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Against the Nominal Mapping Parameter: Bare nouns in Brazilian Portuguese

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1. Introduction

Chierchia 1998 proposes that languages vary in terms of what they allow their NPs to denote. This variation is encoded in a semantic parameter which determines whether NPs denote names of kinds (and are therefore argumental) [+arg, -pred], predicates (and therefore require a determiner to be in an argument position) [-arg, +pred] or either [+arg, +pred]. In this paper we argue using data from bare nouns in Brazilian Portuguese (henceforth BrP) that this kind of parameterisation is both conceptually and empirically problematic. Brazilian Portuguese, like English, but unlike most of the other Romance languages, allows bare plurals and mass nouns in argument position. However, unlike English, BrP also allows singular count nouns to appear bare in argument positions. This is illustrated in (1). We will call these simply bare singulars.

(1) a. Criança é inteligente.
Child is intelligent
'Children are intelligent.'

b. Chegou criança.
Arrived-3sg child
'A child/ children arrived.'

The paper is organised in the following way: first, we introduce the basics of Chierchia's proposal and explain the typology of languages it predicts. We then introduce the basic facts about bare singulars in BrP and show that BrP cannot fit into Chierchia's typology. We will then present some evidence that bare singulars are DPs without Num, and argue that the locus of semantic variation in Chierchia's sense is more successfully dealt with in the syntax of functional projections.

2. The Nominal Mapping Parameter

2.1. Semantic preliminaries

There is a common assumption in both the semantics and the syntactic literature that only DPs can be arguments. The logic of the "only DPs" argument is as follows: given two categories, NP and DP, NPs always denote predicates of type <e,t> while DPs

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denote arguments of type <e> or (for quantificational elements) generalised quantifiers. In order for a predicative category such as NP to be an argument, it must be embedded within a DP. The "only DPs" argument accounts for the apparent presence of bare NP arguments by positing an empty determiner in these cases.

Chierchia questions this view by making the suggestion that NPs can denote names of kinds, and since names of kinds are of type <e> they can freely occur in argument positions. However, since not all languages allow bare NP arguments there must be some constraints on whether a language allows its NPs to denote names of kinds or not. Chierchia suggests that there is a semantic parameter which determines whether a language can allow its NPs to denote names of kinds or predicates or both.

Chierchia further makes some assumptions about the semantics of kinds, mass terms and plurals in order to make his system work as it does. Starting with plurals, he assumes that the domain of quantification includes singular and plural individuals and forms a complete join semi-lattice ordered by the $\leq$ (part of) relation. Plural nouns are therefore true of pluralities, and singular nouns true of individuals. Pluralisation is then a function that applies to sets of atoms and yields sets of pluralities as in (2).

(2) $PL(F) = \lambda x[\neg F(x) \& \forall y[y \leq x \& At(y) \rightarrow F(y)]]$

Rather than treating the mass domain as homomorphic to the count domain but without atoms (Link 1983 and others), Chierchia assumes that mass nouns are really lexicalized plurals, and as such, a mass noun is true of both singular units and pluralities of the noun. Two salient properties of mass nouns follow from this assumption: mass nouns will not pluralise since they are already plural (and the definition in (2) will yield the empty set), and mass nouns cannot be counted without some kind of classifier element that maps mass nouns into sets of atoms.

From this view of plurals and mass nouns, comes a view of kinds as mass terms. The argument goes as follows: since there is a correspondence between properties and kinds, thus we can define two functions, $^{\cup}$ (up) and $^{\cap}$ (down) which map properties (type <s, <e,t>>) to kinds (type <e>) and kinds to properties, respectively. These are defined in (3) and (4). Chierchia suggests that a kind in a given world is the totality of its instances. So the kind 'dog' can be identified as the totality of all instances, which can then be modelled as the largest member of the set of dogs.

(3) Let d be a kind. Then for any world/situation s
$^{\cup}d = \lambda x\,[x \leq d_s]$ if d_s is defined
$= \lambda x$ [FALSE] otherwise
where d_s is the plural individual that comprises all atomic members of the kind

(4) For any property P and world/situation s
$^{\cap}P = \lambda s\, \iota P_s$ if $\lambda s\, \iota P_s$ is in K; else undefined
where P_s is the extension of P in s

It follows from (3) that the property corresponding to a kind does not distinguish between singular and plural instances, in which case such a property ends up as being mass according to the way mass nouns are defined above. It follows from (4) that $^{\cap}$ applied to a singular will not generally yield a kind, thus $^{\cap}$ will only be defined for mass nouns and plurals.

Chierchia's system predicts a broad typology of language types with the following basic properties, as shown in (5).

(5) The Nominal Mapping Parameter

a. [+arg, -pred] (e.g. Chinese)
- generalised bare arguments
- all nouns are mass nouns
- no plural morphology
- generalised classifier system

b. [-arg,+pred] (e.g. French)
- no bare nominals in argument position
- count/mass distinction
- morphological plural

c. [+arg,+pred] (e.g. English)
- bare mass nouns and plurals in argument position
- no bare singular count nouns
- plural morphology

[-arg,-pred] (non-existent)

These properties follow in the following ways. In [+arg, -pred] languages, NPs denote kinds and therefore can freely appear in argument position. However, since they cannot be predicates, in order to be quantified, they need to be shifted using the $^{\cup}$ operator. But since the $^{\cup}$ operator assigns a mass denotation to the resultant property, all nouns in this kind of language will end up being mass nouns. This derives the fact that such languages should not have a singular/plural distinction (since plural is undefined for mass nouns) and it should further require a classifier in order to count the mass nouns derived from kinds. These are the properties given in (5a), and correspond roughly to the properties found in Chierchia.

In a [-arg, +pred] language, NPs always denote predicates, and therefore can never be bare in argument position. The language will also have the count mass distinction and therefore will have PL marking for count nouns. These are the properties in (5b) and correspond roughly with French.

In a [+arg, +pred] language, NPs can denote either kinds or properties. If a lexical noun is +arg then it will need to be shifted to a predicate and become mass. But if a noun is +pred then it will need to be shifted to a kind (using $^{\cap}$) to appear in an argument position. Since mass nouns can be directly mapped into argument positions, then mass nouns will be +arg while count nouns will be +pred. Since the count/mass distinction will be active, PL will also be present. Since $^{\cap}$ is not defined for singulars, then only plurals (derived using $^{\cap}$) and mass nouns (mapped directly) will be allowed to appear as bare arguments.

2.2. Syntactic preliminaries

Because all languages do not clearly fall neatly into the types described in (5), Chierchia supplements his system with two relatively unexceptional assumptions. The first is essentially semantic, but interacts with syntactic and lexical properties of a language in an important way. Since type shifting is generally available in natural language, a question arises as to why [+arg, +pred] use $^{\cup}$ and $^{\cap}$ as their "automatic" type shifters. Chierchia's answer to this question is to claim that covert type shifting is a last resort, and is blocked by the overt forms of an equivalent type shifter. He casts this blocking principle as in (6).

(6) Blocking Principle
For any type shifting operation τ and any X
*τ(X) if there is a determiner D such that for any X in its domain, D(X) = τ(X)

This makes the prediction that in English, only $\cup$ and $\cap$ are available as automatic type shifters, since the other relevant type shifters (ι and $\exists$) are blocked by the definite and indefinite articles, respectively. Chierchia argues that this allows a language like Russian to be accounted for very simply: Russian is like English, but without articles, and the bare NP arguments can have definite, indefinite or kind interpretations.

A further assumption that Chierchia requires is the possibility of a null determiner, which he calls ∂. This is required for languages like Spanish and Italian, which are essentially [-arg, +pred] languages, but allow bare plurals and mass nouns in syntactically restricted contexts. According to Chierchia, languages with generalised type shifting such as Russian and English or [+arg] languages such as Chinese should not have syntactic restrictions on the distribution of bare arguments, while those with null determiners should have such restrictions.

The presence of a null determiner in a language also interacts with (6). Since its function is to shift a +pred NP into an argument, then it must be one of the available type shifters in the language. But the class of available shifters will be predicted by (a slight extension of) the blocking principle: if an overt type shifter exists, then the language must prefer it to the non-overt one. Since Italian has a definite article, then ι will be blocked by it. The shifter $\cap$ will be available, and possibly $\exists$.This predicts that the interpretive properties of bare arguments in Italian and English should be the same, which Chierchia claims is the case.

3. Bare Plurals and Bare Singulars in Brazilian Portuguese

Brazilian Portuguese allows both bare plurals and bare singular count nouns in argument positions. Just as in the English case, both existential and generic readings are allowed.

3.1. Existential readings are available

Existential readings of both bare plurals and bare singulars are allowed as shown in (7). In object positions, both bare plurals and bare singulars have the same distribution. In subject position, the bare singular is slightly more restricted: it is not very acceptable in the subject position of strongly episodic sentences. We will return to this fact below.

(7) a. Chegaram crianças. — Bare plural
Arrived-3pl children
'Children arrived.'

b. Chegou criança. — Bare singular
Arrived-3sg child
'A child/ children arrived.'

c. Ele comprou computadores. Bare plural
He bought computers.

d. Ele comprou computador Bare singular
He bought computer
'He bought a computer/ computers.'

3.2. Generic readings are available

Generic readings of both bare plurals and bare singulars are also allowed as shown in (8). Here there is no difference in syntactic distribution: in both subject and object position both types are fully acceptable.

(8) a. Crianças lêem revistinhas. Bare plural
Children read comic books.

b. Criança lê revistinha Bare singular
Child read-3sg comic book.
'Children read comic books.'

(9) a. Beija-flores são aves. Bare plural
Hummingbirds are birds

b. Beija-flor é ave. Bare singular
Hummingbird is bird
'The hummingbird is a bird.'

BrP also has definite singular and plural generics as shown in (10). We will not discuss these facts further here, but include them for completeness.

(10) a. O beija-flor é uma ave Definite generics
The hummingbird is a bird.

b. Os ursos vivem no Polo Norte.
The bears live in the North Pole.

4. Similarities between Bare Singulars and Bare Plurals

Carlson 1977 showed that bare plurals in English do not behave simply as if they were the plural form of a singular indefinite noun phrase. Evidence for this comes from the kinds of scope interactions that the bare plural can enter into. Bare plurals always take narrowest scope with respect to other quantifiers in the sentence, while singular indefinites can take scope over other quantifiers. Bare singulars in this respect behave like bare plurals and not like singular indefinites.

4.1. Opacity and scope

While a singular indefinite can take scope over an intensional verb like *want*, a bare plural cannot. Thus (11) has two interpretations given in (11a) and (11b). Both the bare plural (12a) and the bare singular (12b) can only take narrow scope with respect to the intensional verb.

(11) Pedro quer encontrar um policial.
Pedro wants to meet a policeman.
a. (∃x) policeman(x) & Pedro wants (Pedro meet x) (transparent reading)
b. Pedro want ((∃x) policeman(x) & (Pedro meet x)) (opaque reading)

(12) a. Pedro quer encontrar policiais. (opaque reading only)
Pedro wants to meet policemen.

b. Pedro quer encontrar policial. (opaque reading only)
Pedro wants to meet policeman.

A similar scope fact is found with respect to negation and universal quantifiers. While an indefinite plural can take scope over negation, (13) (paraphrased as in (13a) and (14b)) or a quantifier like *todo mundo* 'everyone' (15a), the bare plural and the bare singular can only take narrow scope with respect to negation or a universal quantifier as shown in (14) and (15b) respectively.

(13) João não viu uma mancha no chão.
João didn't see a spot on the floor.

a. João saw no spots on the floor. (narrow scope reading)
b. There is a spot João didn't see. (wide scope reading)

(14) a. João não viu manchas no chão. (narrow scope reading only)
João didn't see spots on the floor.

b. João não viu mancha no chão (narrow scope reading only)
João didn't see spot on the floor.

(15) a. Todo mundo leu um livro sobre girafas. (narrow and wide scope reading)
Everyone read a book on giraffes.

b. Todo mundo leu livros/livro sobre girafas (narrow scope reading only)
Everyone read books/book on giraffes

Specific readings of singular indefinites are also allowed in sentences like (16a); however in both the bare plural and the bare singular (16b/c) the specific reading is not available.

(16) a. Pedro viu um cachorro no jardim às 3, às 4 e às 5 da tarde.
Pedro saw a dog in the garden at 3, 4 and 5 in the afternoon.

b. Pedro viu cachorros no jardim às 3, às 4 e às 5 da tarde.
Pedro saw dogs in the garden at 3, 4 and 5 in the afternoon.

c. Pedro viu cachorro no jardim às 3, às 4 e às 5 da tarde.
Pedro saw dog in the garden at 3, 4 and 5 in the afternoon.

4.2 Generic vs. existential readings depend on the predicate

Another property of bare plurals is the fact that they are dependent on the predicate they are part of for their interpretation: they are not ambiguous between generic and existential readings *per se*; in generic contexts they receive a generic interpretation and in existential contexts they receive an existential interpretation. The same facts hold for bare singulars as the data in (17) - (22) shows.

(17) a. Cachorros gostam de gente. Generic
Dogs like people.

b. Cachorro gosta de gente.
Dog likes people.
'Dogs like people.'

(18) a. O João detesta crianças.
The João hates children.

b. O João detesta criança.
The João hates child
'The João hates children.'

(19) a. Elefantes são facilmente domesticáveis.
Elephants are quite easily trained.

b. Elefante é facilmente domesticáveis.
elephant is quite easily trainable
'Elephants are quite easily trained.'

(20) a. Eu notei crianças no ônibus. Existential
I noticed children in the bus.

b. Eu notei criança no ônibus.
I noticed child in the bus.

(21) a. Eu acho que vi livros espalhados pelo chão.
I think that (I) saw books spread around on the floor.

b. Eu acho que vi livro espalhado pelo chão.
I think (I) saw book spread on the floor.

(22) a. Tem crianças na sala.
There are children in the room.

b. Tem criança na sala.
There is child in the room.

4 3 Bare singulars are not canonical types

Another property of bare plurals in English is their unrestrictedness with respect to the kind they can denote. This makes them quite different from definite singular generics in English which are restricted to "canonical" types, i.e. well-established kinds such as animal species or common artifacts. BrP definite generics, which we mentioned briefly above also have this property, but bare singulars do not: examples with novel types such as (23) are easy to construct.

(23) a. No aeroporto em Londres, os policiais só revistaram naquele dia mulher com mochila velha.
At the airport in London, the policemen only inspected that day woman with old backpack
'At the airport in London, the policemen only inspected women with old backpacks that day.'

b. Caderno sem capa colorida estava em liquidação ontem.
Notebook without coloured cover was on sale yesterday.

5. Differences between Bare Singulars and Bare Plurals

Based on the data above, it looks like bare singulars are identical to bare plurals in BrP. Is it possible that bare singulars are really bare plurals without the plural marker? There are a number of reasons to think that this is not the case. First, bare singulars control singular agreement on the verb. Most importantly, there are subtle differences in the distribution of the two forms. We will discuss two cases here.

5.1. Restrictions in episodic sentences

Although bare singulars can appear in both subject and object position with generic readings, in the subject position of strongly episodic sentences (which have existential interpretations) bare singulars are somewhat degraded, while bare plurals are perfect. However, in certain contexts bare singulars are acceptable. In particular, when there is a situation being described with a number of different situations given in a list, the bare singular becomes acceptable. Thus, the examples in (24) do not require any particular context in contrast with those in (25).

(24) a. Mulheres estavam discutindo política.
Women were discussing politics.

b. Greves foram consideradas ilegais pelo governo.
Strikes were considered illegal by the government

c. Homens chegaram tarde.
Men arrived late.

(25) a. Mulher esteve discutindo política.
woman was discussing politics
'Woman was discussing politics, man was discussing soccer, etc.'

b. Greve foi considerada ilegal pelo governo.
strike was considered illegal by the government
'Strike was considered illegal by the government, drug dealing was considered legal, etc.'

c. Homem chegou tarde.
man arrived
'Man arrived, woman left...'

Other elements that can allow the bare singular in subject position of episodic sentences are negation, and adverbs such as *sempre* 'always'. In this latter case, the sentence has the interpretation of iteration over situations.

(26) a. Mulher não esteve discutindo política.
Woman was discussing the fight
'Woman was not discussing politics.'

b. Greve sempre foi considerada ilegal pelo governo.
Strike was always considered illegal by the government.

(27) a. Homem não chegou tarde.
Man didn't arrive late
'Men didn't arrive late, women did.'

b. Homem sempre chegou tarde.
Man always arrived late

It is important to note that the restriction on existential readings only holds in subject position. The bare singulars in (25) become acceptable if the subject is the logical subject of an existential construction (28a/b) or an unaccusative (28c).

(28) a. Tinha mulher discutindo a briga ontem.
has woman discussing the fight yesterday
'There was a woman/were women discussing the fight yesterday.'

b. Tinha greve sendo considerada ilegal pelo governo.
have strike considered illegal by the government
'There were strikes considered illegal by the government.'

c. Chegou homem.
arrived man
'There arrived a man.'

5.2. Discourse anaphora

One other difference between bare singulars and bare plurals comes from discourse anaphora. As Carlson showed, generic readings of bare plurals can antecede pronouns with existential readings and vice versa. These facts also hold true for bare plurals and bare singulars in BrP. However, in generic contexts, a singular pronoun cannot refer to a bare singular, as shown by the unacceptability of (29). Instead the plural pronoun must be used, as in (30).

(29) a. Maria detesta coelho porque *ø/*ele roubou suas cenouras.
Maria hates rabbit because *ø /it stole her carrots.

b. Coelho sempre rouba cenouras da Maria, por isso agora *ø/?ele faz parte da sua lista de inimigos.
Rabbit always steal carrots from Maria; that is why now *ø/?it is part of her enemies list.

(30) a. Maria detesta coelho porque *ø/eles roubaram suas cenouras. Agora ela detesta eles de coração.
Maria hates rabbit because *ø/they ate her carrots. Now she hates them with a passion.

b. Coelho sempre rouba cenouras da Maria, por isso agora ela detesta eles de coração.
Rabbit always steals carrots from Mary, for this reason now she hates them with a passion.

This restriction only holds in generic contexts. In existential contexts, a bare singular can antecede either a singular or a plural pronoun, as in (31).

(31) a. Tem criança na sala. E ela está/ elas estão ouvindo.
There is child in the room. And she is/they are listening.

b. Eu vi criança na sala. E ela estava / elas estavam ouvindo.
I saw child in the room. And she was/ they were listening.

5.3. Are bare singulars mass nouns?

Since bare singulars are different from bare plurals, is it possible that they are interpreted as mass nouns? One well-known property of mass nouns is that they are incompatible with predicates which require atomisation. For example, the predicate *weigh two grams* requires individuation, and is thus unacceptable with a mass term like *gold* as in (32a). This contrasts with a predicate like *be expensive* which does not require individuation.

(32) a. *Ouro pesa duas gramas.
*Gold weighs 2 grams.

b. Ouro é caro.
Gold is expensive.

If bare singulars in BrP were treated as mass nouns, we might expect this same restriction to hold, but as the acceptability of (33) shows, this is not the case.

(33) Criança pesa 20 quilos nesta idade.
Child weighs 20 kilos at-this age
'Children weigh 20 kilos at this age.'

In addition, in contexts such as (34) (and in fact most of the examples we have already seen) the "universal grinder" does not apply.

(34) Tinha livro espalhado pelo chão.
There was book all over the floor
'There were books all over the floor.'

Another piece of evidence for individuation in bare singulars comes from reflexives and reciprocals, both of which are acceptable with bare singulars as shown in (35).

(35) a. Criança briga uma com a outra.
Child fights one with the other.
'Children fight with each other.'

b. Criança sabe se lavar sozinha.
Child know how to wash SELF alone
'Children know how to wash themselves alone.'

Based on these data, it is unlikely that bare singulars are mass nouns. The possibility of individuation also brings out a difference between bare singulars and singular definites in generic contexts. As mentioned above, bare singulars are not restricted to canonical kinds, while definite generics are. There is a further difference between the two types as well: the definite singular does not allow individuation, as the unacceptability of (36) in contrast to the examples above shows.

(36) a. *A iguana brinca uma com a outra.
The iguana plays one with the other.

b. *O homem se beija na França.[1]
The man kisses each other in France.

In addition, predicates that select for kinds such as *invent* are unacceptable with the bare singular, and require the definite singular, as shown in (37).

(37) a. Ninguém sabe quem inventou a roda.
Nobody knows who invented the wheel.

b. *Ninguém sabe quem inventou roda.
Nobody knows who invented wheel.

6. Brazilian Portuguese doesn't fit the NMP Typology

The facts described in the previous sections all lead to the conclusion that bare singulars and bare plurals behave similarly, and pattern exactly like bare plurals in English with respect to scope related facts. If we adopt a Carlsonian view of bare plurals, then we can safely assume that bare singulars denote names of kinds just as bare plurals do. We can now ask whether Chierchia's proposal predicts a system of Brazilian Portuguese sort. The answer, simply put, is that it cannot. We will consider the three options in turn.

If BrP were a [+arg, -pred] language, it should behave much like Chinese, in not having a morphological singular/plural distinction, having a generalised classifier system and not having a count/mass distinction. None of these predicted correlations hold, however. BrP clearly has a singular/plural distinction, and as we have seen above, they do not behave like mass nouns. These findings are summarised in (38).

(38) BrP is not [+arg, -pred]
- singular/plural distinction
- count/mass distinction
- bare singulars have some restrictions
- no generalised classifier system

Because BrP has both a morphological plural and a count/mass distinction, it cannot be a [+arg, -pred] language. However, under Chierchia's proposal, any language with a singular/plural distinction and a count/mass distinction, will allow only plurals and mass nouns to denote kinds. If the language is [+arg, -pred], only mass nouns will be [+arg]; count nouns will be [+pred] and therefore require type shifting using $\cap$. If the

[1] This sentence is acceptable with a reflexive interpretation, i.e. 'The man kisses himself in France.'

language is [-arg, +pred] even mass nouns will require shifting. But ^ is only defined for plurals and masses, thus bare singulars should be impossible.

Even if we could solve this problem, there are other reasons for doubting that BrP fits into the typology as Chierchia characterises it. If BrP were a [-arg, +pred] language (like the other Romance languages in Chierchia's typology) then it must be of the type that has a null determiner. Chierchia partially follows Longobardi 1994 in assuming that the distribution of syntactically present null determiners will be subject to syntactic restrictions on distribution. If BrP were truly [-arg, +pred] it would therefore require a null determiner for both bare plurals and bare singulars. However, as we have seen above, there are no syntactic restrictions on the distribution of bare plurals whatsoever, and almost no restrictions on bare singulars. One might reject the syntactic restrictions on null determiners, but even if this move is taken, Chierchia's blocking principle should block the presence of the null determiner given the fact that BrP has a full range of overt determiners.

(39) BrP is not [-arg, +pred] + null ∂
- bare plurals and mass nouns are unrestricted
- only bare plurals and mass nouns should be allowed in argument position
- the determiner system should block null ∂

A final possibility is that BrP is a [+arg, +pred] language which also has a null determiner. This option is not discussed by Chierchia, but is clearly possible in his system. Given the nature of the blocking system, bare singulars are always predicted to be blocked in such languages, since the bare plural is available, and an overt shifter is to be preferred.

(40) BrP is not [+arg, +pred] (+null ∂)
- only bare plurals and mass nouns should be allowed in argument position
- the determiner system should block bare singulars with or without null ∂

It is clear that Chierchia's system, as presently conceived, fails to allow bare singulars to denote kinds. In some sense, this is a fundamental aspect of Chierchia's predictive machinery. Chierchia's system is built on a particular view of the plural/singular and mass/count distinction (see Chierchia 1998.) The difference between languages like Chinese on the one hand, and most European languages on the other hand, is supposed to follow from the semantic parameter. Although it is clearly possible to build a semantics in which singular count nouns *can* denote kinds, we should stress that this is not the semantics that Chierchia has devised. It is also the case that much of work of accounting for the differences among languages is being done not by the semantic parameter, but by the properties of null determiners in languages which have them. Once we allow null determiners, then it is not obvious why languages like Chinese might also have null determiners as argued for by Cheng and Sybesma (forthcoming). Once this possibility is made viable, the explanatory work of the semantic parameter itself is negligible. In the rest of the paper, we will propose that bare singulars in BrP are best analysed as DPs with empty determiners, but lacking number.

7. The Internal Structure of Bare Singulars

In the previous sections we have shown that bare singulars are not identical to bare plurals, but do not behave like mass nouns. In this section we will argue that bare singulars are unspecified for semantic number, but that they are not simply NPs.

7.1. Evidence for lack of number in bare singulars

There are a number of ways in which bare singulars seem to behave as if they had no specification for number. The evidence from discourse anaphora discussed above shows that a bare singular cannot be the antecedent to a singular pronoun; instead a plural is required. This evidence is suggestive of lack of number, although it is possible that the discourse anaphora of this sort is in fact E-type anaphora (Evans 1980), in which case a plural would be expected. More compelling data comes from aspectual interpretations with bare singulars.

It is well known that properties of the direct object affect the VP aspect (Krifka 1989, Verkuyl 1993). Quantized objects, for example *a letter* or *the letter* trigger terminative readings on verbs like *write*, while non-quantized objects (bare plurals and mass nouns) trigger durative readings. If bare singulars were semantically singular, they should count as quantized and should force a terminative reading. However, as the data in (41) shows, durative readings are forced with bare singulars (41a), and terminative readings are disallowed (41c). Here again, the bare singular patterns with the bare plural and not the singular indefinite (41d).

(41) a. Eu escrevi carta por duas horas.
I wrote letter for two hours
'I wrote letters for two hours.'
b. Eu escrevi cartas por duas horas.
I wrote letters for two hours.
c. #Eu escrevi carta/cartas em duas horas.
I wrote letter/letters in two hours.
d. Eu escrevi uma carta em duas horas.
I wrote a letter in two hours.

Another way in which the bare singular patterns with the bare plural is in the licensing of binominal *each*. Descriptively, binominal *each* requires a cardinal indefinite to be licensed (Safir and Stowell 1988). The bare singular (42c) behaves like a bare plural (42b) in this respect and not like a cardinal indefinite.

(42) a. Os países da UE mandaram um delegado cada.
The EU countries sent a delegate each.
b. Os países da UE mandaram delegados *cada.
The EU countries sent delegates each.
c. Os países da UE mandaram delegado *cada.
The EU countries send delegate each.

The data above show that the bare singular, despite being syntactically singular, patterns semantically like a bare plural with respect to quantity. Bare plurals and bare singulars diverge, however when used with *different*. A bare plural can be modified by *different* as in (43a), as can a singular indefinite, but a bare singular cannot. Although we do not have an account for this distinction, it is consistent with bare singulars being unspecified for semantic number.

(43) a. Eles escreveram livros diferentes.
'They wrote different books.'
b. Eles escreveram um livro diferente.
'They wrote a different book.'
c. ??Eles escreveram livro diferente.
They wrote different book.'

7.2. Are bare singulars just NPs?

If bare singulars are not semantically plural or singular, but are not mass, then it is possible that they are just NPs instead of DPs. We believe this not to be the case. On the assumption that NPs denote predicates, then conjoining two predicates should yield another predicate. This is clearly the case when we conjoin NPs under a single determiner as in (44a). In BrP, this example can only mean "The person who is both a friend and a relative", (roughly ιx.[friend(x) ∧ relative(x)].) This contrasts with (44b) which can allow either this interpretation (modulo the plural) or ιx.friend(x) ∧ ιy.relative(y).[2] If bare singulars are simple NPs, then conjoining them should allow the conjoined predicate interpretation only. However, in examples such as (45), such an interpretation is impossible, i.e. (45) cannot mean "I met people who were both friends and relatives"; instead, it means "I met people who were friends, and people who were relatives".

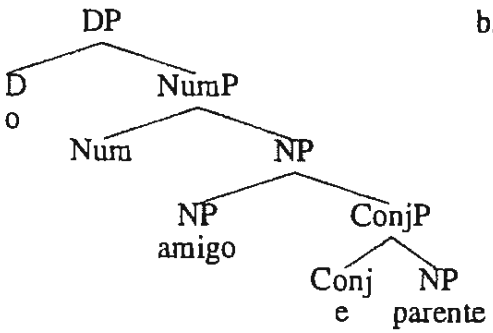
(44) a. Ele encontrou o amigo e parente no aeroporto.
He met the friend and relative in the airport.

b. Ele encontrou os amigos e parentes no aeroporto.
He met the friends and relatives at the airport.

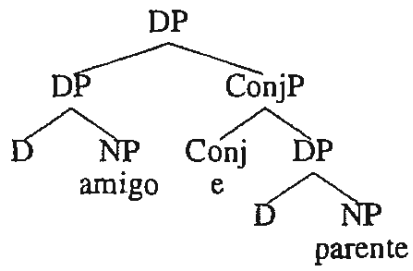
(45) Eu encontrei amigo e parente no aeroporto.
I met friend and relative at the airport
'I met friends and relatives at the airport.'

Assuming a split DP which contains NumP, which we take to be the locus of semantic number, we can make sense of this distinction if we assume that the conjoined predicate reading arises with NP conjunction, as shown in (46a), while the two individual reading arises with NumP or DP conjunction.[3] If this is correct, then conjunctions of bare nouns cannot be simple NP conjunction. We suggest therefore that bare singulars are DPs with no NumP projection. The coordinated bare singulars in (45) would thus have the structure in (46b).

(46) a.



b.



[2] The same fact does not seem to hold as strongly in English, i.e. English seems to allow even the singular form to be ambiguous. In Munn and Schmitt 1999 we argue that this follows from differences in the morpho-syntax of number in the two languages.

[3] We must make some further syntactic assumptions about the difference between singular and plural Num here to rule out the possibility of conjoining singular NumPs. See Munn and Schmitt 1999 for details.

8. Conclusion

In this paper we have argued that bare singulars in BrP provide an argument against treating restrictions on bare singulars in any deep semantic way. Instead, the locus of crosslinguistic variation lies in the interaction between the determiner system and the morpho-syntax of Number. (See also Dayal 1992.) If the results of the previous sections are correct, then bare singulars in BrP are DPs with empty determiners and no number. One question left open in this discussion is the difference between English and BrP in this respect. Why does BrP allow bare singulars and English not? English must not allow number to be omitted from the D/Num/N extended projection. Space does not permit us to answer this question, but we refer the reader to Munn and Schmitt 1999 for a solution.

The fact that bare singulars are unspecified for number conforms with Chierchia's intuition about what a kind is, which is consistent with their syntactic and semantic behaviour. The subtle differences between the behaviour of bare plurals and bare singulars may, in fact, hinge on this distinction. However, it is clear that neutralising the singular/plural distinction is not the same as neutralising the count/mass distinction, and kinds cannot be so closely connected to mass nouns as Chierchia suggests. A hybrid system which models kinds in this way, but preserves the mass/count distinction would be able to accommodate these data.

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