φ
             *'In three wooden boards, I do not step in. **Every** three is more dangerous (than one another)'.*

(13)   "da forma que [...] *cada* [$_{XP}$ UNITY$_{SG\ of}$] *uma* pessoa pede"[12]
             of-the form that […]   each   one person asks
             *'(You have to fold it) the way **each** person asks'.*

I argue that, despite the occurrence of a cardinal (≥2) in (3a), there is a silent noun SET licensed by *cada* ('every'), with plural features, while the cardinal is an argument of the preposition following this silent noun. In contrast, in (13), *cada* ('each') is followed by the cardinal 'one' (=1) and has a unitary reading ('each one'). Therefore, the silent noun bears singular features, and *cada* has no plural marking.

In view of this, we may list at least three different types of *cada* in BP, as follows:

1) **Quantifier** with UNITY ('each') reading, usually followed by 'one' (where 'one' can be a cardinal or a pronoun):
1.1) *Cada* followed by 'one' (cardinal) plus a noun

(13)   "da forma que [...] cada uma pessoa pede".
             of-the way that […]   each one person.SG asks
             'the way each person asks you to do'

1.2) *Cada* followed by 'one' (pronoun)

(14)   "tem onze jogadores$_i$ num campo... e cada um$_i$ tem o seu devido lugar".
             has eleven players in-a field …   and each one has the his right place
             There are eleven players in a field ... and each one has his own position.

2) **Quantifier** with SET ('every') reading, usually followed by a noun or a cardinal ≥ 2:
2.1) *Cada* followed by a noun

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[11] Available at: <https://books.google.com.br/books?isbn=8520936776>. Access on: October 23rd, 2017.

[12] Available at: <http://www.iboruna.ibilce.unesp.br/interna.php?Link=corpo.php&corpo=36>. Access on: October 18th, 2017.

(1)   b.   "as necessidades de *cadas* cliente"
                the needs   of each-PL customer
                'every customer's needs'

2.2) *Cada* followed by a cardinal ≥2 (plus a noun)

(3)   a.   "Em três tábuas eu não piso, cadas [XP **SET** PL of] três mais arriscada".
                In three boards   I not step   each-PL   three more dangerous.ɸ
                *'In three wooden boards, I do not step in. **Every** three is more dangerous (than one another)'.*

3) **Qualifier**[13] 'such' (with SET reading)

(1)   a.   cadas vestido horrível
                each.PL dress.ɸ horrible.ɸ
                'such horrible dresses'

The types of *cada* described in the items (2) ('every') and (3) ('such') above project a silent noun SET roughly meaning "each SET of". In this case, the silent noun has plural features. As *cada* is situated to the left of this silent noun, it is marked with the plural morpheme. In contrast, the types of *cada* described in (1) ('each') project a silent noun UNITY roughly meaning "each UNITY of". In this case, the silent noun has singular features, and *cada* cannot be inflected with plural.

5.   Conclusion

In conclusion, number features are valued and interpretable in Num or in silent nouns, instead of D or N, in the DP-structure of BP. *Cada* projects a silent noun with plural features when it is a quantifier with set reading and a qualifier with an intensifier reading. These types allow inflection of *cada*. *Cada* also projects a silent noun with singular features when it is a quantifier with unity reading. In this case, it is not inflected with plural. Therefore, a silent noun bears number features and works as a boundary dividing the DP into two domains, such that phrases preceding a plural silent noun are marked with the plural morpheme while phrases following it are embedded to a preposition and can be unmarked, a pattern found across languages.

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[13] For the semantic values of *cada*, as a quantifier (distributivity operations) and as a qualifier (intensifier), I refer to Moreira (2001).

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