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Preliminary remarks on the nominal phrase in Cape Verdean: The semantics of bare nouns cross-linguistically

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In this paper, we offer some preliminary remarks on the syntax-semantics of the nominal system in Cape Verdean (CV) in comparison to English, with the aim of having a better understanding of Number Neutral Languages (Chierchia 2010; 2015). In CV, there are no bare plurals; the plural morpheme is attached to the definite or indefinite articles, which are not obligatory, and are ungrammatical with quantifiers. Thus, CV is not a Number Marking Language. However, it is not a Bare Language, since it distinguishes between mass nouns and count nouns, and numbers combine directly with count nouns. We argue that CV is number neutral. We claim that Baptista & Guéron's (2007) proposal of a null determiner cannot fully explain the data presented in this paper. We advance the hypothesis that Number Neutral Languages do not select for predicates or kinds, but they are rule-governed by grammar. In argument position, bare nouns denote the kind directly, as in Mandarin, and in the scope of a determiner, they denote the predicate. The only covert operator is the iota. We propose that CV noun phrase has no number projection. The determiner selects for singular or plural, which is then a presupposition of the determiner. This approach predicts that occurrences of bare plural phrases in CV are very restricted. We aim to provide a better understanding of the nominal system in CV, a language under-represented in the literature, as a way to contribute to analyses of nominal grammars cross-linguistically.

Keywords: syntax-semantics; Cape Verdean; bare nouns; formal semantics; cross-linguistic variation

1 Introduction

Since Chierchia's (1998a; 1998b) seminal papers on semantic parameters, a growing interest in understanding nominal systems across languages has emerged. This includes not only an increased interest in bare noun phrases across languages, but also in the relationship between mass and count nouns, plural morphology and the role of classifiers and/or measure phrases (see Chierchia 2010; 2015; Rothstein 2017; to appear). Chierchia (1998a; 1998b) classified languages according to the possibility of bare nouns in argument position. He divided languages into three different categories: (i) bare languages, such as Mandarin, which have no number morphology and no determiners; (ii) determiner languages, such as French, which require a determiner and do not accept bare nouns; (iii) mixed languages, such as English, which accept bare nouns and have determiners and number inflection.

  Chierchia (2010) redefines the mass/count distinction, relying on the notion of vagueness, and proposes a new grammar for the nominal system, based on plurality, classifiers and the properties of counting. These features allow us to sort languages into

three different categories: (i) Number Marking Languages, such as English and French; (ii) Bare Languages, such as Mandarin; and (iii) Number Neutral Languages. The author fully develops the nominal grammar of English and takes the first steps in analyzing the semantics of Bare Languages, such as Mandarin. In his 1998 typology, there was no mention to Number Neutral Languages. In 2010, Chierchia outlines a proposal for neutral languages, according to which neither plurality nor classifiers are obligatory, and he mentions Wilhem's (2008) description of Dëne Sųłinée as an example. Chierchia (2015) develops the proposal for Mandarin and then discusses Yudja as a Classifier Drop Language, but neutral languages are left out.

In this paper, our aim is to study Cape Verdean (CV) taking into account the typology in Chierchia (2010). We focus specifically on the nominal phrase to argue that CV is a Number Neutral Language.[1] The next section briefly reviews the theoretical debate, examining the semantics of noun phrases across different languages. The third section describes the nominal system in CV, a (European) Portuguese-based creole, and examines the differences between CV and European Portuguese (EP), the latter of which does not accept bare (singular) nouns and imposes severe restrictions on the distribution of bare plurals.[2] The fourth section proposes a grammar for CV, relying partially on Chierchia's formal apparatus (2010; 2015). We show that the bare noun in CV cannot be explained by a null determiner, as proposed by Baptista & Guéron (2007), and argue that the bare noun denotes the kind directly. We then suggest that Number Marking Languages mark plurality on the noun, i.e. there is number projection, whereas in Number Neutral Languages, determiners select for singular or plural. Our account predicts that the bare plural is very restricted in CV, and the default in English, a prediction that is borne out. The final section concludes with some remarks on the cross-linguistic implications of our approach.

2 Preliminaries on the semantics of noun phrases across languages

Carlson (1977) shows that bare plurals in English do not behave like indefinites in several aspects: bare plurals are scope inert; they do not interact with other operators; and, thirdly, they can be the subject of kind predicates, among other properties. The two sentences in (1) illustrate the different behavior of the bare plural compared to the indefinite phrase:

(1)   a.   John is looking for secretaries. (Narrow Scope reading)
        b.   John is looking for a secretary. (Narrow and Wide Scope readings)

Sentence (1b) allows for a wide scope reading, according to which there is a specific secretary whom John is looking for. This interpretation is blocked by the bare plural, in (1a), which only allows the narrow scope reading according to which John is looking for a secretary, whoever she might be. Carlson argues that this and other properties of the bare plural in English follow, if it denotes the kind. In the next section, we apply these tests to show that the bare noun in CV behaves similarly to the bare plural in English as opposed to the indefinite. This supports our claim that the bare noun in CV does not have a null article, and instead denotes kinds.

In a Neo-Carlsonian approach, Chierchia (1998a; 1998b) develops a formal implementation of the kind hypothesis. He incorporates the framework of plurality presented in Link (1983) and a system of type shifting in the nominal domain, first proposed by Partee (1987), into Carlson's proposal. In a nutshell, this would mean that

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[1] We leave to another occasion a discussion of the literature on Number Neutral Languages – Wilhelm (2008), Gillon (2012), Mathieu (2012), Lima (2014) – since our aim is to argue that CV is number neutral.
[2] See Oliveira & Müller (2004) for a comparison between European Portuguese and Brazilian Portuguese.

the sentence in (1a) is derived from a type shift that applies to the plural predicate and returns the individual kind. Languages can vary according to the possibility (or impossibility) of having bare nouns in argument position.

Bare nouns are nominal phrases that are not overtly headed by any determiner and are in argument position. Consequently, they seem to defy the famous DP hypothesis (Abney 1987, among others). In (1a), there is no overt determiner, so 'secretaries' should be an NP, a predicate of type $<e, t>$. However, the noun is in argument position, so it must be of type e. From a semantic point of view, DPs are individuals of type e, or quantifier phrases of type $<<e, t>, t>$, but they cannot be predicates, since the derivation would crash.[3]

There are two ways to avoid this crash. We can propose either a null (covert) determiner[4] or a type shift. A null determiner gives wrong results for English, since we expect the bare plural to behave exactly as its overt counterpart, the indefinite phrase, seen in (1b). According to this view, (1a) and (1b) should be synonymous, but they are not. Here is another example of contrast between these two structures:

(2)　　a.　　#There is a dog everywhere.
　　　　b.　　There are dogs everywhere.

The null determiner does not solve this problem since it cannot accommodate the differentiated scope interactions shown in (2). The other solution appeals to Type Shifting. Type Shifting applies freely in the nominal domain (Partee 1987). Thus, in (1a) and in (2b), the predicate is shifted to an individual. Because there is no determiner, it predicts that the sentences in (1) and (2) are not synonymous.

Chierchia (1998a; 1998b) proposes a Semantic Parameter, according to which English is a language that has bare nouns, both bare plural nouns and bare mass nouns, and also articles, as in (1b) and (2a). It is a [+arg, +pred] language, because the noun can be either an argument or a predicate. In Mandarin, noun phrases are always bare since there are no determiners in this language. Moreover, it has no number morphology, and classifiers are always obligatory with numbers. It is a language where nouns have to be in an argument position and is, therefore, a [+arg, –pred] language. Finally, French is a language that does not accept bare noun phrases and every noun phrase is headed by a determiner. It is, therefore, a [–arg, +pred] language.

Precisely because the semantic parameters give rise to very explicit predictions, it had a great impact on the semantics for natural languages, and many criticisms were raised. In both papers from 1998, Chierchia claimed that all nouns in Mandarin are mass nouns. This claim provoked several reactions. For example, Cheng & Sybesma (1998) clearly show that the difference between mass and count exists in Mandarin and that this distinction surfaces at the classifier level. Chierchia's model also incorrectly predicts that languages with plural morphology can only have bare plurals and, therefore, languages such as Brazilian Portuguese could not exist. Schmitt & Munn (1999) were the first to show that Brazilian Portuguese has a bare singular. Moreover, in 1998 (a and b), Chierchia considered plurality to be exclusive, that is, its denotation does not include the atoms. This leads to erroneous predictions, as pointed out by Sauerland (2003) and others. These and other reactions led to a new proposal.

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[3] One could imagine that (1a) is an example of incorporation, but there are several reasons to reject this hypothesis, as explicitly argued by Carlson (2006).

[4] In Baptista & Guéron's (2007) analysis, bare nouns are determiner phrases with null determiners. We discuss this proposal in the third section.

Chierchia (2010) reframes the mass/count distinction, relying on the idea of unstable versus stable atoms and claims that there are three grammars for the nominal domain: (i) Number Marking Languages, such as English, where number inflection on the noun is obligatory (English and French are now in the same class); (ii) Bare Languages, which do not have number morphology but have a rich system of classifiers in which numerals must be combined with a classifier, such as Mandarin; (iii) Number Neutral Languages, which have number inflection but not as an obligatory feature, and do not have a robust system of classifiers, such as Dëne Sųłinée (Wilhelm 2008).

This new proposal raised many issues. The most important of them was perhaps the definition of mass nouns being composed of unstable atoms. In this paper, our aim is to investigate the nominal system in CV as a contribution to this theoretical discussion. We will not discuss the new definition of mass nouns, as that is a topic best left for a different paper.

3 The nominal system in Cape Verdean

Cape Verde is a former colony of Portugal. Since 1975, it has been an independent, democratic country known as the Republic of Cape Verde. The country's population is estimated at half a million inhabitants living on nine of the ten islands that compose the archipelago. These data are from the last census, which was taken in 2010. It is estimated that there are around one million Cape Verdeans around the world. CV is the mother tongue of nearly all Cape Verdeans living on the islands as well as those who live abroad. It is a Portuguese-based creole, that is, European Portuguese (EP) is the lexifier language (Pereira 2006). EP is the only official language in Cape Verde. Hence, the two languages (CV and EP) coexist in a state of diglossia, with EP enjoying a higher status than CV. EP is used primarily in formal situations (schools, media, official ceremonies, etc.) whereas the use of CV is relegated to more informal situations (Duarte 1998) and everyday interactions. In 2005, the Cape Verdean government, officially recognized ALUPEC (Alfabeto Unificado para a Escrita do Cabo-Verdiano, 'A Unified Alphabet for the Writing of Cape Verdean Creole') as a viable writing system for CV (Boletim Oficial da República de Cabo Verde, Resolução N° 48/2005 de 14 de Novembro). This system is adopted in this paper.[5]

Although there is already literature on the CV nominal system (for instance, Baptista 2002; Alexandre & Soares 2004), our analysis relies on data from one of the authors, who speaks a variety of CV known as the Sotavento variety from the island of Santiago. The data were checked with ten Cape Verdean informants, all of whom were young adults (aged 18 to 21) and native speakers of CV, specifically the variety spoken on the island of Santiago. The speakers were asked to judge the grammaticality and the interpretation of the sentences. The informants were born and raised on Santiago Island, have never lived on any other island or country, and are all university students attending the Portuguese and Cape Verdean Studies course at the University of Cape Verde.[6]

CV is an SVO language, as shown in (3):

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[5] The ALUPEC was proposed in 1994 but had to undergo a long trial period before being made official. According to Baptista (2002: 3) "[t]he ultimate purpose of the ALUPEC is to provide a system of sign-sound correspondence that ensures the principle of linguistic economy". The system, however, does not establish rules for spelling, so that the same word can be spelt out in different ways. Therefore, Cape Verdeans frequently resort to the writing system of European Portuguese, especially in informal contexts, such as social network, chat boxes, and timeline postings. This results in an idiosyncratic writing, with individuals spelling words the way they speak them.

[6] Relying on Matthewson (2004) our first step in understanding the semantics of a language is to collect data with few speakers. This is the data for building controlled experiments to verify whether our hypotheses have statistical support.

(3)　　a.　Nhu　Manel tem　boi　　bunitu.
　　　　　　mister Manel has　　bull　beautiful
　　　　　　'Mister Manel has lovely bulls/a lovely bull.'

　　　　b.　Nhu　　Manel tem　ke-s　　baka bunitu.
　　　　　　mister Manel has　　the-PL cow　beautiful
　　　　　　'Mister Manel has those lovely cows.'

　　　　c.　N djuga.　　/ Nu　　djuga. / Es　　djuga. / Nhos　djuga.
　　　　　　1P.SG play　　1P.PL play　　3P.PL. play　　2P.PL play
　　　　　　'I played.　　/ We played.　 / They played. / You played.'

Plural marking is not obligatory to convey the involvement of more than one individual in
this situation. Although there is no plural marking in (3a), it is true if *Manel* has one bull
and also if he has multiple bulls. Independently of the variety, the pattern in (3b) is the
default form, that is, in CV, plurality is marked on the determiner and not on the noun.
There are a few exceptions with nouns that seem to be about human beings, as in *kes
mininus* ('the boys') and *kes mudjeris* ('the women'). However even with these few nouns,
the plural is not obligatory in the noun and *kes mininu* and *kes mudjer* are grammatical.
Moreover, there is no plural agreement on the noun, as in (3a) and (3b), or in the verbal
domain, as in (3c). The comparison between (3a) and (3b) also shows that CV does not
have gender agreement either.

   With respect to the nominal system, the focus of this paper, there is no consensus in the
literature (Alexandre & Soares 2004; Baptista 2007; 2013; Ferreira 2009; Miranda 2013),
either about whether articles are obligatory, or about the status of the forms *kel* and *kes* as
demonstratives or articles. Baptista (2002) argues that CV is a bare language, because the
default noun phrases are bare. Although it has the indefinite article, *un*, which, according
to the author is a quantifier, and a plural morpheme that attaches to it, *uns*, neither of
these forms, *un* and *uns*, are obligatory, and the default is the bare noun. Thus, the author
understands that CV is a bare language because "the use of null determiners is prevalent
in the [Cape Verdean] language." (Baptista 2002: 30). Baptista & Guéron (2007) and
Baptista (2007) develop the syntax of this proposal, although they do not deal with the
semantics of the noun phrases.

   Contra Baptista (2002), Alexandre & Soares (2005: 10) argue that the indefinite article
is obligatory in contexts such as the one exemplified in (4), since it is the only way to
convey that some men called:

(4)　　Un-s　ómi　　tilifona-m.
　　　　a-PL　man　call-me
　　　　'Some men called me.'

Baptista (2002) considers *kel* and *kes* to be demonstratives, whereas Alexandre & Soares
(2005) take them to be determiners. However, Baptista and Alexandre & Soares agree that
the definite article/demonstrative is optional. Our data show that the indefinite article
does not convey the same information as the bare noun. Thus, it is not optional. However,
there is evidence that *kel* and *kes* lack some of the uses that are characteristic of definite
articles: they cannot refer to the kind, as in (5a) below, nor can they be used in generic
sentences, as in (5b). Most importantly, *kel* and *kes* are not anaphoric, as in (7). Thus, they
are only used to express definiteness in the referential sense, i.e. in a situation where the
referent is contextually salient, as exemplified in (5c). These are indices that they are not
fully developed articles. Since nothing in our analysis hinges on assuming that *kel* and *kes*

are demonstratives or articles, we treat them as determiners. In episodic sentences, such as (5d), both the definite and the indefinite articles can be used, though the meaning is not the same as when the bare noun is used:

(5) a. *Kel/*un   tataruga sta   ta   kába.[7]
         the/ a   turtle   is   TMA   end
         'Turtles are on the verge of extinction.'

     b. *Kel/*un   tataruga ta   poi   óvu.
         the/ a   turtle   TMA   lay   egg
         'Turtles/the turtles/a turtle/the turtle lay eggs.'

     c. Kel/un-s   ómi   stába   detádu   na   txon.
         the/a-PL   man   was   lied   in   floor
         'The/a man was lying on the floor.'

     d. Kel/un-s   tataruga poi óvu   na   area.
         the/a-PL   turtle   lay egg   in   sand
         'The turtle/a turtle/turtles laid eggs in the sand.'

The sentences above show that the bare noun is the default, since it may appear in every context with a variety of interpretations. In (5a) it combines with a kind predicate; *sta ta kába* is a kind predicate because it is ungrammatical with proper names, which denote an "object level individual" (see Krifka et al. 1995): *Djon sta ta kába*. (5b), on the other hand, is a generic sentence. The literature on generics is extensive, but there is agreement that in such sentences, there is a generic operator, probably linked to the imperfective aspect. If this is so, then the generic operator binds the predicate in (5b). The interpretation is not of an egg laying kind, but rather a generalization about the individuals who have the property of laying eggs. In other words, in general, if something is a turtle in a situation of laying eggs (i.e. adult female turtles), then it lays eggs. Notice that neither the definite nor the indefinite articles are grammatical here. Sentences (5c) and (5d) are episodic and ambiguous, since they may be interpreted as definite or indefinite. The bare version of (5d) can be definite or indefinite, singular or plural.

   The bare plural in English combines with kind predicates, and they are used in generic sentences, but in episodic contexts, they can only be interpreted as indefinite. They lack definite readings. Both in English and in CV there is a close interaction between aspect and the interpretation of bare nouns, as already observed by Carlson (1977), but only the bare noun in CV accepts a definite interpretation.

   The following sentences also exemplify the interaction between aspect and the interpretation of the bare noun in CV:

(6) a. Cigáru   ta   máta.
         cigarrette   TMA   kill
         'Cigarettes kill.'

     b. N   odja rátu.
         1P.SG   see   mouse
         'I saw a/the mouse/mice.'

Sentence (6a) is generic because ta indicates genericity or habituality, a topic we will not discuss in this paper; the bare noun is the external argument of *máta* (kill). In (6b), the absence of imperfective morphology indicates an episodic interpretation. There was an

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[7] Speakers report that the use of *kel* gives rise to sub-kind reading. We will not deal with this issue here.

event of seeing, the agent of which is the speaker, denoted by *N* (1P.SG). The bare phrase is in the internal position and is interpreted as being about one mouse or multiple mice, and is ambiguous between a definite and an indefinite interpretation. Thus, (6b) could be about a particular, familiar mouse.

The discourse sequence below also shows that the bare noun in CV can be definite or indefinite. Notice that in this context, *kel* (the) is not grammatical:

(7)   Ómi stába detádu na txon. *Kel ómi labanta pé.[8]
       man was lied in floor the man raise foot
       'A man was lying on the floor. The man raised his foot.'

The first occurrence of *ómi* (man) is indefinite; it introduces an individual into the discourse. The second occurrence, on the other hand, is definite because it refers back to the individual that was introduced by the first occurrence. In the null determiner view proposed by Baptista & Guéron (2007), the logical forms of the sentences in (5c), (5d) and (7) involve two different null articles, equivalent to the indefinite *a* and the definite *the*, as the English translations show. In the next section, we will offer an alternative view.

Our main hypothesis is that the bare noun in argument position always denotes the kind. It relies on the analysis of the bare plural in Carlson (1977), according to which the bare plural denotes a kind, because it does not have the same interpretation as the indefinite phrase. If we compare the bare noun and the indefinite in the same contexts where Carlson interpreted the English bare plural, we see the same contrasts appear. The sentences in (8) mirror the English examples in (1):

(8)   a.   Djon sta djobi un sekretária.
           Djon is search a   secretary
           'Djon is looking for a secretary.' (wide and narrow scope readings)

      b.   Djon sta djobi sekretária.
           Djon is search secretary.
           'Djon is looking for secretaries'. (narrow scope reading)

Only the indefinite phrase *un sekretária* (a secretary) is felicitous in a context where there is a specific secretary *Djon* is looking for. This is the wide scope reading. The so-called narrow scope reading is about finding a secretary, even if there is no secretary. Thus, it is possible to look for unicorns in the narrow sense, because in this interpretation one is not committed to the existence of unicorns. The bare noun in (8b) seems to be restricted to the narrow reading. This difference cannot be attributed to aspect, since both are state sentences (imperfective).

The scope interactions of the bare noun and the indefinite phrases with adverbs that indicate a period of time, *tardi interu* (the whole afternoon), also show that they do not have the same behavior:

(9)   a.   # Djon máta un kuedju tardi   interu.
             Djon killed a rabbit afternoon whole
             'Djon killed a rabbit the whole afternoon.'

      b.   Djon máta kuedju tardi   interu.
           Djon killed rabbit afternoon whole
           'Djon killed rabbits the whole afternoon.'

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[8] Normally one would not repeat the noun *ómi* in such a sequence, but rather, use the subject clitic *e* (3P.SG)

(9a) is pragmatically marked because *un kuedju* (a rabbit) has wide scope, and the interpretation is that there is a certain rabbit which was killed the whole afternoon. This is a frequentative interpretation and we normally do not kill anything repeatedly. The bare noun does not move to a higher position, since it is scopeless. Therefore, it is not about a particular individual or individuals, but about the event of killing realizations of the kind rabbit. We come back to this interpretation in the next section. For now, our aim is to show that the bare noun does not behave like the indefinite phrase.

Another piece of evidence that the bare noun cannot be translated into an indefinite phrase is the contrast exemplified below:

(10) a. Trabadju ka teni un éru.
          work   not have a mistake
          'The paper doesn't have a mistake.' (ambiguous)

      b. Trabadju ka teni éru.
          work   not have mistake
          'The paper doesn't have mistakes.'

Given an adequate context, it is possible to interpret (10a) as being about a paper that has more than just one mistake. Intuitively, stress on the indefinite article *un* would restrict the interpretation to one where there are no mistakes at all. Though in principle (10a) is ambiguous, the latter interpretation is more naturally conveyed by *Trabadju ka teni ninhum éru* (The paper has no mistakes). What is important for our purposes is that (10a) is potentially ambiguous, whereas when the bare noun is present, the only available interpretation is that there are no mistakes. Informally speaking, in (10b) negation has scope over the noun phrase, which is inert.

Finally, the translations of the English sentences in (2) show the same contrast:

(11) a. Sta katxor pa tudu ládu na vila.
          is   dog   by every side in village
          'There are dogs everywhere in the village.'

      b. #Sta un katxor pa tudu ládu na vila.
          is   a   dog   by every side in village
          'There is a dog everywhere in the village.'

The noun phrase *katxor* (dog) is interpreted as referring to different realizations of the dog, as with the bare plural in English. In every place in the village, there is a realization of the kind. In (11b), *un katxor* (a dog) is interpreted as referring to a specific dog, and of course, normally a dog cannot be everywhere.

Throughout the examples above, the bare noun is contrasted with the indefinite phrase showing the pattern one expects to find if it denotes the kind. It is scope inert; it does not interact with other operators, such as negation and frequentatives. We can draw some conclusions from this and the data we presented before: first, one cannot explain the bare noun as a covert manifestation of the indefinite article. The contrasts show that the bare noun phrase, in this language, is not headed by a null indefinite article. If this were the case, then there would be no contrast between bare and indefinite forms. Thus, Alexandre & Soares (2005) seem to be right when they claim that the indefinite article is obligatory: only the indefinite article conveys that there is an individual who has that particular property, as shown by (10b) and (11b). Secondly, only the bare noun denotes the kind,

as shown by (5a). Thirdly, the bare noun can be used anaphorically, thus conveying definiteness. Fourth, in episodic contexts, it is ambiguous between a definite and an indefinite reading.

Let us now turn to plurality. Normally in CV, plurality is marked on the determiner, except for nouns that refer to people, which seem to be the only natural examples of the bare plural in this language:

(12) a.   Mininu-(s) di gosi é   só   kabésa rixu.
            boy-PL   of today is only head   hard
            'Children nowadays are naughty.'

      b.   Sta mininu-(s) pa   tudu ladu na   vila.
            is   boy-PL   by   every side in   village
            'There are children everywhere in the village.'

However, the plural mark in these examples is optional and the bare noun is the default expression. In our proposal, the predicates that admit plural marking are treated lexically. We come back to this issue in the next section.

The examples in (13) show the paradigmatic distribution of the plural morpheme in CV. Apart from those predicates that refer to the human domain, which may carry the plural inflection on the noun, the pattern is plural inflection is on the article:[9]

(13) a.   un cigáru   un-s cigáru   *un-s cigáru-s
            a   cigarette a-PL cigarette
            'a cigarette/ some cigarettes'

      b.   kel cigáru   ke-s   cigáru   *ke-s cigáru-s
            the cigarette the-PL cigarette
            'the cigarette / those cigarettes'

      c.   *Cigáru-s   ta   máta.
            cigarette-PL TMA kill

Thus, the bare plural is severely restricted in CV, since it is only allowed with a small set of predicates which are related to humans. The same pattern is found with numerals, and other quantifiers: by default, the noun does not carry the plural inflection, as in (14b) and (14c):

(14) a.   dos   tres   kuátu tomáti káru
            two   three   four   tomato car
            'two/three/four… tomatoes / cars'

      b.   *dos *três *kuátu   tomáti-s káru-s
            two   three   four   tomato-PL car-PL

      c.   Djon ta   karega txeu   livru.
            Djon TMA   carry   many/much book
            'Djon carries many books.'

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[9] As pointed out by one of the referees, there are some cases where plurality is attached to the noun as in *uns barkus* (some boats) and *uns livrus* (some books). However, these are not the preferred forms and they may be due to the influence of EP. Thus, the plural on the noun is optional.

Numerals do not combine with mass nouns directly:

(15) *un *dos *kuátu leti areia asúkra[10]
      one two   four   milk sand   sugar

(14a) and (15) show that CV is not a bare language, if we assume Chierchia's typology, even though the bare noun is the default phrase.

The literature on nouns reports that, in Mandarin, a classifier is obligatory with numerals, independently of the noun being count or mass (Chierchia 1998a; Cheng & Sybesma 1998; Rothstein 2017). Below are the classical examples:

(16) a. san *(ge) nanhai.
          3   CL   boy
          'Three boys.'

      b. yi   *(ben) shu.[11]
          One CL   book
          'One book.'

In Mandarin, the classifier is obligatory but this is clearly not the case in CV. The examples in (14a) and (15) show that in CV, as in English, classifiers are needed only with mass nouns. Similarly to English, CV distinguishes between mass and count: numerals require classifiers or measure phrases only to combine with mass nouns:

(17) a. dos kilo   (*kilo-s)   di asúkra
          two kilo   kilo-PL   of sugar
          'Two kilos of sugar.'

      b. dos kudjer (*kudjer-s) di   azeti mantega
          two spoon   spoon-PL   of   oil   butter
          'Two spoons of olive oil/butter'

In (17), we see that the measure *kudjer* (spoon) or *kilo* (kilo) cannot be pluralized.

The data from CV clearly shows that it is not a Number Marking Language, since plural marking is not obligatory to express the involvement of more than one individual as extensively exemplified above. More importantly, *bona fide* quantifiers do not carry number morphology, and they require the predicate to be about more than one individual:

(18) Djon ta   karega txeu (*txeu-s) livru
      Djon TMA   kary   many/much   book
      'Djon carries many books.'

Comparatives also show that the bare noun involves more than one object, though there is no plural inflection either on the noun or on the quantifier:

(19) Djon tem más   txeu   livru ki   Maria.
      Djon has more many/much book   that Maria
      'Djon has more books than Maria.'

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[10] As in English, coerced interpretations due to universal packing are possible with *leti* (milk), but not with *areia* (sand): milk comes in conventionalized containers, but sand does not. The literature on the topic is extensive. See Chierchia (2010; 2015), Rothstein (2017).

[11] Example (15) from Chierchia (2010: 107).

The number of books that *Djon* has is greater than the number of books that *Maria* has. Thus, CV is not a Number Marking Language. It is not a bare language either, since numerals combine directly with count nouns, without the need of classifiers, as shown above.

On the one hand, in CV, bare plurals are very restricted, the plural mark is restricted to the definite and indefinite articles and it is optional,[12] since plurality is conveyed by the bare noun; on the other hand, CV does not need classifiers with count nouns. Given Chierchia's (2010; 2015) typology, we conclude, therefore, that CV is a Number Neutral Language. Although Chierchia (2010; 2015) proposes a detailed formal description of English, and the basic elements for the description of the semantics of Bare Languages with Mandarin as an example, he says very little about number neutral languages. According to him, Number Neutral Languages are those in which neither plurality nor classifiers are obligatory. In the next section, we will further explore this idea.

4 A semantics for CV noun phrases

English does not need classifiers to combine count nouns with numerals; it has articles, and plural inflection is obligatory on the noun. In Mandarin, all nouns are bare; there are no articles, no plural inflection,[13] and classifiers are obligatory with numerals, as seen in (16). Chierchia (2010; 2015) argues that these two grammars, the former a Number Marking Language and the latter a bare language, respectively, can be generated assuming a very naïve distributed morphology, in which the root is undetermined between noun and verb. If a nominal projection is added to this root (say, little n) the option is either to be a predicate of type $<e, t>$, or to be a kind of type e. English selects for predicates, Mandarin for kinds. From this difference, two distinct nominal grammars are generated. For instance, in number marking languages, classifiers are count nouns, whereas in bare languages, they are shifters from kinds to predicates.[14] In the first section, we argued that, given this framework, Number Neutral Languages are those languages that do not select for predicates or kinds. We revise the formal apparatus presenting Chierchia's analysis for English which we rely on in order to develop a semantics for noun phrases in CV. The second section is devoted to the role of number in the derivation in both languages.

4.1 The semantics of Cape Verdean noun phrases

Chierchia proposes that the ontology is constituted of atomic semi-lattices closed under a joint operation '∪' and partially ordered by a 'part of' relation '≤'. Thus, in each situation w, the domain of discourse U_w has a Boolean Structure, and the atoms of the domain are the bottom of the structure. In English, the domain is sorted into mass, built from unstable atoms, and atomic/stable structures. This distinction relies on the intuition that there is no way of defining an atom of water that is stable across worlds. A boy is a unity across worlds, but a portion of water is not. This difference is captured using the notion of vagueness and Supervaluation Theory. It is not our aim to discuss the adequacy of this distinction, since nothing hinges on assuming this proposal.[15] For us, it is important that in English, the lexicon is sorted into types of predicates (atomic-stable versus atomic-unstable properties), and kinds are derived via a semantic operation. Predicates may be shifted into kinds via the semantic operation called down operator (more below). In Mandarin, the

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[12] As pointed out by a reviewer, it may well be the case that the plural morpheme has other functions besides expressing plurality as happens in other number neutral languages. This is a topic for future investigation.
[13] One of the referees observed that the claim that there is no plural morpheme in Mandarin is incorrect. We follow Chierchia's description of Mandarin, and leave the topic for further investigation.
[14] Classifiers in English are type $<e,t>$, while in Mandarin they are type $<e, <e, t>>$.
[15] See Liebesman (2016) and Rothstein (2017) for criticisms of Chierchia's notion of mass.

primitive ontological domain is constituted by kinds; the lexicon only has kinds, but kinds are sorted into different types as well (Substance versus Object kinds, for instance). Kinds relate to their instantiations via sum. In English this is a silent operation realized by the up operator; in Mandarin it is overtly realized by the classifiers. Thus, classifiers play a different role in each language: in Mandarin it shifts a kind into a predicate; in English, it counts or measures, they are count nouns.

In Chierchia (2010; 2015) there are just two alternatives for the denotation of a root noun, either a predicate or a kind. Since English selects predicates and Mandarin kinds, the only alternative for Number Neutral Languages is that they do not select; thus, they allow for both predicates and kinds in the lexicon. This is in some sense trivial. We want to argue that although both forms are available, the predicate is derived from the kind. Kinds are primitive. Number Neutral Languages as CV have properties of Number Marking Languages and properties of Bare Languages. If, in the lexicon, roots denote either a predicate or a kind, we understand why it is so. In our proposal, we argue that the choice for kind or predicate is grammatically motivated: in argument position, the noun denotes a kind; in the scope of an (overt or covert) operator, it denotes the predicate.

Although the bare plural in English and the bare noun in CV denote kinds, their syntactic and semantic structures are not the same, as shown in the next section. Comparing (20) to (5a), *tataruga sta ta kába* ('Turtles are on the verge of extinction') will make the difference clear. In (20), the bare plural is the argument of a kind predicate:

(20)   Dogs are extinct.

To be extinct does not accept object level individuals as an argument; it selects for kinds: *John is extinct* and *the boy is extinct* are ungrammatical sentences. This is because the noun phrase denotes individuals like you and me, and the predicate selects for kinds: *The Dodo is extinct* is fine because *the Dodo* denotes the Dodo kind. Thus, *dogs* in (20) denotes the kind. There are two issues here: (i) the semantic derivation of the kind individual; and (ii) what sort of individual the kind is. Kinds are not individuals like you and me, because they can be in different places at a particular point in time. For example, at this particular moment in time, there are several realizations of the kind Dog all over the world, whereas you and I can only be at a specific place. The kind Table is instantiated in two realizations in my living room (two object level individuals). Kinds are related to object level individuals via realization: at a point in time, every dog is a particular realization of the Dog kind. The universe of discourse is inhabited by different sorts of individuals: atomic individuals, such as John, Mary, etc.; plural individuals, such as John and Mary, represented by $j \cup m$-; and kinds, such as $Table_k$, Boy_k, etc. John and Mary are instances of the human kind, among many others. John, however, is not a kind. Chierchia understands that kinds are the intensional sum of individuals across the worlds. In English, they are derived via the down operator applied to cumulative extensions. In Mandarin, kinds are primitive, and classifiers in Mandarin turn them into predicates of object level individuals.

In order to explain the English bare plural in argument position, Chierchia relies on Partee's (1987) proposal that the nominal system is closed in Type Shifts, which are constrained by the properties of the domain, and by overt realizations of the operations. For instance, the iota operator is realized in English overtly by 'the', thus it cannot be realized covertly. This predicts that 'dogs' in (20) is not synonymous with 'the dog', 'a dog', 'some dogs' etc. Partee's proposal allows us to understand how it is possible to derive

an individual from a predicate without any functional projection, i.e., without a covert article. Thus, there is no determiner projection in the logical form of (20). Although Chierchia is not clear about the syntactic structure, in particular with respect to a number projection, we may assume the following syntactic structure, where there is a number projection (see next section):

(21) $[_{DP}$ $[_{NUMP}$ -S_{PL} $[_{NP}$ Noun]]]

Chierchia introduces the down operator, represented by $^{\cap}$, which shifts predicates into kinds. It is only defined for cumulative properties;[16] it is undefined if applied to an atomic predicate. There are at least two reasons for this. The first is that it does not seem right to build a kind from a particular object, say John's shoes or John. The second reason is that kinds have instantiations across worlds. John does not have realizations across the worlds. The interpretation of the noun phrase in (20) as the dog kind is achieved, in Chierchia's derivation, as the result of the down operator being applied to the plural property denoted by dogs, as derived from the singular predicate dog. This corresponds to the syntactic structure in (21). The Dog kind is then the argument of is extinct, as pedantically represented in (22):

(22)   Is-Extinct ($^{\cap}$*dog)

In a step-by-step fashion, the root predicate dog denotes the set of atoms, which is defined as a predicate, the parts of which do not have proper parts, i.e. they are atomic. (23a) defines an atomic predicate, and (23b) exemplifies it with the noun *dog*:

(23)   Definition of AT(om):
    a.   If P is of type $<e, t>$, AT(P) = $\{ x \in P: \forall y \in P [y \leq x \rightarrow x = y]$
          In words: For any predicate, something is an atom of P if it is P and it has not parts (if something is part of that thing, then it is that thing itself)

    b. $[[dog]]^w = \lambda x.$ x is dog_w = $\{ a, b, c\}$ (Chierchia 2010: 113)

Mass nouns are not atomic in the sense of (23a), because they do not have stable atoms. The plural operation is only defined for atomic predicates. Since Link (1983), it has been represented by the star operator: *dog.[17] Below is the definition of the plural operator and an example:

(24)   a.   For any P, *P = $\lambda x \exists Q [Q \subseteq P \wedge x = \cup Q]$
          In words: For any predicate, the pluralization of that predicate results in the set of all sums that are a sub-set of P.

       b. $[[dog\text{-}s]]^w = [[*dog]] = \{a, b, c, a\cup b, a\cup c, b\cup c, a\cup b\cup c\}$ (Chierchia 2010: 114)

In English, the * operator is overtly realized by the plural morpheme -s (and its variations). Finally, the down operator applies to the inclusive plural predicate, $^{\cap}$*dog, and returns the kind individual, type e.
    Chierchia's definition of the down operator, presented below, makes it explicit that the kind is the individual constituted by the maximal instantiations in all worlds:

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[16] Cumulativity is the property that goes up in the lattice structure: dogs plus dogs add up to dogs, but one dog plus one dog does not add up to one dog. Thus, singular predicates are not cumulative.
[17] In Chierchia (1998a; 1998b), plurality is exclusive. From Chierchia (2010) on, plurality is inclusive, as expressed in (24). Inclusive plurality means that not only the sums but also the atoms are in the denotation of a plural predicate.

(25)　　$\cap P = \lambda w[\iota x P_w(x)]$　　　(Chierchia 2010: 115)
　　　　In words: the maximal individual in every world

Imagine a model with 3 worlds – w_1, w_2, w_3. Suppose the intension of 'dogs', a plural predicate, is:

　　$w_1 = \varnothing$　　　$w_2 = \{e, f, g, e \cup f, e \cup g, f \cup g, e \cup f \cup g\}$　　　$w_3 = \{h, i, h \cup i\}$

The down function returns the maximum individual for each world: $e \cup f \cup g$ for w_2 and $h \cup i$ for w_3. The Dog kind denotes the set of all the maximal sums of dogs in each world.

　　The down operator is not a null determiner. It is a type shift, that is, it applies freely without any costs and as a last resort. Null determiners are very restricted, and are subject to licensing conditions. Chierchia (1998b) argues that there is a null determiner in Italian, which allows sentences such as (26b):

(26)　　a.　　*Ragazze in minigonna sono estinte.
　　　　　　Girls　　in miniskirt　are　extinct
　　　　　　'Girls in miniskirt are extinct.'

　　　　b.　　Qui,　ragazze　in minigonna　sono　rare.
　　　　　　Here　girls　　in miniskirt　are　　rare
　　　　　　'Here, girls in miniskirt are rare.'

Bare plurals in Italian are very restricted; they require certain conditions, such as being in a focus position, as seen in (26b). This is not the case for the bare plural in English, since it imposes no licensing conditions. The bare plural in English occurs freely in any position, without any restriction. Thus, it is type shifted.

　　There are different ways of accounting for the semantics of the Cape Verdean examples in (5). Baptista & Guéron (2007) propose that the noun phrase in CV has a syntactic structure where there is a null determiner: [_DP_ null D [Noun]]. But since we have different interpretations of the Bare Singular we are obliged to postulate different null articles: in (5a) one is talking about a particular kind, the null determiner has to be the generic definite article; (5c) is ambiguous between definite and indefinite null operators. As pointed out in the literature, null articles should be restricted, if there is an overt counterpart. In CV the bare singular is unconstrained; the definite article is restricted and optional. Finally, null determiners should have the same interpretation as their overt manifestation and this is not the case, as we saw in the previous section when compared them with indefinite phrases. In our proposal, the bare singular denotes the kind directly from the lexicon. This explains why it does not behave as the indefinite phrase. The definite interpretation is reached either overtly in deitic contexts with *kel/kes* or there is a null article as argued by Baptista and Guéron.

　　According to our hypothesis, CV is a Number Neutral Language. By assumption, Number Neutral Languages have access in the lexicon to predicates and kinds. In argument position, the noun phrase denotes the kind directly. Thus, in (5a), *tataruga* ('turtle') denotes the kind directly as is the case for Mandarin or any other Bare language. This means that the Logical Form of (5a) is not the same as that of (20). The DP in (27a) has no number projection, no covert article, and no type shifting:

(27)　　a.　　[_DP_ Noun]
　　　　b.　　sta-ka-kába (tataruga_k)

According to the literature, generic sentences are generalizations about properties that object level individuals have. In (5b), *tataruga ta poi óvu* (turtles lay eggs), one is not talking about the kind, but stating a generalization about its instantiations. To lay eggs is a property of adult, fertile, female turtles. This reasoning led semanticists to assume that in the logical form of generic sentences, there is a generic operator (Krifka et al. 1995, among others).[18] According to Chierchia, in English this is achieved by shifting a kind into a predicate via the up operator, which returns sums. Thus, the sentence in (28a) has the logical form in (28b):

(28) a. Turtles lay eggs.
      b. GEN[x;] [$^{\cup\cap}$*turtle; lay eggs(x)]
          In words: In general, if something is a turtle in a situation of laying eggs, then it lays eggs.

Suppose generic sentences in CV are also headed by the generic operator. The difference is that, in CV the noun in argument position denotes the kind directly; so, only the up operator applies, as represented below:

(29) GEN [x;] [$^{\cup}$turtle$_k$; lay eggs (x)]

The choice of kind or predicate is not free; it is semantically driven. Because the noun *tataruga* ('turtle') is in the argument position of a generic sentence, it denotes the kind.

We have already said that the interpretation of the bare plural in English is guided by the type of predicate. In the internal position of episodic predicates, as exemplified in (30), it only has an "existential" interpretation:

(30) John bought books.

Carlson (1977) proposes that type mismatching shifts a kind into a predicate. Chierchia claims that the type mismatch between an episodic predicate $<e, t>$, and a kind of type $<s, e>$, triggers a raising of kind to predicate, and a local existential closure (inside the VP). This is the so-called DKP (Derived Kind Predicate). The existential closure must be local in order to explain why the bare plural is scope inert, as we saw in examples (1) and (2). Below is the semantic representation of (30) using event semantics:

(31) ∃e [Buy (e) ∧ Agent (e, j) ∧ Theme (e, ∃x ($^{\cup\cap}$*book (x)) ∧ e < now]
      In words: there is an event of buying whose agent is John, the theme is some realizations of the book kind, and it happened before now.

The path for the derivation of the interpretation of books is: the (root) singular predicate book is pluralized, *book; it is turned into a kind via the down operator, $^{\cap}$*book, and turned into a plural predicate via the up operator, $^{\cup\cap}$*book, which is existentially bound at the local domain.

In CV the bare noun in argument position of an episodic predicate, as in n (6b), *N odja rátu* (I saw a/the mouse/mice), *rátu* (mouse) allows for a definite interpretation which is not allowed in English, where the only interpretation is weak indefinite as shown in (31). Thus, (6b) is ambiguous between a definite and an indefinite interpretation which parallels that of English. Since we normally do not talk about a particular mouse,

---

[18] There are other reasons that support the claim that there is a covert generic operator in sentences as (28a). For instance, the overt presence of *in general* in English conveys the same meaning; any type of noun phrase will give the same interpretation: 'Turtles lay eggs', 'a turtle lays eggs', 'the turtle lays eggs'.

though that may be the case, the default interpretation of (6b) is indefinite. If, as we argue, *rátu* (mouse) denotes the Kind, it only indicates realizations of the kind, and a local existential closure applies. Since *rátu* (mouse) is in argument position, it denotes the kind directly. It must be turned into a predicate via type shifting since there is a type mismatch. The kind individual is of type $<s,e>$, and the predicate is $<e,t>$. Local existential closure is necessary in order to warrant that there is no interaction with quantifiers and negation, as we saw in the previous section. Thus, the Logical Form of (6b) is:

(32) $\exists e$ [Seeing (e) $\wedge$ Agent (e, speaker) $\wedge$ Theme (e, $\exists x$ ($^{\cup}$rátu$_k$) $\wedge$ e $<$ now]
In words: there is a seeing event, the agent of which is the speaker, and the
theme of which are instantiations of the mice kind.

The kind is turned into a predicate which is locally bound by the existential operator. (6b) is compatible with one mouse, or more than one mouse, because they are realizations of the kind. Number neutrality is derived from the operation of realization. The point is that (6b) may be felicitously uttered in a situation where it is already part of the background knowledge that there is a particular mouse that lives in the kitchen, the definite interpretation. This interpretation may be explained via pragmatics, but the definite interpretation is necessary to explain the anaphoric behavior of *ómi* (man) in (7), a context where the definite article cannot be used, probably due to its semantics being that of a demonstrative. In (7) the second occurrence of *ómi* (man) must be definite. Dayal (2004) argues that in Hindi the bare plural denotes a kind, and that the bare singular is a definite phrase. Baptista & Guéron (2007), relying on Dayal's (2004) analysis for Hindi, argue that there is a null definite article; thus the bare singular is a definite phrase for them. However, in Hindi the bare singular is always definite and singular. This is not the case with the bare noun in CV, which may be definite, indefinite, singular or plural. Thus, the bare singular in CV does not have the same semantics as the bare singular in Hindi, but Baptista & Guéron (2007) are right when they claim that the definite reading is achieved via a covert operator. Thus, (6b) has two Logical Forms: the weak existential reading of (6b), which is achieved via DKP, and represented in (32); the definite reading, represented below, where there is a null article with the semantics of the iota operator:

(33) $\exists e$ [Seeing (e) $\wedge$ Agent (e, speaker) $\wedge$ Theme (e, ιx rátu(x)) $\wedge$ e $<$ now]

In (33), the iota operator applies to the realization of the kind λx. R (x, rátu$_k$). The prediction is that it may be true about a particular mouse or about particular mice. The plural versus singular is a presupposition of the context.

    Consider (34a). Out of the blue, it is ambiguous between one car and multiple cars, between definite or indefinite interpretations. The indefinite interpretation in (34c) is always the result of applying DKP to the kind, since *káru* (car) is in argument position. The definite interpretation is possible if there is already a car or cars in the common ground.[19] It is due to the iota operator, the covert manifestation of the definite article, (34b):

(34)   a.   Káru sta   na garági.
               car   is   in garage
               'The car/cars is/are in the garage.'

---

[19] This is a very rough description; the definite interpretation poses several issues that we will not discuss here.

    b.   In-the-garage ιx (car(x))

    c.   In-the-garage $\exists^{\cup}$car$_k$

The definite interpretation (34b) can be true if there is one car or if there are multiple cars in the garage, because the predicate denotes atoms and pluralities thereof.

    To summarize, we argued that, following Chierchia's reasoning, in Number Neutral Languages predicates and kinds are available in the lexicon. We also argued that the denotation of the noun is grammatically motivated: in argument position, the noun denotes a kind, whereas in the scope of an operator it denotes a predicate. The definite interpretation is overtly and covertly conveyed which indicates the competition of forms. However the covert definite has a broader use, since it appears in anaphoric contexts. The different interpretations of the bare singular cannot be explained by null articles, since the bare singular and the indefinite article do not show the same interpretation. We have argued that our proposal explains the data. We now turn to plurality in the Determiner Phrase.

4.2 Plurality

Below are the possibilities of noun phrase combinations in CV:

(35)   a.   ke-s   gátu
                the-PL   cat
                'the cats'

        b.   *kel gátus
                the   cats

        c.   kel gátu
                the   cat
                'the cat.'

As we have already said, with some nouns, most of which are related to the human domain, the plural mark may appear on the noun. The relevant data, however, is the ungrammaticality of (35b).

    If we compare it to English, we see that they seem to be mirror languages:[20]

(36)   a.   *The-s boy
   b.   The boy-s
        c.   The boy

Following Chierchia, in Number Marking Languages, number is computed at the noun level. We propose that, in Number Neutral Languages, predicates are neutral in the lexicon, and it is the determiner that selects for singularity or plurality which are presuppositions. Thus English and Cape Verdean have different syntactic-semantic derivations as we have already argued in the last section.

    Suppose that the Semantic Derivation of the Definite Noun Phrases in English, as in (36b) and (36c), are represented as below[21] in (37a):

(37)   English Noun Phrases

---

[20] Pires de Oliveira & de Swart (2015) argue that this is the difference between colloquial Brazilian Portuguese and English. We will not deal with their proposal here, but it is worth mentioning that the distribution of the plural morpheme in Brazilian Portuguese and in CV is not the same, as pointed out by a reviewer.

[21] The labels are just explanatory. From our perspective, the important point is the semantic composition.

a.

$$
\begin{array}{c}
\text{DPe} \\
\diagup \quad \diagdown \\
\text{DET}{<}e,{<}e,t{>>} \qquad \text{NumP}{<}e,t{>} \\
| \qquad\qquad \diagup \quad \diagdown \\
\text{the} \quad \text{Num}{<<}e,t{>}{<}e,t{>>} \quad \text{NP}{<}e,t{>} \\
| \qquad\qquad | \\
\text{SG/PL} \qquad\quad \text{N}{<}e,t{>}
\end{array}
$$
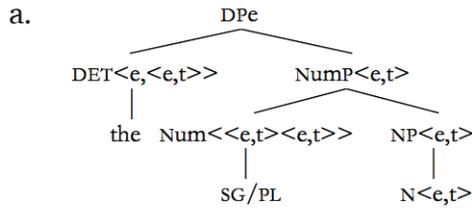
DET is the definite article *the* as in (36b) and (36c). Let's assume a semantics as in Heim & Kratzer (1997). NumP is the number phrase which is of type $<e, t>$. Thus Num is a modifier of type $<<e,t>, <e,t>>$. NP is the projection of the root, represented by N, which is supposed to be either countable (= atomic) or mass predicate. If the root has the feature count, N_c, then it denotes the atomic predicate.[22] Suppose that SG is the function that selects for the atoms. In English, since the NP is atomic it looks like the identify function. PL is the star operator as defined in the last section. Assume an optimal mapping between linguistic realization and structure. The plural morpheme is the plural operation *. As the examples in (36) show, it appears on the predicate. Thus, the structure in (37a) is an optimal representation of (36b) and (36c); moreover, it precludes (36a). This is precisely the definition of Number Marking Languages proposed in Chierchia (2010; 2015): the plural is marked on the predicate.

(37b) is the structure for the Bare Plural, exemplified in (1a) and (2b):

(37)   b.

$$
\begin{array}{c}
\text{DPe} \\
| \\
\text{NumP}{<}e,t{>} \\
\diagup \quad \diagdown \\
\text{Num}{<<}e,t{>}{<}e,t{>>} \quad \text{NP}{<}e,t{>} \\
| \qquad\qquad | \\
\text{SG/PL} \qquad\quad \text{N}{<}e,t{>}
\end{array}
$$
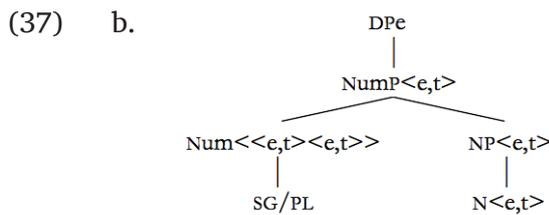
The only difference is that there is no determiner. In English the root noun N is either an atomic predicate or a mass noun. The atomic predicate is turned into a plural predicate via the plural operator, which is realized by the plural morpheme; it is then shifted into the individual kind, as described in the last section: the down operator shifts the plural predicate in NUMP into the kind, the denotation of the DP. If SG applies in (37b) it generates an atomic predicate and the derivation crashes because the down operator only applies to cumulative predicates.

Our contribution is a proposal for the noun phrases in CV. Our main claim is that CV is a Number Neutral Language, thus the root noun, N denotes the kind, and the ontology is sorted into mass and count roots, or the predicate if under the scope of an operator. Number is not an operation on the predicate as in English, but it is an imposition of the determiner or the quantifier. (38a) represents (35a) and (35c). We may think of *kel* and *kes* as two different items in the lexicon. They operate on realizations of the kind, selecting the individuals. There is no number projection. Other items impose other conditions: *txeu* exemplified in (14c) and (18) selects for non-atomic individuals (= sums).

(38)   Cape Verdean Noun Phrases

---

[22] If the root is mass, then it denotes a singularity in Chierchia (2010, 2015). We do not discuss mass in this paper.

a.

```
              DPe
          ╱        ╲
      DET           NPe
       |             |
   <<e,t>,e>         Ne
       |
     SG/PL
```
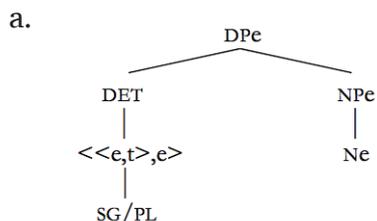
The mapping of the Bare Noun is: either it denotes the kind, (38b), or it denotes the particular individual in context (in competition with the overt determiner phrase, which works mainly as a demonstrative) via a covert iota operator (in accordance with Baptista & Guéron 2007), (38c); this explains the definite interpreations of (5c), (5d) and (7). In (38b), the root noun denotes the kind. Thus the Bare Noun is used with kind predicates as in (5a). In the scope of an operator, as the generic operator, or the VP existential operator – the low existential clousure – it is shifted to the realizations of the kind.[23] We explain (5b), (6a), (6b), and derive all properties of the Bare Plurals in English which were discussed from examples (8) to (12). Number Neutrality is a direct consequence of the denotation of the root noun.

(38)   b.

```
    DPe
     |
    NPe
     |
    Ne
```
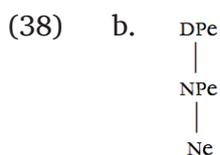
The definite uses are explained via a covert iota operator. Singularity or Plurality is a pressuposition of the context. Thus, the null operator applies to realizations of the kind and returns the only one that is salient in the context, a singular or a plural individual.

(38)   c.

```
              DPe
          ╱        ╲
    null-DET        NPe
       |             |
   <<e,t>,e>         Ne
```
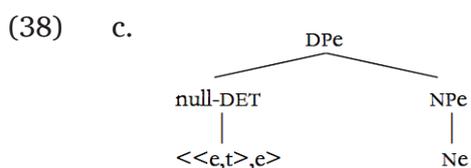
Many issues were not mentioned, but we hope that this paper contributes to a better understanding of the CV nominal system, and Number Neutral Languages in general.

5 Cross-linguistic reflections

The greatest challenge of linguists, as Chomsky has often stated, is to explain not only language variation, but also how children can learn such a complex system so quickly. The main hypothesis is that the system is minimal, very simple and reduced to some highly relevant choices. This is the picture that Chierchia (2010; 2015) offers for the nominal domain. It includes three types of grammars that are generated by the choice between argument or predicate. The choice for predicates leads to Number Marking Languages, while the choice for kinds builds Bare Languages.

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[23] In this paper we treat the up operator as the same as the Realization operator in Carlson, though we believe that they are not the same, a point we will not develop here.

Our main contribution is the suggestion that Number Neutral Languages share properties with both of these grammars, because they do not select kind arguments or predicates. Instead, they allow both, though not freely. If a noun is in argument position, then it denotes a kind; a predicate is selected if the noun is in the domain of a (covert or overt) determiner. The only covert determiner, as argued by Baptista & Guéron (2007), is the iota operator. We suggest that English and CV are mirror languages with respect to plural inflection. While in English singularity and plurality are tied to the noun, and there is number projection, in CV, it is the determiner that selects for number, and there is no number projection. The prediction is that in Number Neutral Languages, singular or plural is either a presupposition of the determiner or a felicity condition of the context. It goes without saying that our proposal is rather exploratory; a better account of the quantifier and the pronouns are just two examples. Only careful studies of natural languages, and in particular of under-represented languages in the literature, as is the case of CV, may shed light on semantic variation. It is our hope that our paper is a contribution to a better understanding of CV and the issue of semantic variation, even if many issues are left open.

Additional File

The additional file for this article can be found as follows:

- **Preliminary remarks on the nominal phrase in Cape Verdean.** The semantics of bare nouns crosslinguistically. DOI: https://doi.org/10.5334/gjgl.157.s1

Abbreviations

1P = First Person, 2P = Second Person, 3P = Third Person, CL = Classifier, CV = Cape Verdean, DET = Determiner, DP = Determiner Phrase, EP = European Portuguese, GEN = Generic Operator, NP = Nominal Phrase, NUM P = Number Phrase, NUM = Number, N = Noun, P = Predicate, PL = Plural, SG = Singular, TMA = Tense, Mood, and Aspect

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Competing Interests

The authors have no competing interests to declare.

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