

Reference to kinds and to other generic expressions in Spanish: definiteness and number¹

Olga Borik and M.Teresa Espinal

Universitat Autònoma de Barcelona

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1. Introduction

Reference to kinds is a phenomenon of natural languages that allows speakers to express regularly observed generalizations about various classes, types or *kinds* of objects. As is commonly assumed in the literature (Carlson 1977, 2011, Gerstner-Link and Krifka 1993, Carlson and Pelletier 1995, Krifka et al. 1995, Greenberg 2003 and many others), there are reasons to distinguish between two possible ways to make generic statements, depending on whether the locus of genericity is a DP (D-genericity) or a sentence itself (I-genericity). In the latter case, the generic character of a statement is usually attributed to the presence of an invisible generic operator GEN (cf. Krifka et al. 1995). This paper, however, focuses on D-genericity, i.e. a meaning associated with the DP that gives rise to a generic interpretation for the whole sentence. In addition, we discuss a phenomenon that we name V-driven genericity and which is to be distinguished from I-genericity mentioned above, i.e., when a generic meaning of nominal expressions results from combining with a restricted class of predicates which select for generic expressions in argument position.²

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² To make it clear, the difference between I-genericity (or characterizing sentences in Krifka's et al. 1995 terms) and our V-driven genericity, which we discuss in Section 5, is that the former is usually associated with a presence of a generic operator in the sentence, whereas the latter is treated in this paper as a type of coercion by which the predicate forces a shift in meaning on the denotation of a nominal phrase in an argument position. We do not postulate any sentential level operators for the phenomena that exemplify V-driven genericity.

Kind-referring nominal expressions are not uniform in their morpho-syntactic appearance. Consider, for instance, the contrast between a definite DP in (1a) and a bare plural (BPl) in (1b) in the following examples, taken from Carlson (1977:276):

(1) a. *The owl* is common/widespread/fast disappearing/often intelligent.

b. *Owls* are common/widespread/fast disappearing/often intelligent.

In the theory of Carlson (1977), which is probably the most influential approach to kind reference, both *the owl* and *owls* in (1a) and (1b), respectively, are nominal expressions referring directly to kinds of individuals, as opposed to reference to a specific object, exemplified in (2):³

(2) *The owl* that just flew by

Notice also that the difference in the referential status of the subject in (1) and (2) coincides with a difference in the type of predicate the nominal expression combines with: a k(ind)-level and an i(ndividual)-level predicates are used in (1), as opposed to a s tage)-level predicate in (2).⁴

One point raised by the examples in (1) is whether there are relevant differences in the interpretation of the subjects in (1a) and (1b), even though the claim that *both* subjects refer to kinds remains central to Carlson's theory of kind reference. Carlson himself points out that

³ The difference between kinds and objects can also be related to the *type/token* distinction that has been postulated in the literature, e.g., Vergnaud and Zubizarreta (1992).

⁴ As for predicates, following the distinction between k-, i- and s-level predicates (Carlson 1977, Chierchia 1995, Kratzer 1995), it should be taken into account that: (a) k-level predicates select for kind entities (type $\langle e^k \rangle$) as arguments, (b) i-level predicates may select for kinds or individual objects (types $\langle e^k \rangle$ or $\langle e^o \rangle$), and (c) s-level predicates only select for individual entities (type $\langle e^o \rangle$). A model based on this predicate typology predicts the possibility to use a kind-referring definite NP with k-level and i-level predicates, as illustrated in (ia-b). This predicts that definite kinds must also be allowed as subjects of conjoined k-level and i-level predicates, as (ic) illustrates.

- (i) a. The blue whale *is the largest mammal* in the world.
b. The blue whale *lives* in all oceans, mainly in the Arctic and the Antarctic.
c. The blue whale *lives* in all oceans and *is the largest mammal* in the world.

However, an s-level predicate makes it impossible to interpret the subject DP as a kind. In order to make a generic statement with an s-level predicate the sentential operator GEN is required (Krifka et al. 1995). This type of abstract operator is what guarantees the appropriate interpretation for (ii).

- (ii) A blue whale *eats* an average of three tones of food a day (and *is the largest mammal* in the world).

Although we realize that many predicates are difficult to unambiguously classify in terms of k-, i- or s-level, we will use this classification as it allows us to illustrate in a very clear way the empirical observations and predictions made by the analysis we will develop below with respect to various predicate-argument combinations. It should be noted that for many predicates, it seems that their status as an s- or i-level becomes apparent only in use. To give an example, *contain vitamin C* seems to function as an i-level predicate, while *contain jewelry* is rather an s-level predicate.

in English, definite generics as in (1a) have a more restricted distribution with respect to BPI kinds exemplified in (1b). Basically, definite expressions are restricted to well-established (Krifka et al. 1995) or well-defined (Ionin et al. 2011) kinds, but the reasons for this restriction remain poorly understood. We will get back to this issue later, and we will align ourselves with the view that the requirement for definite generics to refer only to “well-established kinds” is not a linguistic constraint on the formation of kinds, but is dependent on encyclopaedic information, as Dayal (2004: note 30) already observed. For the time being it should be noted that the class of acceptable definite kinds is largely pragmatically constrained, and that the kind reading of non-well defined kinds can be coerced by context.

BPIs, exemplified in (1b), have always been in the focus of attention in the literature on kinds, considering their special status in a language like English: these are the only nominal expressions that freely appear without an article in English. They also have been assumed to be a default way to refer to kinds in this language, probably due to the fact that the definite generics are subject to some apparent restrictions, as was just pointed out in the previous paragraph.

It should also be noted that (1a) and (1b) exemplify two different semantic types of kind referring subjects, which correlates with the hypothesis that the nominal expressions in these examples are derived by applying different semantic operators (Chierchia 1984, 1998; Dayal 2004): the definite subject in (1a) is derived by means of the iota operator ι , whereas the BPI subject in (1b) is a result of the application of the special $\text{nom}/^n$ operator.⁵

One of the main goals of the present paper is to argue that, contrary to the above mentioned common assumption in the linguistic literature, BPIs are not the default, most common or standard way to refer to kinds crosslinguistically. All languages that have Determiners (null or overt) allow definite kinds,⁶ but the availability of bare plurals for kind denotation depends on the semantic status of these nominal expressions in accordance with the Nominal Mapping Parameter (Chierchia 1998). We hereby focus on kind expressions exemplified in (1a), arguing that they denote the kind or species itself (Jespersen 1927), whereas plural subjects always refer to a (maximal) sum of representatives of the kind, but do not name the kind itself. The former, as we argue in this paper, is the default way to express

⁵ From now on we will use the term $\text{nom}/^n$ operator to refer equally to Partee’s (1987) nominalization and Chierchia’s (1998) down operator.

⁶ Brazilian Portuguese (Cyrino & Espinal to appear), which omits articles in more contexts than many other Romance languages, and Russian (Borik & Espinal 2012), a language with no overt articles, are the other languages that we have studied in relation to kinds and which confirm this prediction.

D-genericity in Spanish, and possibly in Romance languages in general. We will also challenge a closely related claim, namely, that the kind reference is necessarily built on pluralities. We defend the hypothesis that there is no plurality and, in fact, no number involved in the denotation of definite generics.

In this paper we provide an analysis of definite generic nominal expressions of the type exemplified in (1a), or, as we will call them henceforth, *definite kinds*. We analyse the syntactic and semantic processes involved in the derivation of a kind interpretation for definite kinds and propose that the denotation of a definite kind is built by applying the iota operator to the denotation of a common noun. The ingredients of such a derivation are not new, but the details of the compositional analysis, as will become clear later in the paper, are significantly different from the existing proposals.

English will not be the main empirical focus of this paper, though. We will develop our analysis on the basis of the data from Spanish, a representative of the Romance languages, which, in general, have been extensively studied in the literature on kind reference (cf. Chierchia 1998; Longobardi 2001, 2005; Zamparelli 2002; Beyssade 2005, Dobrovie Sorin & Pires de Oliveira 2007, among others). The most well known fact about Romance languages is that, in contrast to English, BPIs in Romance cannot obtain a kind reading, but only an existential one (cf. Laca 1990, 1999; Longobardi 1994, 2001; Dobrovie-Sorin and Laca 1996, 2003; Beyssade 2005; de Swart 2006), and that, by contrast, definite plurals are used in these languages to render a logically equivalent kind interpretation. The following example is taken from Dobrovie-Sorin and Laca (2003:245) to illustrate the point:

- (3) En la India se están extinguiendo *tigres / los tigres.
 in the India CL are extinguishing tigers the tigers
 ‘Tigers are becoming extinct in India.’

We will argue that definite kinds are the only expression of D-genericity in Spanish, whereas the interpretation of other generic nominal expressions, including definite plurals exemplified in (3), is constrained by the predicate. The representation of these expressions will require a more complex structure with some sort of nominal specifier (i.e., the definite article, a demonstrative, an indefinite or a quantifier). The Spanish examples corresponding to the English sentences in (1) will look like follows:

- (4) a. *El búho* es común / está por todas partes/ desaparece rápidamente/
 the owl is common / is at all parts / disappears rapidly/
a menudo es inteligente.
 often is intelligent

‘The owl is common / widespread / fast disappearing / often intelligent.’

- b. **(Los) búhos* son comunes/ están por todas partes/ desaparecen rápidamente/
the owls are common / are at all parts / disappear rapidly/
a menudo son inteligentes.
often are intelligent

‘Owls are common / widespread / fast disappearing / often intelligent.’

A first contrast that we observe on the basis of the English examples in (1), in comparison to the Spanish ones in (4), is the following: in English, kind referring expressions differ in both definiteness marking (definite in (1a), bare in (1b)) and number (apparently singular in (1a), plural in (1b)). In fact, previous research on this sort of data in English has mostly concentrated on the definiteness contrast (Carlson 1977 and many others) and possible syntactic or semantic explanations for it (cf. Chierchia 1998; Longobardi 2001; Dayal 2004, 2011, etc.). However, in Spanish, the only difference between generic referring expressions in (4a) vs. (4b) is in number; the definiteness contrast is absent language internally. It is this observation that led us to wonder what the role of definiteness and number exactly is in reference to kinds and to other generic expressions in Spanish.

The proposal that we are going to develop in this paper will rest on the following assumptions. First of all, we adopt the assumption that linguistic models should not presuppose theoretical ambiguities if they can be avoided, so we will try to keep all the ingredients of our analysis unambiguous. This is to say that we start off by postulating that neither the common noun (contra Dayal 2004), nor number, nor the definite article (contra Chierchia 1998, Dayal 2004) are ambiguous. We also assume an inventory of independently postulated linguistic operators (Partee 1987, Chierchia 1998, and Dayal 2004) in building reference to kinds and to other generic expressions in Spanish: the *iota operator* (ι) (Frege, Russell) that imposes maximality (Sharvy 1980, Link 1983) and maps properties to the unique / maximal / largest individual satisfying that property, which is (roughly) the meaning of the definite article; the *Realization operator* (R) (Carlson 1977, Déprez 2005) that guarantees an instantiation of kinds; and the *intensionalizing operator* (\wedge) (Montague 1970, Chierchia 1998).

With these assumptions in mind the main claims we will argue for in this paper are the following: Definite kinds express D-genericity, denote the kind itself and are built by applying a *iota operator* (which corresponds to the definite article) to the meaning of a common noun, which is taken to denote properties of kinds. Definite kinds are numberless

DP structures. Other generic interpretations for nominal expressions including generic definite plurals, which emerge largely as the expression of V-driven genericity, are the result of satisfying the selection requirements of a restricted class of verbal predicates. The latter group of nominal expressions is associated with DP structures that express Number. On the basis of empirical arguments from Spanish we will question the universal status of the down operator and the Derived Kind Predication (Chierchia 1998), since none of them seem to be required in the grammar of Spanish (and maybe more generally, in the grammar of other Romance languages) for reference to kinds and to other generic expressions.

The paper is organized as follows. In Section 2, we will review two prominent analyses of definite kinds, namely Chierchia's (1998) and Dayal's (2004) analyses.

In Section 3, we move on to explaining our theoretical proposal with regard to the meaning of common nouns, the definite article and Number. We will argue that common nouns denote properties of kinds, conceived as intensional entities. We spell out how common nouns interact with the iota operator (ι) to yield a definite kind description. This operation constitutes the essence of our proposal concerning the derivation of definite kinds. We further argue that Number should be analyzed as an instantiation operator (cf. Carlson 1977, Déprez 2005), which, when applied to a common noun, yields properties of objects. Crucially, this operator is not involved in the derivation of definite kinds. In other words, we argue that definite kinds do not refer to any instantiation of the kind, due to the absence of Number. Thus, we claim that it is misleading to refer to definite kinds as singular definite generics (cf. Gerstner-Link and Krifka 1993) or singular generics (Chierchia 1998), since, as we will argue, they do not specify any sort of number. This view is crucially different from Dayal's analysis, discussed in Section 2.2, where singular number plays a major role in resolving a conflict between 'conceptual plurality' and 'atomicity', the properties that she associates with definite kinds.

In Section 4 we move to the empirical data from Spanish to show how reference to kinds is built in this language and how the data give support to the analysis spelled out in Section 3. We argue that definite kinds (Section 4.1) and modified kinds (Section 4.2) are the expressions of D-genericity.

In Section 5 we discuss other types of generic nominals (namely, subkinds and plural definites) expressed by full DPs specified for morphosyntactic Number, combined with k- and i-level predicates. Subkinds and generic definite plurals are argued to be the expression of V-driven genericity. We defend the view that a taxonomic interpretation for nominal

expressions must be considered an epiphenomenon, including on the one hand modified definite kinds (for which a DP structure with no Number is postulated), and on the other hand subkinds (for which a full DP structure that specifies morphosyntactic Number is postulated).

In Section 5.2 we will argue that generic plural definites in Spanish, as the one exemplified in (4b) above, cannot simply be assumed to be equivalent in meaning to BPIs in English. This means that we will reject the claim that the definite article in Spanish and other Romance languages lexicalizes two semantic operators, the iota and the down operator, and that the differences between languages are to be explained in terms of different lexicalization strategies (Dayal 2004). This conclusion is coherent with the hypothesis introduced in Section 3.2 that the definite determiner uniquely corresponds to the iota operator. A generic reading for definite plural subject arguments is derived by an intensionalizing operator $\hat{\cdot}$ applied to the definite description ($\hat{\iota}$) (Chierchia 1998), an operation that is triggered only when the nominal expression is in argument position of a k- or an i-level predicate.

In Section 6, we will sum up the main points and the results of our analysis and evaluate some predictions made by it. This section concludes the paper.

2. Definite kinds: some previous theoretical approaches

It would not be fair to say that definite kinds did not receive much attention in the literature, although, as we already mentioned, the discussion of kind reference has been more focused on bare plurals and their counterparts in other languages. This section will be devoted to the discussion of two representative analyses of definite kinds that have been very influential in the literature, namely, Chierchia's (1998) and Dayal's (2004) analyses. We will review the proposals in turn, with an emphasis on some problematic aspects, most of which have been noted in the literature before, and the valuable empirical observations that have been made in these proposals.

2.1. Chierchia (1998)

Chierchia (1998) puts forward one of the most important and explicit semantic analyses of kind referring expressions. In this section we briefly review his treatment of the singular generic *the N* construction, or our definite kinds.⁷

The derivation of singular generics in Chierchia's account is a rather complex process that proceeds in two steps. In general, common count nouns start their lives as properties, and to turn them into arguments, different operators must apply. In the case of definite kinds, the first operator that combines with a common count noun is MASS, which is a massifying function that turns a count noun into a mass noun, as in (5):

$$(5) \quad owl \rightarrow \text{MASS}(owl)$$

The derived expression in (5) has a mass reference, which is interpreted as referring to both atomic owls and pluralities of owls.

At the next step of the derivation of definite kinds, the iota operator combines with the MASS operator. It should be noted at this point that the contribution of the iota operator in Chierchia's account is basically ambiguous, i.e. its output depends on whether the iota operator applies to a count (for a singular definite count reading) or a mass noun. Thus, Chierchia (1998:380) gives the two definitions of the iota operator presented in (6).

$$(6) \quad \text{THE } P = \begin{cases} \iota P, & \text{if } P \text{ is a } \textit{count noun} \text{ denotation;} \\ g(\iota P), & \text{if } P \text{ is a } \textit{mass noun} \text{ denotation} \\ & \text{(where } g \text{ is a function from pluralities into groups)} \end{cases}$$

In the case of definite kinds, the input for the iota operator is a derived mass noun, and the output is a definite noun whose denotation is essentially a group:

$$(7) \quad \text{the owl} \Rightarrow \text{THE}(\text{MASS}(owl)) = g(\iota \text{MASS}(owl))$$

Leaving aside the discussion of the motivation for this complex analysis of definite kinds, let us focus on the predictions that this proposal makes. First of all, the proposal predicts that the denotation of the definite kind is essentially a *group*, a collective noun. This has some welcome consequences. For instance, it is well known that a group individual does not allow any reference to its members. In this respect, definite kinds do behave as regular group nouns like *family* or *committee*, and do not seem to easily combine with predicates that require not a collective but a distributive plural interpretation.

$$(8) \text{ a. } * \text{The owl is numerous/is more than four.}^8$$

⁷ Many of the observations and assumptions used in Chierchia's analysis of definite kinds are, of course, part of a bigger picture presented in his paper. For obvious reasons, we cannot do justice to Chierchia's proposal in general and will only focus on the part directly relevant for our purposes here.

- b. *The Jones family/the committee is numerous/is more than four.

However, to combine a group noun with a k-level predicate becomes a non-trivial matter. As witnessed by the contrast in (9), a standard group noun in (9a) does not naturally occur as an argument of a kind-level predicate, whereas a kind group noun in (9b) does:

- (9) a. *The committee is rare/common/extinct.
b. The tiger is rare/common/extinct.

Chierchia observes that there is a type mismatch in (9) created by a k-level predicate combined with a group individual. A way to resolve it in the case of (9b) is by intensionalizing the argument, using Montague's cap operator $\hat{\ }$ to create an intensional entity. However, the contrast in (9) still remains unexplained, because it is not clear what prevents the same cup operator to apply in the case of (9a) to resolve an apparently very similar type mismatch. Apart from this, we find it very counterintuitive that to derive a simple sentence like *The tiger is extinct* you need to apply in a precise order three different semantic operators to a common noun: MASS, ι (precisely the right variant of it) and $\hat{\ }$.

Another problem of Chierchia's analysis is that it makes a wrong prediction with respect to mass nouns, as already noticed by Dobrovie-Sorin and Pires de Oliveira (2007). In particular, it appears to be impossible to rule out the group version of the iota operator as defined in (6) to apply directly to real mass nouns such as *gold*, although this combination turns out to be ungrammatical in English.

- (10) (*The) gold is rare.

In other words, the group iota seems to apply only to the output of the MASS function, whereas the English mass nouns like *gold* do not and cannot combine with the definite article

⁸ It should be noted, however, that the acceptability of definite kinds with predicates such as *to be numerous* shows some variability among native speakers, which should probably be attributed to lexical or encyclopaedic knowledge.

- (i) a. The antelope is numerous in the African savannah.
b. #The rabbit is numerous in South Africa.
(ii) "Though the Adelie penguin is numerous –with more than five million individuals stretched across 38 colonies– their native habitat is changing rapidly." <http://www.treehugger.com/natural-sciences/penguins-hop-on-the-scale-for-climate-research-video.html> [Oct. 6th, 2012]

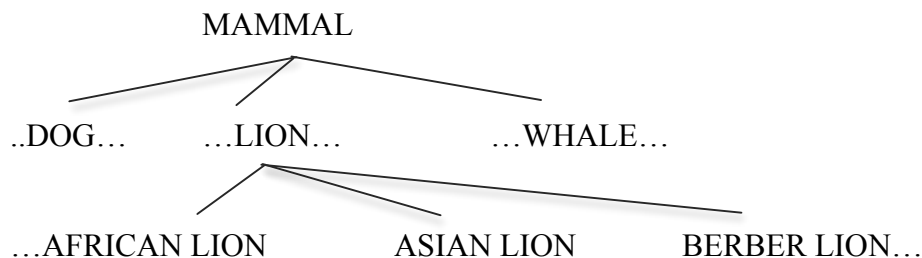
A relevant comment concerning distributional predicates like *to be common / abundant / rare / numerous* that has already been discussed in the literature (cf. Krifka et al. 1995, Longobardi 1999, Zamparelli 2002) is that these predicates express *ratios* that relate individuals with locations. This is why the acceptability of the sentences with this kind of predicates improves in the presence of the location argument (cf. (ia) and (ib)), although some examples such as (ii) can also be found. We thank K. Huddleston (p.c.) for providing these examples to us.

to refer to kinds. We will come back to mass nouns in our argumentation for definite kinds, in Section 4.1.

2.2. Dayal (2004)

Let us now turn to another influential analysis of kinds in general and singular definite kind terms in particular, namely, the one proposed by Dayal (2004). Her proposal for definite kinds adopts the assumption that any common noun has two possible denotations: one in the domain of individuals, and another one in the taxonomic domain. An example of a hierarchical taxonomic domain is given in (11):

(11) TAXONOMIC DOMAIN (Dayal 2004:424, ex. (50))



A second essential ingredient of Dayal’s analysis is the iota operator, which is standardly and unambiguously treated as giving the unique maximal member of a set it applies to. Singular kinds are thus derived by the application of the iota operator to a taxonomic noun, yielding a unique kind reference (e.g., *the dog*, *the African lion*). She furthermore postulates that the uniqueness requirement of the iota operator applied to a taxonomic denotation of a noun is satisfied if subkinds do not form part of the quantificational domain. In other words, $\iota(\text{LION})$ is well formed if we do not have access to the subkinds of lions, that is, if *African lion*, *Asian lion*, *Berber lion*, and so forth, are excluded from the domain of quantification.

Dayal makes a crucial assumption that definite kinds are singular. Hence, the difference between singular definite kinds and bare plurals in Dayal’s analysis is captured by deriving the corresponding expressions in fundamentally different ways: definite kinds are derived by the iota operator applied to a singular noun, whose denotation is necessarily in the taxonomic domain. BPLs, on the other hand, are derived by the down operator (\downarrow) applied to plural nouns (as in Chierchia).

Besides, Dayal’s analysis provides an easy explanation as to why mass nouns, as opposed to definite kinds, do not take articles in English (cf. example (10)). The explanation

essentially boils down to the fact that the down operator can freely apply to mass nouns because they are inherently plural, hence they satisfy the plurality requirement of the down operator. Just as any other noun, mass nouns also freely refer in the taxonomic domain, so they readily yield a kind reading after the application of the down operator. Therefore, the difference in the derivation of English definite kinds and mass nouns with kind reference is represented as follows (Dayal 2004:435): in (12a) the down operator cannot apply to a singular individual, but the definite determiner is felicitous if the set denoted by the taxonomic common noun has a unique maximal entity that is familiar; in (12b) it is shown that mass terms follow a different analysis, because \circ is defined for them, as it is defined for BPIs.⁹

(12)a. $\text{Pred}_k(\circ\text{lion}) = *_{\circ}(\text{SING}) \Rightarrow \text{Pred}_k(\iota X[\text{LION}(X)])$

b. $\text{Pred}_k(\circ\text{wine})$

The role of number in the derivation of kind expressions will be one of the fundamental differences between Dayal's analysis and the proposal that we are going to develop in Section 3 of this paper. As opposed to Dayal, we will not rely on number morphology in the derivation of definite kinds. In fact, the proposal we will develop here is based on the assumption that definite kinds are built on definiteness without number, since we argue that there is no plurality or singularity involved in the derivation of definite kinds, neither conceptually, nor grammatically.

Another crucial difference between the proposal that we are going to develop in this paper and the analysis of Dayal concerns the treatment of kind reference in Romance languages, in particular. Thus, we will argue against Dayal's claim that the definite article in Romance languages can lexicalize two semantic operators, the iota and the down operator. Instead, we will opt for an unambiguous treatment of the definite article as expressing the iota operator and show that there is no empirical evidence to postulate a down operator for Spanish at all (see Section 5 for details).

In addition, our proposal will be based on a significantly different understanding of kinds. In particular, we assume that the semantics of kinds (at least of definite kinds) is not built on taxonomies, even though we do not deny their existence as part of our conceptual knowledge.

⁹ It is worth mentioning that Dayal, as opposed to Chierchia, simply does not make a wrong prediction with respect to mass nouns, as discussed in relation to example (10), because in her analysis there is no MASS operator involved in the derivation of definite kinds, so no parallelism between definite kinds and mass nouns is expected. Thus, the problem simply never appears.

In other words, we promote a view in which kinds are not sets of subkinds, but are instead perceived as integral, undivided entities with no internal structure.

As we hope to have illustrated in this section, definite kinds present various non-trivial problems that a semantic analysis needs to handle. The proposals that we have discussed are rigorously formalized and have substantial empirical coverage, although we presented several arguments that could be raised against both analyses. Chierchia's analysis, in our view, faces some empirical problems, especially with respect to group and mass nouns, but Dayal's proposal also leaves open some unresolved issues, especially with relation to number.

Our conclusion is that we are still in need of an alternative proposal for definite kinds. In the next section we present our theoretical proposal for kind reference.

3. Theoretical proposal

To support our main hypothesis that Romance can only refer to kinds by means of the ι operator, in this section we start by focusing on the meaning of common nouns. We argue that they denote properties of kinds (Dobrovie-Sorin and Pires de Oliveira 2007, Espinal and McNally 2007, 2011; Espinal 2010) and provide empirical evidence for this claim. Next, we discuss the meaning of the definite article, conceived as a maximality operator (Sharvy 1980), and the composition of a definite kind reading. We finally proceed to explain the role of Number, and we defend the hypothesis that, conceived as a Realization operator (Carlson 1977, Déprez 2005), it is not needed for reference to kinds/classes/species, since its function is to turn properties of kinds into properties of individuals.

Since the only possible way to refer to kinds in Romance is by means of the definite article, in the discussion that follows it will be argued that no ambiguity should be attributed to the common noun (contra Dayal 2004) or to the definite article (contra Chierchia 1998, Dayal 2004), and, in addition, no well-established kind restriction will be said to apply at the linguistic level of analysis in this group of languages.¹⁰

3.1. The meaning of N

¹⁰ For different viewpoints on well-established kinds and the relevance of this restriction in Romance languages see Carlson (1977), Vergnaud and Zubizarreta (1992), Krifka et al. (1995), Ionin et al. (2011) among many others.

Since Partee’s seminal work (Partee and Rooth 1983, Partee 1987) on type shifting, there seems to be a general agreement in the literature that noun phrases (NPs) should be able to type shift between entities, properties and quantifier-type denotations. Kamp (1984) and Heim (1982) also provided strong evidence that many noun phrases lack quantificational force and thus should be given a non-quantificational analysis. In the syntactically oriented literature, it is standardly assumed that the type shifting operation is the semantic function attributed to the Determiner (Longobardi 1991, 1994, 2005; Chierchia 1998), which type-shifts a property (a predicate) into an entity (an argument) (cf. Espinal and McNally 2004).

If we consider not full NPs but common count nouns, a standard assumption is that they denote properties.¹¹ Another option explored in the kind-oriented literature is that common count nouns can denote a kind of thing (Carlson 1977, Zamparelli 1995, etc.). Yet, there is a third option, namely, to assume that common nouns denote properties of kinds, and this is the option we adopt in here. This theoretical alternative has been empirically motivated in a number of recent proposals, including Dobrovie-Sorin and Pires de Oliveira’s (2007) work on bare nouns in Brazilian Portuguese, McNally and Boleda’s (2004) analysis of relational adjectives, and Espinal and McNally’s (2007, 2011), in addition to Espinal’s (2010) semantic description of the meaning of bare nouns in object position in Catalan and Spanish.

To support this hypothesis we can consider three arguments based on adjective modification, number neutrality, and pronominalization in Catalan (Espinal 2010, Espinal and McNally 2011). We will focus on the properties of bare nouns (henceforth the BNs) which, in the languages where they are available, can be particularly revealing for establishing the denotation of lexical nouns. The first argument is based on the restrictions on modification exhibited by BNs in object position of HAVE-predicates, in contrast to full DPs. In this language, BNs can only combine with classifying expressions (e.g., *parella estable / formal* ‘long-term partner’), but not with qualitative and descriptive expressions (e.g., *parella alta / malalta* lit. partner tall / ill) that predicate of individual entities.¹² A modified BN denotes the intersection of properties of kinds.

¹¹ Chierchia (1998), however, argues that languages can be classified into typologically different groups, depending on the denotation of the common nouns, which can refer to either properties, or entities, or both. He proposes a Nominal Mapping Parameter to account for this typological variation.

¹² With regard to the position it seems that pronominal adjectives can only modify individual objects, not kinds, and therefore cannot appear as objects of those verbs that allow object BNs in Romance. See the contrasts in (i):

- (i) a. Té parella.
 has partner
 ‘(S)he has a partner.’

- (13)a. Té parella *estable* / *formal*.
 has partner stable formal
 ‘(S)he has a long-term partner.’
- b. *Té parella *alta* / *malalta*.
 has partner tall ill
- c. Té una parella *alta* / *malalta*.
 has a partner tall ill

Additional support for this analysis of BNs on the basis of Catalan data comes from McNally and Boleda’s (2004) analysis of relational adjectives like *tècnic* in *arquitecte tècnic* ‘technical architect’ as denoting properties of kinds. They convincingly argue for an intersective analysis of this type of adjectives, which means that, to combine them with a noun, the noun itself should also be taken to denote properties of kinds.

The second argument is based on pronominal anaphora and shows that Catalan BNs in object argument position can only denote information about types / properties, and not information about tokens / contingent particulars. In (14a) the BN *rellotge* ‘watch’ is interpreted as a type of thing a person can wear, a situation which –in the absence of additional contextual information– only licenses the anaphoric property-type pronoun *en* in Catalan. The pronoun changes into an object-level anaphor *el* if some extra sentential information, such as the two temporal modifiers and the episodic past simple tense in (14b), enables an existential reading for the nominal expression *rellotge*.

- (14)a. Porta *rellotge*. *En* / *#el* porta cada dia.
 wears watch PROP it.ACC.SG wears every day
 ‘(S)he is wearing a watch. (S)he wears one every day.’
- b. Excepcionalment *ahir* a la tarda va portar *rellotge*.
 exceptionally yesterday in the afternoon PAST wear watch
#En / *el* va portar fins a la nit.
 PROP it.ACC.SG PAST wear until to the night
 ‘Exceptionally, yesterday afternoon (s)he wore a watch. (S)he wore it until nightfall.’

Thus, the contrast in (14) illustrates that at least in some uses, BNs in Catalan do not have an object level denotation.

-
- b. *Té *pressumpta* / *falsa* parella.
 has suspected false partner
- c. Té una *pressumpta* / *falsa* parella.
 has a suspected false partner
 ‘(S)he has a suspected / false partner.’

The third argument shows that count BNs in argument position have a number neutral interpretation, in the sense that they are compatible with atomicity and non-atomicity entailments. BNs in object position allow a plural or a singular interpretation, but have neither a dependent plural reading nor a dependent singular reading, nor are these nominal expressions specified for morphosyntactic number. Thus, sentence (15a) is true in a situation where the almond tree being referred to has one flower or more than one. Similarly, sentence (15b) is true in a situation where the subject has the characteristic property of being a client of the bank being mentioned, without specifying the number of accounts (s)he has with that particular bank. Given that in both examples we have count nouns, the number neutral interpretation shows that when no number information can be inferred for BNs, this type of information is not encoded in the denotation of a noun itself but comes from elsewhere (from the Number projection, in our proposal).

(15)a. *L' ametller té flor.*

the almond-tree has flower

'The almond tree has bloomed.' (It could have one flower, or more than one)

b. *Tinc compte corrent al Deutsche Bank.*

have account checking at.the DB

'I am a client of the DB.' (I may have one account, or more than one)

If we want to analyze all three sets of data that have just been examined in a systematic way, it is most plausible to assume that bare nouns denote properties of kinds. We arrive at this conclusion by the following reasoning. First, a common noun (a BN in Catalan or Spanish) cannot be taken to simply refer to objects because the type of anaphoric pronoun that it licenses is not compatible with an object/token interpretation. Hence, it should denote properties. If a common noun has a property denotation, it has no inherent number information, so the data in (15) follow. However, if its denotation is a property of objects, then the modification data remains unexplained. Hence, we believe that all the facts examined lead us to conclude that common nouns should be taken to denote properties of kinds.

In accordance with this conclusion, we formally represent the meaning of a common noun as in (16), where P stands for a property corresponding to the descriptive content of N: the property of being an x^k , x^k a kind entity (Carlson 1977) such that the property P applies to x^k .

(16) $\|N\| = \lambda x^k [P(x^k)]$ where $x^k \in K$ (domain of kinds)

Our assumption that nouns denote properties of kinds reconciles two popular views: on the one hand, a widely accepted claim that a noun initially has a property denotation (cf. Partee 1987 and many others) and, on the other hand, the assumption put forward in the kind literature, most notably, in Carlson (1977) and Zamparelli (1995), that common nouns' denotation relates to kinds rather than objects.

Our representation of the meaning of common nouns as referring to properties of kinds presupposes that nouns are conceived as intensional entities. This assumption is, in a way, hidden in many approaches that take nouns to denote kinds (cf. references above), since all taxonomic readings of a noun always presuppose intensionality.¹³ If nouns denote kinds, or properties of kinds, as we advocate in this paper, then they should denote intensional entities. In our analysis, we make this assumption explicit.

If, in contrast to the approach defended here, nouns were represented extensionally as properties of classes of individual entities (i.e. as sets of individuals having the property encoded by N), then intensionality, when required, as, for instance, in the case of kind referring expressions, had to come from somewhere else, e.g. from a *nom/* or a *^* or a GEN operator. In our analysis of definite kinds, by contrast, intensionality does not have to be brought in by any special operators. On the contrary, a realization operator will be applied to a noun to yield extensional realizations or instantiations of a property of a kind.

In our approach, we conceive of kinds themselves as unique entities with no internal structure which name types and classes of things. However, conceptualizing a kind this way does not lead to a kind being intrinsically linked to the notion of plurality in any sense. We believe that one can perceive something as a segregated object without any need to refer to or imagine any parts or instances of it. In other words, kinds are a result of generalizing over various instances, but the product of this generalization abstracts away from instantiations and semantically behaves like an entity without any internal structure.

In addition, we assume that kinds as integral entities do not form part of a standard quantificational domain for individuals represented by a lattice structure (Link 1983), and hence are not subject to any operations assumed for individuals. This assumption also helps to dissociate kinds from pluralities in Romance languages (cf. Beyssade 2005, for French). This being said, we do not claim that kinds cannot be part of *any* lattice structure due to some principled reason, but if they are, then this structure has to differ considerably from the lattice

¹³ Taxonomic interpretation is understood here in a broad 'biological' sense, i.e. as a name of a group of objects given on the basis of shared characteristics. Thus, we do not use 'taxonomic' as a synonym to 'subkind'.

for individuals (or individual properties). For instance, kinds can be conjoined (as we can say *The dodo and the pink pigeon are extinct*), but cannot be pluralized (i.e., *the dodos* does not refer to kinds, but to subkinds, at best) or combined with any quantifier or determiner, apart from the definite article (cf. *the tiger* vs. *every tiger*). So, whatever mathematical structure they can be modeled in has to be more restricted than our regular quantificational domain for individuals.¹⁴

If nouns start out as properties, it follows that they have to combine with a function that can turn a property-type expression into an argument-type expression, in order to be able to compose semantically with a predicate that selects for it; otherwise, as properties, nouns would not be able to combine with predicates that select for kinds (see note 3, above).¹⁵ Consider the data in (17) for Spanish, which present a count and a mass noun in subject position of k-level predicates.

- (17)a. **Dodó* fue exterminado.
 dodo was exterminated
- b. **Agua* se encuentra por todas partes.
 water CL finds by every part

Native speakers do not express any doubt at the time of judging these examples. Both (17a-b) are excluded as being completely ungrammatical. Furthermore, native speakers agree on the evaluation that in order to turn these examples into well-formed sentences that render the intended kind reading, a definite article is necessary, which means that the definite article expresses the required semantic function to turn a property of a kind into a kind:

- (18)a. *El dodó* fue exterminado.
 the dodo was exterminated
 ‘The dodo was exterminated.’
- b. *El agua* se encuentra por todas partes.
 the water CL finds by every part
 ‘Water is widespread.’

¹⁴ It is outside the scope of this paper to either create or further investigate the properties of this potential mathematical structure. The only point we want to make is that kinds cannot be considered part of the same quantificational domain as individuals, a claim already made in the literature by Beyssade (2005:53).

¹⁵ We have shown that BNs (which convey property-type denotations) do, however, combine with a restricted class of HAVE-predicates in Romance. It has been proposed that these V + N combinations form a complex predicate by semantic pseudo incorporation (Espinal & McNally 2007, 2011).

It should be noted that in these examples the definite article does not refer to any specific individual, but rather it refers to the kind entity named by the count noun *dodó* ‘dodo’ or to the kind matter named by the mass noun *agua* ‘water’. In other words, the definite expressions in both (18a-b) refer to kinds. Notice also that in Spanish, unlike in English, the definite article is also obligatory for mass nouns like *agua* in those cases where they have a generic reference. This is an important difference between Spanish and English that we will briefly reassess in Section 4.1 of the paper.

As we just illustrated, the definite article represents a necessary function to turn a property of kinds into a kind, so our next logical step is to look at the semantics of the definite article.

3.2. *The meaning of the definite article*

There is a common consensus in the formal semantic literature that the definite article is to be represented as the iota operator, as in (19), although there has been some disagreement about what the ‘iota’ itself actually means.

$$(19) \quad \textit{the} N \equiv \iota x N(x)$$

In this paper, we adopt the proposal of Partee (1987), according to which the definite article corresponds to an operation that maps any property $\langle e, t \rangle$ onto an individual denotation $\langle e \rangle$ or, in other words, it maps a property onto the unique individual having that property.

$$(20) \quad \iota: P \rightarrow \iota x [P(x)]$$

Sharvy (1980) and Link (1983) extended the semantics of the definite article so that it could uniformly apply to singular and plural nouns. Following them, we assume that the iota operator expresses maximality, that is, it selects the maximal / unique entity that satisfies the property denoted by the noun. Thus, when this operator applies to a singular count noun it gives the unique individual in the discourse domain. If, however, it applies to a plural count noun, it yields the sum of all the items that satisfy the plural predicate.

In the case the definite article combines with a noun whose meaning is to denote properties of kinds, the iota operator selects the maximal species itself. In other words, we believe that the definite article always has the same semantic contribution. It does not change its meaning when it combines with a noun in the singular or in the plural, or with a noun unspecified for Number (e.g., in combination with proper names in some Romance languages

like Catalan or Portuguese, and also –as will be postulated below– in the case of definite kinds). Conceived in these terms, the definite article is neither ambiguous nor expletive (Vergnaud and Zubizarreta 1992), and this view also accounts for the uniqueness presupposition of the definite determiner.

Now that we have defined both common nouns and the definite article, we can semantically compose the two, which will give us the denotation of the definite kind: the definite article combines with a property of kinds of type $\langle e^k, t \rangle$ to give an entity-denoting expression, the atomic kind of type $\langle e^k \rangle$, as exemplified below for the expression *el dodó* from example (18a).

(21)a. [DP *el* [NP *dodó*]]

b. $\|el\ dodó\| = \iota x^k [dodó(x^k)]$

It is crucial to note that the ι operator in this configuration binds variables of kinds (x^k), and the structure in (21a) syntactically corresponds to a definite nominal expression not marked for Number. The output of this derivation corresponds to what we name *definite kinds*. The derivation that we propose underscores that they are neither *singular* definite kinds (Carlson 1977) nor *singular* generics (Chierchia 1998). The meaning associated with the semantic representation in (21b) provides the maximal / unique kind entity that satisfies the property denoted by the noun.

A definite determiner, standardly interpreted as the iota operator ι , is responsible for instantiating a kind-denoting expression if, and only if, it selects for a Noun, and there is no intervener in between D and N. An immediate advantage of this approach is that, without extra machinery we can account for the definite kind interpretation associated with the definite article as applied to any common noun: a count noun *el dodo* ‘the dodo’, a mass noun *el agua* ‘(the) water’, or an abstract noun *la semántica* ‘(the) semantics’, all of which must be used with a definite article in Spanish. This is the reason why we may call this derivation a ‘direct’ application of the iota operator to the denotation of a common noun. In particular, definite kinds do not involve Number in any possible way, neither semantically, nor syntactically. Semantically, definite kinds directly refer to kinds themselves, not to maximal sums of realizations or instantiations of those kinds. Thus, definite kinds have unique reference. Syntactically, no Number projection is involved in the representation of a definite kind.¹⁶

¹⁶ This suggests that when a definite kind combines with a verb there is no subject-verb agreement. We assume the verb simply takes a default third person singular form.

Note also that the definite article is the only determiner that can occur with this type of kind expressions. The reason for this, we believe, is in the semantics of the definite article itself, which is associated with the iota operator and yields the maximal / unique entity corresponding to the description. All the other determiners and quantifiers contribute or constrain the interpretation of a nominal expression in more specific ways that cannot be achieved without access to instantiations, which in our proposal would involve application of Number, the topic of the next section.

So far, in this section, we have shown how the meaning of $\|N\|$ combines with the meaning of the definite article in kind-denoting expressions. We have presented kinds as unique entities which do not form part of a quantificational domain. What is crucially needed to become part of a quantificational domain is the access to the instantiations or realizations of a kind, and this is the role we attribute to Number in the next section.

3.3. *The meaning of Number*

The analysis of definite kinds that we developed in the previous section is based on the absence of Number in the syntactic and semantic structure associated with the definite kind. Nevertheless, we assume that the canonical syntactic structure (Zamparelli 1995, Chierchia 1998, Longobardi 2001) for nominal arguments in languages with number morphology and determiners involves a Number projection, as the one given in (22). This is the structure that we also postulate for nominal expressions that refer to ordinary individuals.

(22) $[_{DP} D [_{NumP} Num [_{NP} N]]]$

In this section we examine the consequences of the presence of Number for the interpretation of DPs.

We propose an analysis of Number based on the idea that it can be treated as a realization or instantiation operator (cf. Déprez 2005, Espinal 2010, Borik and Espinal 2012, Gehrke and McNally 2012). The basic idea is to treat Number similarly, but not identically, to Carlson's (1977) realization operator R , which relates kinds to individual objects. In our proposal Number is a morpho-syntactic category that applies to *properties of kinds* (the meaning of N) to yield *properties of objects*. In other words, the general role of Number is to provide sums of objects that instantiate a given kind: $x^o_1 \oplus \dots \oplus x^o_n$ stands for the individual sum or plural individual object X^o that realizes x^k , and for any object member of that sum it is true that it instantiates x^k . Thus, Number takes us from properties of kinds to the quantificational domain

of objects, which we assume, following Link (1983), to be formally represented as a joint semi-lattice containing atoms and their sums.

We take the difference between singular and plural to reflect the common intuition that a singular noun refers to one entity, while a plural one refers to more than one object. One way to make this intuition more precise is to say that singular nouns refer to atomic entities, while plurals refer in the domain of sums (cf. Chierchia 1998, Rullman and You 2006, Farkas and de Swart 2010, and many others).¹⁷

The formal representation of singular and plural Number is given in (23): these formulas relate the property of being a kind x^k and the property of being an object x^o of that kind, such that a realization operator R instantiates x^k into an individual atomic entity x^o if Number is morphosyntactically specified as [-PL], or a sum of x^o 's if it is specified as [+PL].

- (23) a. $\|\text{Num}^{-\text{PL}}\| = \lambda P.\lambda x^o.\exists x^k (P(x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{At})$
 b. $\|\text{Num}^{+\text{PL}}\| = \lambda P.\lambda x^o.\exists x^k (P(x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{Sum})$

Given our central assumption that nouns denote properties of kinds (cf. (24a)), the result of applying the singular number to a noun *dodó* is given in (24b):

- (24) a. $\|\text{dodó}\| = \lambda x^k [\text{dodó}(x^k)]$
 b. $\|\text{Num}^{-\text{PL}}\|(\|\text{dodó}\|): [\lambda P.\lambda x^o.\exists x^k (P(x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{At})] (\lambda x^k \text{dodó}(x^k)) \rightarrow$
 $\lambda x^o.\exists x^k ([\lambda x^k \text{dodó}(x^k)](x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{At}) \rightarrow$
 $\lambda x^o.\exists x^k (\text{dodó}(x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{At})$

According to this representation, *dodó* with [-PL] Number specification denotes an atomic entity instantiating the kind *dodó*. Furthermore, as we already pointed out in the previous section, we aim at keeping the semantics of the definite determiner uniform, independently of whether it combines with a nominal expression specified for Number or not, as in the case of definite kinds. When the DP is specified for Number the ι operator, conceived as a maximality operator, provides the maximal sum of individual objects (type $\langle e^o \rangle$) that satisfy the property denoted by N. Thus, if we consider the definite DP subject of an s-level predicate, as *disecar* ‘to dissect’ in (25), the semantics of the subject DP would look like (26).

- (25) *El dodó fue disecado en el Museo Ashmolean.*
 the dodo was dissected in the museum Ashmolean
 ‘The dodo was dissected in the Ashmolean Museum.’

- (26) $\|\text{el}\|(\|\text{Num}^{-\text{PL}}\|(\|\text{dodó}\|)): \iota x^o \exists x^k [\text{dodó}(x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{At}]$

¹⁷ We abstract away from the debate about inclusive and exclusive plural (cf. Sauerland et al. 2005, Spector 2007, Farkas and de Swart 2010, etc.).

It should be clear by now that we attribute the contrast between a kind vs. an individual object interpretation to the presence of Number in the structure of the DP: an individual object interpretation is available only if the kind property expressed initially by the noun is instantiated, and since we treat Number as an instantiation function, it follows that an individual object interpretation is only available if Number applies. Thus, the syntactic structures attributed to the subject arguments in (18a) and (25) are given in (27a) and (27b), respectively. Structure (27a) corresponds to a definite kind, which combines straightforwardly with a k- selecting predicate (e.g., *extinguirse* ‘to be extinct’). Structure (27b) corresponds to an individual object denotation that contains only one atom, which combines straightforwardly with an s- selecting predicate (e.g., *disecar* ‘to dissect’).

- (27) a. [DPD [NP_N]] - *kind*
 b. [DPD [Num_P Num_[-PL] [NP_N]]] - *individual object*

To sum up what we have said so far, we assume that the presence of Number is crucial for obtaining an individual object interpretation of a DP. We have proposed a formal analysis of Number as a realization operator, which relates properties of kinds to properties of objects and thereby brings out the contrast between a kind vs. an individual object (including an individual sum or plural object) interpretation. This contrast is best exemplified by combining the same DP *el dodó* ‘the dodo’ with a k-level (18a) or with an s-level predicate (25).

Even though this paper focuses on the interpretation of kind-denoting expressions only in argument positions, it should be noted that bare nouns that denote properties of kind species, like *dodó*, cannot be used in a predicate position without an article, as shown in the examples below.

- (28) a. *Puf es dodó.
 Puf is dodo
 b. Puf es *un* dodó.
 Puf is a dodo.

Even though Spanish, just like other Romance languages, does allow for BNs in predicate position (i.e., when denoting functions, roles, capacities, etc.; see de Swart et al. 2007, Beyssade 2007, Zamparelli 2008) the conditions for this use with kind species are limited. As (28b) shows, nominal phrases found in predicate position of copular sentences usually require an expression of Number (cf. a singular indefinite determiner). Thus, for the sentence in (28b) above we assume the following semantic representation:

- (29) $\lambda x^o \exists x^k [\text{dodó}(x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{At}] (\text{Puf}) \quad \rightarrow$

$\exists x^k [\text{dodó}(x^k) \ \& \ R(\text{Puf}, x^k) \ \& \ \text{Puf} \in \text{At}]$

To sum up, the proposal advanced and elaborated in this section is that definite kinds in languages like English and Spanish are expressed by means of a definite article applying directly to a noun. Semantically, we assume that nouns denote properties of kinds and that the meaning of the definite determiner is the iota operator, i.e., a maximality operator that yields the maximal entity or the maximal sum of entities denoted by the noun as its output. We have also provided a theoretical analysis of Number as a realization operator, which is needed to explain the contrast between a kind and an individual object interpretation.

We now move to Section 4 where we explain in more detail how kind reference is expressed in Spanish.

4. Kind reference in Spanish

In this section, we show how the model we worked out in the previous section straightforwardly accounts for definite kinds in Spanish, no matter the lexical status of the Noun (count, mass or abstract). In Section 4.1 we argue that definite kinds is the default way to refer to kinds in Spanish. In Section 4.2 we extend this analysis to modified kinds (i.e., definite kinds modified by classifying expressions), which preserve kind reference.

4.1. Definite kinds

As pointed out in the Introduction, in the literature on D-genericity it is usually taken for granted that, at least in English, canonical kinds are expressed by means of BPLs. Since Romance languages like Spanish do not allow generic bare plurals, a relevant question to ask is how canonical kinds are expressed in this group of languages. One of the goals of this section is to show that canonical kinds in Spanish are definite kinds, i.e. expressions composed by a definite article applied to a noun.

Consider first example (30). In (30a) the subject DP combines with a k-level predicate and denotes a kind, the bird species known by the name ‘dodo’. In (30b) the subject DP, in combination with an i-level predicate can be also associated with a kind reading (cf. Carlson 1980).¹⁸

¹⁸ Another possible reading for the nominal expression *el dodó* in (30b) is an individual object interpretation, a specific token, for which we have postulated Number in the syntactic and semantic structures. This reading is only salient when adequate contextual information is available. See also footnote 4.

- (30) a. *El dodó* se extinguió en el siglo XVII.
 the dodo CL extinguished in the century XVII
 ‘The dodo was extinct in the XVII century.’
- b. *El dodó* vivió en la isla Mauricio.
 the dodo lived in the isle Mauritius
 ‘The dodo lived in Mauritius Island.’

In both examples the kind reading of the DP subject keeps the intensionality of the noun *dodó*, since the definite article simply selects the maximal / unique entity that refers to the class itself (i.e., to the class of individuals described by the Noun), but does not make the denotation restricted to a given world. Thus, an intensional definition of kind entities allows for dodos in some other world to still exist and live in different places. This intensional reading is the reason why we can talk about non-existing species in the first place.

Let us point out once again that in Spanish, the definite article is obligatory not only with count nouns denoting species, but with any count, mass or abstract noun, and we assume that the last two classes also denote kinds. The relevant examples are provided below.

- (31) a. *(El) *iPod* fue inventado por Steve Jobs.
 *(the) iPod was invented by Steve Jobs
 ‘The iPod was invented by Steve Jobs.’
- b. *(El) *agua* se encuentra por todas partes.
 the water refl found for all parts
 ‘Water is found everywhere.’
- c. *(La) *Lingüística* es el estudio del lenguaje.
 the linguistics is the study of.the language
 ‘Linguistics is the study of language.’

All in all, the significant similarities between *el iPod*, *el agua* and *la lingüística* can only be captured if a unified analysis is given for these nominal expressions that provide kind reference. This observation is our first argument to support the claim that in Spanish, unlike English, definite kinds are, in fact, the default way to refer to kinds, even if they do not refer to species.

Let us hereby discuss mass nouns in a bit more detail.¹⁹ As has already been mentioned, the behaviour of mass nouns in Spanish as kind referring expressions is radically different

¹⁹ We acknowledge the request of anonymous reviewers to introduce the discussion of mass nouns into the paper, although it should be noted that our primary focus remains on count nouns, not so extensively studied as

from their English counterparts. An obvious contrast is based on definiteness, exemplified in (31b) and its English translation. Our explanation for this most obvious contrast will rely on the claim argued for in Section 5, namely, that Spanish does not provide any empirical support to the existence of the down operator. Thus, if in English this operator is taken to be the standard means to derive a kind denotation on the basis of plural properties, it also applies to mass nouns since, by most common assumption, they inherently include pluralities in their denotation (cf. Chierchia 1998, Dayal 2004). In Spanish, all kind denoting expressions are necessarily derived by the iota operator, no matter whether it combines with a count, mass or abstract noun, and this operator is lexicalized as a definite article.

Having said that, we can make our general assumptions about mass nouns a bit more explicit. First of all, we assume that bare mass nouns, just as bare count nouns, refer to properties of kinds. That is, we take the basic denotation of *agua* (water), just like *tigre* (tiger) to be $\langle e^k, t \rangle$. In other words, we do not make any semantic distinction between the two classes, mass and count nouns, in terms of their referential properties and denotation at the lexical level.²⁰ A kind reading of the mass nouns in Spanish, as we have said above, is derived by the same mechanism as the kind reading of a count noun, namely, by application of the iota operator to the denotation of a common noun, as described in detail in Section 3.2.

Mass nouns in Spanish, like in many other languages, also occur in episodic contexts where, according to our analysis, a count noun would have a full DP structure with a semantically interpreted NumP projection. We would like to propose that the same configuration postulated in (27b) for count singular nouns can be ascribed to a mass noun in combination with an s-level predicate, that is, a mass noun in (32a) has a full DP structure with Number specification, as represented in (32b).

(32)a. El agua está limpia.²¹

mass nouns. Furthermore, one of the main topics of this paper is to emphasize the role of number in deriving a kind interpretation. The discussion below indicates that there are some not completely clear issues concerning the role of number in mass nouns, but for now we are determined to keep the analysis of mass nouns as close as possible to the one we propose for count nouns in this paper.

²⁰ This is contrary to Chierchia (1998), who assumes that mass nouns directly denote kinds, whereas count nouns denote properties, but is in agreement with Dayal (2004), who keeps the initial denotation of mass nouns in the property domain.

For the purposes of the present article we assume that all Nouns denote properties of kinds, although we acknowledge that there are lexical semantic differences between them that do not seem to be crucially relevant for the claims we argue for.

²¹ We owe this example to a reviewer. The structure in (32b) does not take into account how Number agreement will be guaranteed at spell out. What we wish to emphasize here is that an s-level predicate selects for individual objects, and therefore the mass noun need to be instantiated as an individual amount of water in order to be able to be combined with the predicate.

the water is clean

b. [DP *el* [_{NumP} Num_[-PL] [_{NP} *agua*]]]

Even though the specific consequences of this proposal remain to be worked out, we would like to point out two pieces of evidence that support our hypothesis that grammatical number, is not incompatible with mass nouns and that this claim can be made for Spanish.

First, it appears that cross-linguistically, number morphology on mass nouns is not that rare (cf. Corbett 2000). In particular, it has been shown that in Greek number morphology can appear on mass nouns, which keep their mass denotation (Tsoulas 2009), like in the following example.²²

(33) *Epesan nera sto kefali mu.*
fell.3PL water.PL.NEUT.NOM on.the head.NEUT.SG my
'Water fell on my head.'

Thus, it appears that English, a language where (interpretable) number morphology never appears on mass nouns, is, once again, far from a universal case, and a general hypothesis that Number can apply to a mass noun gets some cross-linguistic support.

Secondly, it seems that Spanish, like Greek, is much more liberal with respect to Number realization with mass nouns. It might be more difficult to present direct evidence for the presence of singular number since in that case *el agua* would be homophonous with a definite kind, but on the other hand plural mass nouns quite frequently appear in a number of different contexts. Consider, for instance, the two examples in (34).

(34)a. *La masa de las aguas que cubren las depresiones*
the mass of the.PL waters that cover the.PL hollows
de la corteza terrestre forma mares y océanos.
of the crust earth forms seas and oceans
'The mass of the waters that cover the hollows of the earth crust forms seas and oceans.'

<http://www.astromia.com/tierraluna/mares.htm> [March 5th, 2014]

b. *Las aguas de los tanques están limpias.*
the.PL waters of the.PL tanks are clean.PL
'The waters of the tanks are clean.'

²² In this sense Greek can be contrasted with English, where it is generally assumed that a mass noun marked for number has been coerced into a count one.

These examples illustrate that it is far from implausible to postulate the presence of Number with mass nouns in Spanish for those cases where mass nouns do not have a kind denotation.

All in all we would like to emphasize that our analysis presented in Section 3 will derive a kind denotation for both count and mass nouns in a uniform way which is fully supported by empirical data presented in (31a) and (31b), and can even be extended to abstract nouns, as illustrated in (31c).

After this excursus on the possibility of composing definite kinds from count, mass and abstract nouns, let us now go back to presenting our arguments for the status of definite kinds as default kind expressions in Spanish.

Our next argument is based on the use of definite kinds in those contexts where newly discovered things have to be named. Thus, in a situation when a name of a new kind is introduced, as for instance in the complement position of verbs like *descubrir* ‘to discover’, and *inventar* ‘to invent’, Spanish speakers, as a rule, only use a definite DP.

(35)a. Thomas Alva Edison descubrió, entre otras cosas, *la bombilla* y *el fonógrafo*.
Thomas Alva Edison discovered among other things the bulb and the phonograph
(<http://www.wordreference.com/es/en/translation.asp?spen=descubrir>) [March 5th, 2014]

b. Alexander Fleming inventó *la penicilina*.
Alexander Fleming invented the penicillin

Notice again, that in English, as opposed to Spanish, bare plurals are quite frequently used with predicates like *invent* and *discover*, and phrases like *Who invented magnets?* (http://education.jlab.org/qa/historymag_01.html) sound quite natural.²³

The third context that we look at is descriptive generalizations (in the sense of Krifka 2012). Consider the following examples:

(36)a. *La mosca de la fruta* es típica del verano.
the fly of the fruit is typical of the summer
‘Fruit flies are typically found in the summer.’

b. *La drosophila melanogaster* es típica del verano.

²³ Definite plurals are possible in Spanish in this position as well, but they obligatorily yield a subkind interpretation with predicates like *inventar* ‘invent’ and *descubrir* ‘discover’, whereas the English bare plurals do not. See Section 5 for details.

the *drosophila melanogaster* is typical of the summer

‘*Drosophila melanogaster* is typically found in the summer.’

Descriptive generalizations are formulated over kinds, and since the default form for kind reference in Spanish is a definite DP that does not specify Number, this is the form that nominal expressions must take in this context. It is plausible to suggest that this pattern occurs in descriptive statements because they presuppose the existence of a specific kind being described and speakers prefer to refer to it by means of a definite article. The use of a bare plural in English for translating the Spanish sentence (33a) clearly exemplifies the contrast between these two languages. The translation given for (33b) suggests that the Latin name of this species of fly is conceived as a proper name in English. In Spanish, whereas proper names are most commonly used without a definite article, the name of the species requires it, suggesting that in this language *la drosophila melanogaster* is treated as the name of a kind.²⁴

To sum up, in this section we have considered the notion of definite kind as applied to Spanish. We have argued that in this language (and most probably in the rest of Romance languages) definite kinds are the default way to express D-level genericity, a reading that refers to the kind itself and is directly constrained by the structure of the DP.

In the next section we deal with modified kinds as a means for rendering a taxonomic interpretation for nominal expressions.

4.2. Modified definite kinds

Consider now the case of modified DPs, as illustrated in (37).

- (37) *El dodó {blanco, de la isla Reunión} sólo se conoce*
the dodo white from the isle Reunion only CL knows
a partir de dibujos y descripciones.
from drawings and descriptions

²⁴ We assume that proper names and definite kinds share the same syntactic representation, namely, they are both DPs without Number. However, we do not claim that proper names and definite kinds are semantically similar as well. There are different views both on what the denotation of proper names should be (cf., for instance, Matushansky (2008) and Löbner (2011)) and on whether proper names should be closely associated with kinds, semantically (cf. Carlson 1977/1980, Krifka 1995, Chierchia 1998, Doron 2003). In this paper, we do not discuss the semantics of proper names, hence, we do not make any claims about the relation between kinds and proper names.

‘The {white dodo, Solitaire of Reunion} is only known from drawings and descriptions.’

The subject of the i-level predicate is a DP in which the definite article combines with a nominal expression composed by a noun and a modifier. In this example it appears that modification restricts the referential properties of the nominal phrase: the modified DP, similarly to the non-modified version of it, denotes a kind, but the modified DP denotes a restricted kind, for which we provide an intersective analysis.

Semantically, a classifying expression (i.e., either an adjective or a prepositional phrase of type $\langle e^k, t \rangle$) in combination with a noun is interpreted as an intersection of properties of kinds, thus denoting a subdomain of the kind ‘dodo’ (e.g., *dodó blanco* ‘white dodo’). But, when this NP combines with the definite article, the whole DP *el dodó blanco* ‘the white dodo’ has the semantics of a kind denoting expression, as represented in (38).

$$(38) \quad \|\text{el dodó blanco}\| = \iota x^k [\text{dodó}(x^k) \ \& \ \text{blanco}(x^k)]$$

This analysis treats the expression *el dodó blanco* as a definite kind. Modified kinds with classifying expressions, hence, maintain the ability of the unmodified expression *el dodó* to refer to a kind.

An important note has to do with identifying the conditions under which a property can be interpreted as a classifying expression, i.e., as a kind modifier. This possibility does not seem to be a matter of lexical (semantic) idiosyncrasy and we would like to suggest that, in principle, any classifying modifier can be a potential candidate to obtain a restricted kind. Thus, the adjective *blanco*, as used in (34), can modify a noun *dodó* and yield an intersection of properties of kinds *dodó blanco*, which in its turn can yield a kind interpretation by application of the definite article (i.e., the iota operator). However, the same colour adjective, when combined with other nouns, may yield a different interpretation. This is the situation illustrated in (39), where *blanca* modifies the noun *nevera*, and the whole DP *la nevera blanca* ‘the white fridge’ is the external argument of an s-level predicate in an episodic context. In this linguistic environment the DP is interpreted as referring not to a kind but to a specific individual object.

$$(39) \quad (\#)\text{La nevera blanca se ensució mucho.}$$

the fridge white CL got.dirty a.lot

Relevant to our discussion is the fact that we do not normally classify fridges by colour, hence the nominal expression *la nevera blanca* ‘the white fridge’ fails to get a generic kind reference, unless relevant information is added to the common ground.²⁵

A crucial question that arises at this point is which modifiers can function as classifying expressions. Some discussions in the literature seem to support the claims already advanced in Section 3.1. For instance, relational adjectives have been analysed as denoting properties of kinds (McNally and Boleda 2004), so their findings provide one well-defined class of adjectives that should not be interpreted as denoting properties of individuals. Similarly, colour adjectives, as we have seen in the discussion above, can also denote properties of kinds, although we are not claiming that they always do. Perhaps an analogy can be drawn between colour adjectives and individual-level predicates in Carlson’s (1977) classification: just as the latter can take either a kind or an object as an argument (see footnote 4, above), the former (and possibly many other types of adjectives which we have not considered here) can function as denoting properties of kinds or properties of individual objects. Extending this analogy to relational adjectives, we would compare this class to kind-level predicates.²⁶

Note also that the claims advocated in this section with respect to modified kinds do not contradict our claims about possible bare noun modifiers in Section 3.1. In particular, we assume that the modified expressions discussed in that section (e.g., *parella estable* ‘stable partner’) should be able to give rise to a definite kind reading once the iota operator has been

²⁵ There are more cases where colour adjectives are perfectly acceptable as classifying modifiers. Consider the following example:

- (i) *El contenedor verde* está destinado a los objetos de vidrio.
 the container green is assigned to the objects of glass
 ‘The green container is for glass.’

Since a recent campaign for recycling in Spain makes use of the trash containers of different colours for different types of waste material, (i) sounds perfectly natural with the DP *el contenedor verde* ‘the green container’ referring to the kind of container assigned for glass and not any other container in particular. Thus, the case of *el dodo blanco* ‘the white dodo’ is not an exceptional one, in spite of the fact that it is definitely not a general property of colour adjectives to function as classifying modifiers. Rather, whether an expression can get a kind interpretation depends, once again, on the encyclopaedic information and our world knowledge. This means that the conditions under which a modified kind can still be interpreted as kind are similar to the conditions that underlie the well-established kind restriction: whether something is a kind or not depends on the more general extralinguistic information about the world and social conventions.

²⁶ Of course, we also expect to find many adjectives that behave like s-level predicates, i.e. adjectives that can only be applied to individual entities. Perhaps character or appearance describing adjectives (cf. *generous*, *handsome*, etc.) are of this type. Note, however, that just as in the case of predicates one and the same predicate can shift from i-level to s-level (see footnote 4 above) depending on the context, we should expect the same type of variability with adjectives, at least in some cases. There is an obvious need for a much more extended research in this area which would hopefully provide more precise and satisfactory answers to many questions related to kind modification, but, hopefully, we have exposed our general idea about modified definite kinds clear enough.

applied and the DP is an argument of a k-level predicate. Vice versa, we expect to find our modified kind expressions as admissible bare complements of HAVE-predicates in Spanish (and Catalan). A brief look at the data confirms this prediction.

- (40)a. *La pareja estable casi se ha extinguido en el mundo occidental.*
 the partner stable almost CL has extinct in the world occidental
 ‘The long-term partner has become almost extinct in the occidental society.’
- b. *Este urbanización no tiene contenedor verde.*
 this residential area not has container green
 ‘This residential area does not have a green container.’

In addition to the restriction on modification discussed above, we assume that there is a pragmatic / encyclopaedic restriction on what we consider to be a canonical kind, referred to in the literature as the so-called restriction on well-established kinds (Carlson 1977). One of the well-known examples that illustrate this restriction is given in (41) for English (Krifka et al. 1995:69). Similar effects can be illustrated for Spanish in (42).

- (41)a. The Bengal tiger is dangerous.
 b. (#)The wounded tiger is dangerous.
- (42)a. *El tigre de Bengala es peligroso.*
 the tiger of Bengal is dangerous
 b. (#) *El tigre herido es peligroso.*
 the tiger wounded is dangerous

Since in our natural environment it is not customary to classify types of tigers by having or not having been wounded and / or to attribute any common status to this classification, the examples in (41b) and (42b) sound bizarre in a standard situation. However, contextual manipulation can render a definite DP such as *the wounded tiger* as acceptable as a generic expression as *the Bengal tiger* is.²⁷ We seriously doubt that in a culture where different classificational criteria would apply, (41b) and (42b) would sound less natural than their counterparts do, which supports the claim that this restriction is not linguistic (semantic) in nature, but is rather to be attributed to the encyclopaedic knowledge of speakers and hearers, their cultural and social conventions, and their conceptualization of reality (cf. Dayal 1992, 2004:note 30; Krifka et al. 1995:69). This means that when the background knowledge

²⁷ A suitable context for treating *the wounded tiger* as a kind would be a biology lesson at school when the teacher explains that wounded tigers exhibit different behavioral patterns in comparison to healthy ones. In this situation sentence (42b) would sound acceptable with a kind reading attributed to the subject.

changes, it influences the abilities of the speaker(s) to refer to kinds: some entities can become or cease to exist as well-established kinds.

In Spanish any definite DP unspecified for Number can be interpreted as a definite kind, if it combines with a k- or an i-level predicate, and our knowledge of the world allows a kind interpretation. Thus, the reason why *el tigre herido* is not a good candidate for argumenthood in (42b) is only due to our knowledge of the world.²⁸

In this section we have argued that the classificatory flavor of certain modifiers (even colour adjectives), interpreted as properties of kinds, provides a way to compose a taxonomic interpretation.²⁹ Let us now consider other forms of generic reference.

5. Other generic expressions in Spanish

So far we have argued that the principal, canonical way to refer to kinds in Spanish is by means of definite DPs that are not specified for Number. These DPs constitute the expression of D-genericity. However, it is well-known that in the same context where we use definite kinds, other forms of DPs (with demonstratives, indefinites, quantifiers and definite plural articles) can also be used, as in the examples below.

- (43)a. Thomas Alva Edison descubrió *una máquina para el cálculo automático de votos.*
 Thomas Alva Edison discovered a machine for the calculation
automático de votos.
 automatic of votes
 ‘Thomas Alva Edison discovered a machine for the automatic calculation of votes.’

²⁸ This is, we think, how we have to understand the proposal in the literature that the well-established kind restriction does not exist in Romance languages, namely in French. See the minimal pair in (i):

- (i) a. Le tigre du bengale est dangereux.
 the tiger of.the Bengal is dangerous
 ‘The Bengal tiger is dangerous.’
 b. Le tigre blessé est dangereux.
 the tiger wounded is dangerous
 ‘The wounded tiger is dangerous.’

Vergnaud and Zubizarreta (1992:644) claim that the relevant contrast observed in English does not exist in French, and that the counterpart of (37b) in (ib) is fine. However, those French native speakers we have asked do not seem to accept this example as being as natural as (ia).

²⁹ It should be noted that the expressions with classifying modifiers we have considered in this section are not idiomatic, in the sense that the meaning of a complex expression is compositionally transparent: the green container is indeed green and the white dodo is indeed white. For idiomatic expressions interpreted as kinds, such as *heavy water* or *the German shepherd*, see ter Meulen (1980) and Krifka et al. (1995).

b. Charles Babbage inventó los ordenadores.

Charles Babbage invented the.PL computers

‘Charles Babbage invented computers’

In these contexts, however, DPs are not any longer the expressions of kind reference per se, but are still generic expressions. (43a) means that Edison was the inventor of a subkind of device used to count votes, and (43b) can be successfully uttered only if Babbage, in fact, invented several types of computers.³⁰

In this section we argue that the two DPs illustrated in (43) can be associated with a generic interpretation, not because the DP has a special syntactic structure (cf. our hypothesis of a numberless DP structure for definite kinds), but because the predicate the DP combines with imposes a V-driven genericity. In other words, the hypothesis that we defend in this section is that generic DPs of the type illustrated in (43) are not instances of D-genericity in the sense that the definite kinds are. This is to say, the DPs in these examples are associated with a syntactic and semantic structure that unambiguously yields an individual denotation, i.e. they refer either to an atomic individual or to a sum of individuals, depending on the Number specification. Thus, by default, and taken in isolation, they will only be understood as denoting individuals. However, when such a DP is composed with a k-level or i-level predicate, its meaning is forced to be reinterpreted. In this section we consider two cases of such reinterpretation: the emergence of a subkind denotation and the generic reading of definite plurals in Spanish. In both cases an individual-denoting DP in combination with a k-level or i-level predicate is reinterpreted to satisfy the requirements of the predicate, what we name a V-driven genericity. Recall that our proposal for definite kinds does not postulate any reinterpretation of the kind described above: the kind reference in the case of definite kinds arises from the structure and meaning of the DP itself (D-genericity), which can freely combine with k- and i-level predicates without any further semantic change.

We now proceed to discuss how we build a taxonomic subkind interpretation by means of the grammatical category Number.

³⁰ In this section (and in this paper, in general), we consider only a subkind reading of indefinites, which is one of the possible interpretations associated with these expressions in generic contexts. Note that indefinites do not typically appear with kind predicates, apart from the context where they have a subkind interpretation. Probably one of the most typical contexts where indefinites are found is that corresponding to generic sentences of the type *A lion has a bushy tail*, which is composed of an indefinite in combination with an s-level predicate, and gets a generic interpretation from a special semantic GEN operator. Such examples are instances of I-genericity or characterizing sentences (cf. Krifka et al. 1995). As we pointed out in the Introduction, we will not discuss I-genericity in the present paper, which focuses on the expression of D-genericity.

5.1. Subkinds

Let us first consider the examples illustrated in (44), where the noun is combined with a demonstrative, an indefinite article, a numeral, and a quantifier. Our claim is that these nominal expressions correspond to full DPs specified not only by an overt determiner, but also by morphosyntactic Number, either singular or plural.

- (44)a. {*Una, esta*} *ballena* {está en peligro de extinción, tiene dientes}.
- {a this} whale is in danger of extinction has teeth
- ‘{A, this} whale {is on the verge of extinction, has teeth}.’
- b. {*Dos, muchas, algunas, todas las*} *ballenas* {están en peligro de extinción, tienen dientes}.
- two many some all the whales are in danger of extinction have teeth
- ‘{Two, many, some, all the} whales {are on the verge of extinction, have teeth}.’

According to what we have advanced in Section 3.3, a full DP specified for Number – before it is merged with the VP, is interpreted as referring to (sums of) individual entities. However, once the full DP is combined with a k- or i-level predicate, the meaning of the DP must be intensionalized and coerced to a subkind interpretation. The DP thus acquires a generic reference due to the coercion requirements imposed by the predicate. This is the hypothesis we will defend in this section.

One empirical difference between the examples in (44), that include DPs referring to subkinds, and definite kinds is that in the former a lexical item such as *clase, tipo* ‘kind’ (a name of a kind of thing in Carlson 1977, a kind-noun in Zamparelli 1995), can always be inserted between the Determiner and the Noun. With the definite kind DP this possibility is discarded, and the sequence *como clase* ‘as a kind’ can only occur as an apposition in this particular case. The contrast is presented in (45) and (46).³¹

- (45)a. *Esta clase de ballena* está en peligro de extinción.
- this kind of whale is in danger of extinction

³¹ Note also that modified kinds like *el dodó blanco* ‘the white dodo’ pattern with definite kinds rather than with taxonomic expressions, as illustrated in (i).

- (i) a. **La clase de dodó blanco* sólo se conoce a partir de dibujos y descripciones.
the kind of dodo white only CL knows from drawings and descriptions.
- b. *El dodó blanco, como clase*, sólo se conoce a partir de dibujos y descripciones.
the dodo white as class only CL knows from drawings and descriptions.
‘The white dodo, as a class, is only known from drawings and descriptions.’

- ‘This kind of whale is on the verge of extinction.’
- b. Dos *tipos de* ballenas están en peligro de extinción.
two kinds of whales are in danger of extinction
‘Two kinds of whales are on the verge of extinction.’
- c. *La *clase de* ballena está en peligro de extinción.
the kind of whale is in danger of extinction
- (46)a. *Esta ballena, *como clase*, está en peligro de extinción.
this whale as class, is in danger of extinction
- b. *Dos ballenas, *como clase(s)*, están en peligro de extinción.
two whales as class(es) are in danger of extinction
- c. La ballena, *como clase*, está en peligro de extinción.
the whale as class is in danger of extinction
‘The whale, as a class, is in danger of extinction.’

Recall that our central idea, presented and developed in Section 3, was that the definite kind interpretation is crucially built without Number. But, as we have shown in examples (44) and (45), the same cannot be said of subkinds: they can be counted and quantified over, and they appear with a whole range of determiners. It seems that the grammatical properties that we attribute to kinds are thus crucially different from the ones we should attribute to subkinds. To capture these differences, we suggest that a subkind interpretation, just like an individual object interpretation, is built on Number.

This line of reasoning presents us with a problem that we must face: how is a subkind reading derived? If we follow our explanation in Section 3.3, Number is a realization relation that turns properties of kinds into properties of individual objects, changing drastically the referential properties of the nominal expression. Now, the examples in (44) show explicitly that a subkind denotation is derived also as an output of Number. From a theoretical perspective, we should consider two possibilities: the first one is to define Number as an ambiguous operator that would relate properties of kinds to either properties of objects or properties of subkinds,³² and the second one is to keep the denotation of Number as we defined it and argue that a subkind reading is due to some other factor.

³² This option would be comparable to the position taken in Zamparelli (1995), who postulates two different realization operators: *KO* (from kinds to objects) and *KSK* (from kinds to subkinds). Similarly, Krifka et al. (1995) speak of a realization relation *R* (which relates kinds to objects), and a taxonomic subkind relation *T* (which relates kinds to subkinds).

In this paper, we follow the second option. In particular, we characterize Number as an operator that always yields the possibility of talking about individual objects, either individual atoms (if singular) or individual sums (if plural). Thus, the Number operator will always yield properties of individuals at the output.

However, individual objects are sometimes reinterpreted as if they could be intensionalized and, consequently, refer to subkinds. The question then is: when does this happen? In other words, what are the contexts in which individual objects can be interpreted as referring to subkinds? And, does this possibility depend on the DP itself, or rather on the VP the nominal expression combines with? Looking at the data, there is nothing special about the DPs in (44), they are regular DPs with overt determiners and Number. So, the answer must be in the predicate, or more exactly in the combination of any of these DPs with a subclass of predicates, namely k- and i-level predicates.

We postulate that a shift is needed from a set of individual objects to a subkind interpretation and that this shift is triggered by a predicate. The shift is accomplished by means of a *coercion* operator (cf. de Swart 1998), potentially intensional in nature, that guarantees that the selecting requirements of the predicate are satisfied at the time it combines with a DP that refers to individual objects. That is, coercion is triggered by k- and i-level predicates when there is a conflict between the denotation of the full DP and the selectional requirements of the predicate. This means that, in our approach, the instantiation of a kind into subkinds is not to be conceived as a case of D-genericity but rather of V-driven genericity.

To illustrate how this coercion works consider the pattern in (47), where a nominal expression with a demonstrative occurs in argument position of different types of predicates.

- (47)a. *Este tigre* se extinguirá en 100 años. *k-level*
 this tiger CL be.extinct.FUT in 100 years
 ‘This tiger will become extinct in 100 years’.
- b. *Este tigre* vive en la selva. *i-level*
 this tiger lives in the jungle
 ‘This tiger lives in the jungle.’
- c. *Este tigre* nació en el zoológico el año pasado. *s-level*
 this tiger was.born in the zoo the year past
 ‘This tiger was born in the zoo last year.’

The interpretations we observe for *este tigre* in (47) match the ones we described for kinds vs. individual objects in the previous sections. However, in (47a,b) instead of a definite kind

interpretation, we get a subkind interpretation. In the case the DP combines with a s-level predicate (47c), the only available reading for the DP is reference to an individual object. This proves that the predicate is actually the constituent that constrains whether a given DP argument is interpreted as referring to an individual object or to a subkind. In the structure represented in (48a) the operator C_{i-sk} stands for the coercion of an individual object onto a subkind. If this operator were not triggered by the verb, the derivation would clash, as in (48b).

(48)a. se extinguirá (C_{i-sk} (este tigre))

b. #se extinguirá (este tigre)

From the discussion here and in Section 4.2, we conclude that there are two ways by which a complex nominal expression acquires a taxonomic interpretation: either by modifying a definite kind (a case of D-genericity) or by coercion onto a subkind reading (a case of V-driven genericity).

The next question we want to address is how we make a transition from individuals to subkinds. We think that a change into a subkind denotation involves a change from individual reference to a group of individuals which satisfy the same description. For instance, in the case of *este tigre*, an expression which by default refers to an individual tiger, shifts its denotation (under coercion) to a subkind of well-defined tigers which are grouped together according to some general classificatory principles, which do not have to be principles of biological classification. Moreover, even though our most usual way to think about subkinds is based on biological taxonomies (i.e., we may think about subspecies of Bengal, Siberian or Caspian tiger),³³ note that, in principle, a subkind denotation can arise in a given context for any individual denoting expression. Thus, although we are not predisposed to think about tigers as forming subkinds of lazy, wounded or tall tigers, we can successfully refer to both natural subkinds and arbitrary subkinds on the basis of some unifying properties in combination with k- or i-level predicates. Consider the examples in (49).

(49)a. Two types of tiger prey on domestic buffalo, *a Bengal tiger* and *a Malayan tiger*.

b. Two types of tiger prey on domestic buffalo, *a lazy tiger* and *a wounded tiger*.

Thus, a subkind is, in a sense, an arbitrary sum of representatives of a kind, but just as in the case of well-established kinds, we do not readily perceive any such group of individuals as a

³³ Note that such taxonomies only exist for natural kinds (Rothstein 2010). For artefacts, for instance, various classifications exist, which are formed on the basis of quite different principles.

relevant subkind without contextual support. This means that a most general characterization of a subkind is a sum of representatives of a kind unified by a number of common properties.

In the present section we have argued that full DPs specified for morphosyntactic Number can be interpreted as denoting subkinds as the output of a coercion operation triggered by the selecting properties of the predicate the DP combines with. Thus, we conclude that a distinction is to be made between definite kinds and nominal expression with a taxonomic or subkind reference (cf. Krifka et al. 1995, Beyssade 2005 for French, Doron 2003 for Hebrew). Both subkinds and kinds require a D projection, a definite D in the case of kinds and a non-uniqueness determiner in the case of subkinds. But, in addition, subkinds are built on Number, either singular or plural.³⁴

In the next section we consider another type of expressions that are built on Number and also have a generic reference, but must be distinguished from both kinds and subkinds.

5.2. *Generic definite plurals*

Romance languages seem to freely use definite plurals in those generic contexts where English uses BPLs. In Romance BPLs cannot get a generic reference at all (Laca 1990; Dobrovie-Sorin & Laca 1996, 2003; Longobardi 2001, 2005; Zamparelli 2002; etc.). Therefore, the idea is that definite plurals would act in their stead.

The goal of this section is to account for the meaning of generic definite plurals and their representation, relying on empirical evidence from Spanish. It is organized as follows. First and foremost, in Section 5.2.1 we show that the meaning of definite plurals is crucially different from the meaning of definite kinds, on the basis of several arguments. In Section 5.2.2 we focus on the differences between English bare plurals and Spanish generic definite plurals and argue against the need of the down operator \circ in the derivation of the latter. We show that definite plurals cannot get an existential interpretation where bare plurals can, and

³⁴ Another interesting case of coercion seems to be posed by well-known sentences such as those in (i).

- (i) The rat reached Australia in 1770.

If the DP subject lacks Number and denotes a definite kind, it should not combine with s-level predicates. However, (i) looks like a notable exception to this rule, as discussed at length by Krifka et al. (1995), Dayal (2004), and many others. Intuitively, it seems that what is going on in (i) is a case of coercion of the kind expression into a prototypical representative: *the rat* in this example is perceived neither as an individual entity nor as the kind itself. Rather it refers to one prototypical representative of a kind. The conditions that restrict the possibility of this type of coercion are difficult to state explicitly, but it seems to be clear that the generalization expressed in this way has to be of importance to the whole kind, not just some individual entities representing the kind.

we argue that the DKP rule, at least as stated by Chierchia (1998), does not apply in Spanish. We take this to be an indication of a semantic difference between BPIs and definite plurals, and the basis to argue that a generic interpretation of definite plurals in Spanish is derived differently from the generic interpretation of BPIs in English. Finally, in Section 5.2.3 we explain the analysis in terms of \hat{t} that we adopt for the generic reading of definite plurals, following Chierchia (1998).

5.2.1. Definite plurals and definite kinds

In a recent experimental study Ionin et al. (2011) found out that in the context of sentence-level genericity Spanish native speakers slightly preferred to use the definite plural over the indefinite singular and significantly over the definite kind, whereas in NP-level genericity they slightly preferred the definite kind over the definite plural, but significantly above the indefinite singular.

At first sight, plural DPs or definite kind descriptions seem to be equally good with k- and i-level predicates in a generic interpretation. Consider, for instance, the data in (49) and (50).

- (49)a. *Los colibrís son comunes en Costa Rica.* *k-level*
 the hummingbirds are common in Costa Rica
 ‘Hummingbirds are common in Costa Rica.’
- b. *Los colibrís vuelan hacia atrás.* *i-level*
 the hummingbirds fly towards backwards
 ‘Hummingbirds fly backwards.’
- (50)a. *El colibrí es común en Costa Rica.* *k-level*
 the hummingbird is common in Costa Rica
- b. *El colibrí vuela hacia atrás.* *i-level*
 the hummingbird flies towards backwards

However, in this section we will show that there are contexts where the definite kind and the definite plural differ, and only one of the two seems acceptable, and we will argue that definite kinds and definite plurals do not have exactly the same meaning in spite of being both used in generic contexts.

A first difference between those two types of expressions arises in combination with canonical k-level predicates like *inventar* ‘to invent’. If we compare the interpretation of a

definite plural and a definite kind in examples (51), we infer that (51a), with a definite plural refers necessarily to subkinds of penicillin, whereas (51b) only allows a definite kind reading.

(51)a. (#)Alexander Fleming inventó *las penicilinas*.

Alexander Fleming invented the.PL penicillins

b. Alexander Fleming inventó *la penicilina*.

Alexander Fleming invented the penicillin

As was pointed out at the beginning of Section 5, the subkind interpretation is the only one available for definite plurals, hence for (51a), which complicates its understanding for those speakers who are unaware of the fact that penicillin comes in several subtypes.³⁵ Furthermore, (51a), to the extent that it is acceptable, is truth-conditionally different from (51b). For instance, in a situation where penicillin had already been discovered by, say, Guillermo Jones, but it was still unknown that there were several subtypes of this antibiotic, only (51a) would be true, since it asserts that Fleming discovered that penicillin came in different types, whereas (51b) will come out false. Our conclusion is thus that definite kinds do not have the same denotation as definite plurals.

The second difference between definite kinds and definite plurals that we bring up here is their use in different types of generic sentences. Krifka (2012) (following previous work by Lawler 1973; Burton-Roberts 1976, 1977; Cohen 2001 and others) distinguishes between descriptive generalizations and definitional statements. The former make generalizations about recurrent patterns in the world and rely exclusively on descriptions of kinds, the latter introduce a new term or a new interpretation of an existing term and may describe either kinds or individuals instantiating the kind, thereby restricting the language used to describe the world. It seems that in English there is a tendency to express the former by means of bare plurals, while the latter can also be expressed by means of indefinite singulars. This is illustrated in the pattern below, where (52) presents a descriptive generalization and (53) exemplifies a definitional statement (Krifka 2012:372, after Lawler 1973):³⁶

(52)a. Madrigals are popular.

³⁵ For someone who is not aware of the fact that penicillin comes in several types, (51a) sounds deviant. However, there are several types of penicillin, as witnessed by the following statement from the Wikipedia:

(i) *Penicillin* (sometimes abbreviated *PCN* or *pen*) is a group of antibiotics derived from *Penicillium fungi*. They include penicillin G, procaine penicillin, benzathine penicillin, and penicillin V. (<http://en.wikipedia.org/wiki/Penicillin>) [March 5th, 2014]

³⁶ See Greenberg (2003), Prasada and Dillingham (2005), Carlson (2010) for the importance of the notion of *principled connection* in combining predicates with different types of generic arguments.

b. #A madrigal is popular.

(53)a. Madrigals are polyphonic.

b. A madrigal is polyphonic.

In Spanish, by contrast, descriptive generalizations are usually expressed by means of definite kinds, as was mentioned in Section 4.1. Definite generics are dispreferred in these contexts, as shown in (54). As these data clearly illustrate, definite plurals in Spanish share the same sort of restrictions as indefinite singulars in English (cf. (52b)) in descriptive generalizations.³⁷

(54)a. *La sardana* es la danza más popular en Cataluña.

the sardana is the dance most popular in Catalonia

‘The sardana is the most popular dance in Catalonia.’

b. #*Las sardanas* son las danzas más populares en Cataluña.

the sardanas are the dances most popular in Catalonia

If we look at the other type of generic descriptions, definitional sentences, then the difference between definite kinds on the one hand, and definite generics on the other, gets blurred. As illustrated in (55), both types of nominal phrases are acceptable.

(55)a. *La sardana* es una danza que se baila en corro.

the sardana is a dance that CL dances in circle

‘The / a sardana is a dance that is performed in a circle.’

b. *Las sardanas* son danzas que se bailan en corro.

the sardanas are dances that CL dance in circle

‘Sardanas are dances that are performed in a circle’

Presumably, the reason for the well-formedness of (55) is that ‘being performed in a circle’ is true of kinds (55a), but it is also true of all the individual objects that might instantiate the kind (55b). In definitional statements the speaker introduces a new term or a new understanding of a term. The language is not fixed in this situation, and native speakers can express the definition in various ways: by means of a definite plural, if they define a whole sum of individuals in the discourse domain; or by means of a definite expression, if they define a term as a kind expression, in DP-level genericity.

³⁷ The same pattern holds for our examples in (36), discussed in Section 4.1. If the definite kind expressions in (36a-b) are replaced by definite plurals, the sequences become odd, independently of whether the definite plural expressions are built on the popular name (#*Las moscas de la fruta son típicas del verano* lit. the.PL flies of the fruit are typical.PL of.the summer) or on the scientific name of the species (#*Las drosophila melanogaster son típicas del verano* lit. the.PL drosophila melanogaster are typical.PL of.the summer).

To sum up, all the data presented in this subsection show that definite kinds are different from definite plurals both in meaning and distribution. We have presented evidence to the claim that the denotation of definite plurals is different from the one of definite kinds, and we have argued for the distributional differences between the two types of nominal expressions in so-called descriptive generalizations and definitional statements. Hence, the overall conclusion is that, despite the apparent similarities, definite plurals cannot be treated on a par with definite generics.

In the next two subsections, we discuss the semantic analysis of generic definite plurals and we propose that they refer to the intensional maximal sum of individuals that instantiate the kind. The data presented so far clearly show that definite plurals can combine with k- and i-level predicates. Thus, we argue that definite plurals are, along with subkinds, V-driven generic expressions.

5.2.2. Definite plurals: the lack of nom/^o

As we have already seen in the preceding sections, plural arguments in Spanish can express a generic reading when they are specified for definiteness. Bare plurals in this language do not refer to kinds, and typical k-level predicates such as *extinguir-se* ‘to be extinct’ or *inventar* ‘to invent’, can never combine with a bare plural in argument position:

- (56)a. **Dodos* se extinguieron en el siglo XVII.
 dodos CL extinguished in the centuryXVII
 b. *Steve Jobs inventó *iPods*.
 Steve Jobs invented iPods

The only possible way to turn the examples in (56) into well-formed sentences in Spanish is by substituting the bare plural for either a definite kind or a definite plural, as illustrated in (57):

- (57)a. {*El dodó, los dodós*} se extinguieron en el siglo XVII.
 the dodo the dodos CL extinguished in the centuryXVII
 b. Steve Jobs inventó {*el iPod, los iPods*}.
 Steve Jobs invented the iPod the iPods

The questions that arise in the light of these data are what sort of genericity can definite plurals express, and whether definite plurals in those cases where they get a generic

interpretation could be analyzed as derived by means of Chierchia’s nom/^h operator, just like their English BPI counterparts.

Dayal (2004, 2011) gives a positive answer to the second question. In her proposal, the cross-linguistic variation in the kind-denoting expressions boils down to which semantic operators are lexicalized and which are not. She postulates a universal principle of lexicalization “in which iota (which is canonically used for deictic and anaphoric reference) and nom (which is canonically used for generic reference) are mapped along a scale of diminishing identificability: $\text{iota} > \text{nom}$ ” (2011:1102).³⁸ According to her approach languages lexicalize at distinct points on this scale, proceeding from iota to nom. English, for instance, only lexicalizes the iota as the definite article, whereas BPIs are derived by nom, which is not lexicalized. This means that the kind reading of *dogs* in *Dogs are intelligent* is directly derived by applying nom/^h to a plural noun.

In the case of Romance languages, including Spanish, both iota and nom are lexicalized as the definite article in Dayal’s analysis. This means that, essentially, Spanish definite plurals are like English BPIs in the sense that they both refer to kinds, the difference being that in Spanish the operator that derives plural kind expressions, namely nom/^h, is lexically expressed by the definite plural article. Thus, it follows from Dayal’s approach that the definite article in Romance languages is ambiguous since it can encode both the iota and the nom operator. This is represented in Table 1.

Table 1: Lexicalization of semantic operators according to Dayal (2004)³⁹

	ι	$>$	nom/ ^h
English	<i>the</i>		BPI
Spanish	<i>el/la/los/las</i>		<i>los/las</i>

However, recall that Dayal (2004) basically follows Chierchia (1998) in her theoretical proposal, at least as far as the general semantic model and available semantic operations are concerned. In particular, Chierchia (1998:364) derives an indefinite interpretation of bare plurals in English by means of a DKP rule, which is stated as follows:

³⁸ The scale also includes the existential operator, which is ranked lowest, i.e. below both iota and nom (cf. also Chierchia 1998).

³⁹ It should be noted that Dayal extends her analysis for languages without articles like Russian and Hindi. For this type of languages, the lexicalization cut point is at the extreme left, which means that neither iota nor nom are lexicalized in languages without articles.

(58) *Derived Kind Predication*

If P applies to objects and k denotes a kind, then

$$P(k) = \exists x [{}^{\circ}k(x) \wedge P(x)]$$

DKP is a type shifting rule which turns a kind denoting argument into an existentially bound indefinite. This operation, as formalized in (58), accounts for the possible existential reading of BPLs in English, for example in (59), since the bare plural denoting a kind occurs in the argument slot of a predicate that does not select for kinds (Chierchia 1998: 364, (31c) and (32)):

(59)a. *Lions* are ruining my garden.

b. ruining my garden (${}^{\circ}$ lions)

$$\Leftrightarrow (\text{via DKP}) \exists x [{}^{\circ}\text{lions}(x) \wedge \text{ruining my garden}(x)]$$

Dayal (2004) makes Chierchia's DKP rule part of her proposal, as is evident from the fact that she effectively uses it to argue that an indefinite interpretation of bare plurals in languages like Hindi and Russian only arises in those contexts where a kind interpretation is also available. In other words, she uses DKP as a semantic operation applicable in different languages, and not as an operation restricted to English. Hence, we can safely assume that DKP is also expected to work in Spanish. This allows us to make the following prediction: if definite plurals in Spanish were the systematic counterpart to BPLs in English (in the sense that they both had the same kind denotation), we would expect these nominal phrases to behave similarly also in non-generic contexts. In particular, it is a well-known fact that BPLs in English get an existential interpretation if they are combined with a predicate that selects for an individual object.

If definite plurals in Spanish denoted kinds, just like BPLs in English do, we would also expect that in existential contexts we would be able to get an indefinite meaning for a definite plural by the same rule that applies to BPLs. In other words, we would expect to find contexts where definite plurals could be interpreted existentially. This prediction, however, does not find any empirical support. In Spanish, definite plurals cannot obtain an existential interpretation at all, no matter which type of verb this definite plural combines with.

- (60)a. *Los dinosaurios* desaparecieron. *k-level predicate*
the dinosaurs disappeared
'Dinosaurs disappeared.'
- b. Juan odia (a) *las mujeres*. *i-level predicate*
Juan hates OM the women

‘Juan hates women.’

- c. *Los colibrís* están enjaulados. *s-level predicate*
the hummingbirds are in.cage
‘(The) hummingbirds are incaged.’

None of the definite descriptions in italics in these sentences are to be interpreted as introducing existential quantification over instances of a kind, no matter the type of predicate these definite descriptions combine with. Intuitively, the definite plural in (60a) means that all instances of the kind ‘dinosaur’ disappeared, so the nominal expression does not have an existential reading. (60b) cannot mean that Juan hates some women –either he hates them all in general, or he hates all the women in a specific, contextually determined group. In the latter case, the nominal expression gets a regular definite interpretation. And finally, example (60c) claims that all instances of the kind ‘hummingbird’ we are considering in a particular situation are incaged birds. All these interpretations are fully compatible with the semantics of the definite article as a maximizing operator, but there is no hint of any indefinite interpretation close to the one that the BPI *lions* gets via the DKP rule in (58).

Still, with regard to the possibility that definite plurals license an existential interpretation, Zamparelli (2002) argued that an existential interpretation is available for definite plurals in Italian, but only in those contexts where this definite plural can have a kind meaning. He provides the following data to support his claim:^{40,41}

- (61)a. Ogni settimana, il mio sito web viene attaccato da *gli hacker*.
every week the my site web comes attacked by the hackers
‘Every week my web site gets attacked by (#the) hackers’
- b. Nel 1986 *i ladri* hanno svuotato il mio appartamento.
in.the 1986 the thieves have emptied the my apartment
‘In 1986, (#the) thieves have emptied my apartment’

Note that in English, BPIs would be used instead of the Italian definite plurals in italics. Examples similar to (61) can also be constructed in Spanish, presenting what appears to be

⁴⁰ As pointed out by Zamparelli (2002:8), these –and other examples he gives– are all ambiguous. For example *gli hacker* in (61a) (his example (27)) “can mean either ‘a specific group of hackers’ (the ‘normal’ definite meaning) or ‘some random members of the hacker community’ (most likely not always the same in different weeks). The normal definite meaning requires a context in which this unique group can be picked out, the other meaning doesn’t”.

⁴¹ It should be noted that for the rest of examples that Zamparelli (2002) analyses, in Spanish –in the absence of a particular context that licenses a specific reading– either a BPI or a mass noun should be used in object position.

some counter evidence to our claim that definite plurals cannot get an existential interpretation.

- (62)a. Cada semana, mi página web es atacada por *los hackers*.
every week my site web is attacked by the hackers
'Every week my web site gets attacked by the hackers'
- b. En 1986 *los ladrones* vaciaron mi apartamento.
In 1986 the thieves emptied my apartment
'In 1986, the thieves emptied my apartment'

However, we still think that there are arguments to support the claim that the definite arguments in (62) do not really render an existential interpretation as a true indefinite would. For this to be the case, a BPl *hackers* needs to be used in (62a), whereas (62b) would employ an indefinite article, i.e. *unos ladrones* (cf. object-subject asymmetry). The interpretation we get with definite plurals is not, really, the one that would be expressed by the \exists operator in the DKP rule, as formulated above. Rather, we believe that the examples in (62), in addition to the specific reading, present instances of the so-called *functional* reading (Condoravdi 1992, 1994),⁴² a possibility not considered by Zamparelli for Italian, a reading that once again presupposes rather than asserts the existence of hackers and thieves, respectively. This is also one of the readings BPls in English can get, which explains why BPls need to be used in English instead of definite plurals in Italian and Spanish. A defining feature of the functional reading is that the context provides the conditions for the interpretation of the nominal expression. In the case of examples such as those in (62) the DPs refer to the set of *particular* hackers or thieves (and not just *some* arbitrary hackers or thieves) who acted at a specific time in a specific place.

Yet another explanation of the apparent 'existential' flavor of the definite nominals in (62) is that in these particular cases they are interpreted as definite, but non-specific. It is well known that definiteness and specificity are two independent semantic properties (cf. Enç 1991, van Heusinger 2011) and in Romance languages, including Spanish, non-specific definites cannot be analyzed on a par with indefinites.

From the above discussion we conclude that $\text{nom}/^{\circ}$ is not a possible operation to derive a generic reading for definite plurals in Spanish. The postulated logical equivalence between Spanish definite plural DPs and English BPls (see Table 1) should thus be refined, because the predictions made by the classical analysis of BPls cannot be extended to definite plurals.

⁴² This reading is also called *quasiuniversal* in Dobrovie-Sorin and Laca (1996).

We also conclude that the DKP rule is not universally required, since an existential interpretation cannot be derived from definite plurals in languages that have indefinite DPs and indefinite BPs to assert an existential meaning.

Let us now get back to the nom/\wedge operator and specifically to the question of whether we should postulate this operator for Spanish. Our answer to this question is negative. In other words, we presume that this operator simply does not exist in Spanish because there are no empirical reasons to believe otherwise. In the rest of the section we review the main arguments that support our claim.

First of all, notice that in the original proposal of Chierchia the absence of the nom/\wedge operator is the only possibility that would allow us to analyze the Spanish data correctly. The output of a nom/\wedge operator has to be a bare noun with a generic interpretation. However, in Spanish, as argued, BPs do not have a generic interpretation in any context (Laca 1990, 1999; Dobrovie-Sorin and Laca 1996, 2003).⁴³

In Dayal's version of Chierchia's analysis, however, it could still be the case that nom/\wedge operator exists, but is lexicalized as the definite article, along with the ι . This means that essentially, definite plurals are ambiguous: either they are derived by ι and denote a contextually determined maximal sum(s) of individual(s), or they are derived by the nom/\wedge operator and denote kinds. However, we expect that in the latter case (i.e. for the definite plurals derived by the nom/\wedge) we could apply the DKP rule in episodic contexts, just like in English, which would yield an indefinite interpretation. This prediction does not find any empirical support: as we have just discussed, definite plurals do not get indefinite interpretations in Spanish. Thus, Dayal's version of Chierchia's account cannot be maintained either.

It seems to us that the only plausible conclusion is to say that the nom/\wedge operator simply is not required in Spanish. If this were not the case, we would be able to find some traces of the presence of this operator, yet we find none. All that we potentially need the nom/\wedge operator for is the generic interpretation of definite plurals. However, an alternative analysis, which was originally proposed by Chierchia (1998) for Italian and adopted hereby for Spanish, renders the nom/\wedge operator unnecessary also in this case. Definite plurals in their generic uses are conceived as the intensionalized version of 'normal' definite plurals ($\wedge\iota$). This analysis makes definite plurals logically equivalent to the output of the the nom/\wedge operator, because

⁴³ Note that Zamparelli (2002) claims the same for Italian.

the nom/\wedge operator is simply defined as an intensional variant ι , however, there is a different semantic process involved in the derivation of generic definite plurals. Furthermore, an advantage of this analysis is that, not having access to nom/\wedge , Spanish does not have access to DKP either. Those meaning differences we find between BPIs in English and definite plurals in Spanish (such as the absence of an indefinite interpretation with definite plurals) can be easily explained by the presence of ι with its standard semantics, associated with an implication of uniqueness as a side effect (Sharvy 1980), and a presupposition of existence.

Furthermore, we can nicely capture yet another difference between English and Spanish. Recall that English has to use bare mass nouns in generic contexts, whereas Spanish necessarily uses a definite article in these cases. As we already pointed out in Section 2.1, the pattern is problematic for Chierchia's (1998) analysis since it uses a MASS operator to derive definite kind readings for singular count nouns, thereby predicting non-existent similarities between mass nouns and definite kinds composed from count nouns. The difference between English and Spanish is illustrated in (63), where (63a) is repeated from (10).

- (63)a. (*The) gold is rare.
 b. *(El) oro es escaso.
 the gold is rare

In our proposal, this contrast is explained as follows. As a mass noun, English *gold* would satisfy the input requirements of the nom/\wedge operator, which can only apply to pluralities. Hence, the operator can successfully apply to mass nouns in this language and give a bare noun as an output. In Spanish, however, the only way to derive a kind interpretation for *oro* is by means of a definite article. Should Spanish have a nom/\wedge operator, we would expect a bare mass noun to be possible in such a context.

5.2.3. The need for $\wedge\iota$

Let us consider again some of the examples introduced in the previous text that show that definite plural DPs may occur in argument position of different kinds of predicates. We will hereby argue that the composition of a definite plural with k-level and i-level predicates is what determines a generic reading for them, thus illustrating what we name V-driven genericity. Consider (64a-b) in contrast to (64c).

- (64)a. *Los colibrís* son abundantes en Costa Rica. *generic*
 the hummingbirds are numerous in Costa Rica

‘Hummingbirds are numerous in Costa Rica.’

- b. *Los colibrís vuelan hacia atrás.* =(49b) *generic*
the hummingbirds fly towards backwards

‘Hummingbirds fly backwards.’

- c. *Los colibrís están enjaulados.* =(60c) *non-generic*
the hummingbirds are in.cage

‘The hummingbirds are incaged.’

Example (64c) is a non-generic sentence composed by a definite plural argument and an s-level predicate. In this case, the definite plural refers to the maximal sum of contextually determined individuals specified in the domain of discourse. The other two sentences are generic. They are comprised by the same definite plural and a k-level (64a) or an i-level (64b) predicate. Note, furthermore, that, whereas the English translation for (64c) requires a definite plural, the translations of examples (64a-b) use a bare plural that can only be interpreted as a kind-referring expression (cf. Ionin et al. 2011).

For the analysis of generic definite plurals we partially assume the proposal advocated in Chierchia (1998). In Chierchia’s account, two ways of deriving kind reference was postulated in the domain of pluralities. One canonical way is to apply a nom^h operator to the denotation of a noun to get a BPI with a generic reference, as in English. Another way, which is specific for Romance languages, was the application of an intensional operator to a definite plural expression. The latter is the only analysis that we need for assigning a generic reading to definite plurals and intensionalizing a plural DP in Spanish.

Since a definite article is standardly associated with the ι operator, Chierchia’s proposal for Italian is that in those cases where definite plurals correspond to BPIs in English, they are derived by an intensional operator \wedge , which applies to a definite description in the context of a k-level predicate. The output of this operation is $\wedge\iota$, an analysis we only adopt for generic definite plurals in argument position of k- and i-level predicates in Spanish. In relation to our particular examples in (64), we assume the semantic representations in (65).

(65)a. *son-abundantes* ($\wedge\iota$ colibrís)

b. *vuelan-hacia-atrás* ($\wedge\iota$ colibrís)

c. *están-enjaulados* (ι colibrís)

A definite plural denotes a maximal sum of individuals, as defined by ι , and an s-level predicate looks for object individuals. Therefore, in (64c) the predicate *estar enjaulado* ‘to be

incaged’ selects for the sum of all the individuals of the kind *colibrí* ‘hummingbird’ to be considered in the discourse domain.

However, a compositional problem arises when kind-seeking predicates like *ser abundantes* ‘to be numerous’ or *volar hacia atrás* ‘to fly backwards’ combine with a definite plural whose meaning is the contextually defined maximal sum of individuals of the kind *colibrí* ‘hummingbird’. In this context a type mismatch is created between the meaning of the plural DP and the meaning of the selecting predicate, the former denoting the maximal plural object and the latter looking for kinds. A way to avoid this mismatch is to coerce the interpretation of the plural DP by abstracting over worlds/situations, thereby making the denotation of the nominal expression intensional. The output of this operation makes it possible to refer to the maximal sum of hummingbirds with respect to the world / situation, and predicate a certain property of them (i.e., the property of being numerous or flying backwards in our examples). In other words, the meaning of the definite plural DP is shifted into an intensionalized generic reading in the context of a k- or an i-level predicate. In accordance with this approach, the semantic formulas corresponding to (64a) and (64c) have the form of (66).

- (66)a. $\hat{\iota}x^o \exists x^k [\text{colibrí}(x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{Sum}] \ \& \ \text{abundante}(x^o)$
 b. $\iota x^o \exists x^k [\text{colibrí}(x^k) \ \& \ R(x^o, x^k) \ \& \ x^o \in \text{Sum}] \ \& \ \text{enjaulado}(x^o)$

Summing up, in this section we have first shown that definite plurals in Spanish crucially differ from BPLs in English because they never license an existential interpretation. Furthermore, we provided a number of arguments to illustrate that definite plurals and definite kinds have different meanings. In particular, only definite kinds can be used in descriptive generalizations, and in some other contexts definite kinds cannot be assumed to have the same denotation as definite plurals. We have also argued that, when a definite plural is combined with a k- or an i-level predicate, the potential mismatch between the denotation of the nominal expression and that of the predicate is overcome by intensionalizing the definite plural argument. This means that the generic interpretation of definite plurals is a result of a V-driven type shift, the output of which is an intensionalized version of iota ($\hat{\iota}$).

We see a conceptual advantage in our proposal with respect to the one of Dayal (2004), since we do not have to postulate the ambiguity of the definite article as lexicalizing different semantic operators in different languages. In our analysis the definite article is not ambiguous, for it does not lexicalize two distinct operators (iota and nom), and it only

corresponds to the maximal iota operator. In Table 2 we summarize the various semantic operators required for kind denotation and generic definite plurals in English and Spanish.

Table 2: Semantic operators for kinds and generic definite plurals

	<i>English</i>	<i>Spanish</i>	<i>Examples</i>
kinds	nom/ ^h	∅	<i>Hummingbirds</i> are common in CR.
	ι	ι	<i>The hummingbird</i> is common in CR <i>El colibrí</i> es común en CR.
generic definite plurals	∅	^h ι	<i>Los colibrís</i> son comunes en CR.

6. Conclusions.

In this paper, we have discussed and analysed one of the means of expressing D-genericity in natural languages, namely, definite kinds. Definite kinds, as we have argued, are the expressions built by applying a iota operator, which is encoded by the definite article, to the denotation of a common noun, which refers to properties of kinds. The semantic analysis of definite kinds that we provided in Section 3 does not resort to either the ambiguity of the noun itself (as in Dayal 2004) or to the ambiguity of the definite determiner (as in Chierchia 1998, Dayal 2004), but relies on the independently motivated and commonly recognized semantic properties of common nouns and the definite determiner. We consider this to be a conceptual advantage of our proposal since one of our basic assumptions is that theoretical proposals built on non-ambiguous models should be preferred to those which incorporate ambiguity.

As we emphasized several times throughout the paper, definite kinds are numberless DPs. This is to say that Number is not involved in the denotation of definite kinds neither semantically, nor syntactically, nor conceptually. Kinds are modelled as integral entities and do not form part of the domain of individuals represented by a lattice structure. This reading is composed by applying the definite article (i.e. the iota operator) onto a bare N that has an intensional meaning (i.e., it denotes properties of kinds). The output of this operation provides the unique / largest / maximal kind associated with the property denoted by the noun.

We have argued that predicates can select for kinds or individual objects as their arguments, depending on their lexical requirements. In particular, k- and i-level predicates

take kinds as arguments, whereas s-level predicates allow for object arguments only. This means that the choice between a subkind and an individual object interpretation of a Number-marked nominal expression is not made at the DP level, but rather at the level of predicate-argument composition, when a predicate imposes its requirements on the argument type. Thus, even though conceptually we might be more inclined to think about subkinds as a ‘special variant’ of a kind, we have shown that linguistically, subkinds and kinds are different and we have argued that subkinds should be treated as instances of V-driven genericity.

Furthermore, in this paper we have argued that definite plurals in a language like Spanish also express what we have called V-driven genericity. When definite plurals are combined with k- or i-level predicates, they are intensionalized to meet the selectional restrictions imposed by the predicate. Thus, a generic interpretation associated with both subkinds and definite plurals in Spanish is viewed as a contextually driven shift in the denotation of the argument: the meaning of the DP needs to be semantically ‘adjusted’ to be able to satisfy the selectional restrictions of the predicate it combines with. In this paper, we have proposed separate mechanisms for deriving a subkind and a generic interpretation for definite plural nominal expressions in Spanish, although the analyses could potentially be unified as two instances of coercion.

The analysis that we adopted for definite plurals in Spanish essentially leads us to reject one associated claim, namely, that definite plurals are derived by the $\text{nom}/\text{^}$ operator which, following a common assumption in the literature, also derives BPIs in English. We have argued against the alleged equivalence between definite plurals and BPIs by showing that this hypothesis would lead to certain predictions that do not find any empirical support in Spanish. In particular, we would expect definite plurals derived by means of $\text{nom}/\text{^}$ operator to also get an existential reading, but this prediction is not borne out. The detailed discussion of definite plurals in Spanish has led us to conclude that there is no necessity for adopting the $\text{nom}/\text{^}$ operator at all.

Finally, one of the more general conclusions of our study is that canonical kinds are expressed differently in different languages. In English canonical kinds seem to be expressed by means of a BPI, but in Spanish and other Romance languages (e.g., Catalan) canonical kinds are expressed by definite kinds, composed by a definite determiner preceding a noun unspecified for Number.

References

- Beyssade, Claire. 2005. Les définis génériques en français: noms d'espèces ou sommes maximales. In Carmen Dobrovie-Sorin (ed.), *Noms Nus et Généricité*, 33-63. Paris: Presses Universitaires de Vincennes.
- Beyssade, Claire. 2007. Bare nouns in French. Paper presented at the Colloque en l'honneur d'Alain Lecomte, Pauillac, 1-2 November.
- Borik, Olga & M.Teresa Espinal. 2012. On definite kinds. *Recherches Linguistiques de Vincennes* 41. 123-145.
- Burton-Roberts, Noel. 1976. On the generic indefinite article. *Language* 52. 427-448.
- Burton-Roberts, Noel. 1977. Generic sentences and analyticity. *Studies in Language* 1. 155-196.
- Carlson, Greg. 1977. *Reference to Kinds in English*. Amherst, MA: University of Massachusetts at Amherst dissertation. Published in 1980. New York: Garland.
- Carlson, Greg. 2010. Generics and concepts. In Francis J. Pelletier (ed.), *Kinds, Things and Stuff: Mass Terms and Generics* (New Directions in Cognitive Science series), 16-35. Oxford: Oxford University Press.
- Carlson, Greg. 2011. Genericity. In Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds.), *Semantics. An International Handbook of Natural Language Meaning* (HSK 33.2), 1153-1185. Berlin: Mouton de Gruyter.
- Carlson, Greg & Francis J. Pelletier. 1995. *The Generic Book*. Chicago: The University of Chicago Press.
- Chierchia, Gennaro. 1984. *Topics in the Syntax and Semantics of Infinitives and Gerunds*. Amherst, MA: University of Massachusetts at Amherst dissertation.
- Chierchia, Gennaro. 1995. Individual-level predicates as inherent generics. In Carlson, Greg & Francis J. Pelletier (eds), *The Generic Book*, 176-223. Chicago: The University of Chicago Press.
- Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6. 339-405.
- Cohen, Ariel. 2001. On the generic use of indefinite singulars. *Journal of Semantics* 18. 183-209.
- Condoravdi, Cleo. 1992. Strong and weak novelty and familiarity. *Proceedings of SALT 2*. (Ohio State University Working Papers in Linguistics 10), 17-37. Columbus, OH: Ohio State University.

- Condoravdi, Cleo. 1994. *Descriptions in Context*. New Haven, CT: Yale University dissertation. Published in 1997. New York: Garland.
- Cyrino, Sonia & M.Teresa Espinal. To appear. Bare nominal in Brazilian Portuguese: more on the DP/NP analysis. *Natural Language & Linguistic Theory*. <http://ling.auf.net/lingbuzz/002024>
- Dayal, Veneeta. 1992. The singular-plural distinction in Hindi generics. *Proceedings of SALT 2*. (Ohio State University Working Papers in Linguistics 10), 39-58. Columbus, OH: Ohio State University.
- Dayal, Veneeta. 2004. Number marking and (in)definiteness in kind terms. *Linguistics & Philosophy* 27. 393-450.
- Dayal, Veneeta. 2011. Bare noun phrases. In Klaus von Stechow, Claudia Maienborn & Paul Portner (eds.), *Semantics. An International Handbook of Natural Language Meaning* (HSK 33.2), 1088-1109. Berlin: Mouton de Gruyter.
- Déprez, Viviane. 2005. Morphological Number, Semantic Number and bare Nouns. *Lingua* 115(6). 857-883.
- Dobrovie-Sorin, Carmen & Claire Beyssade. 2012. *Redefining Indefinites* (Studies in Natural Language and Linguistic Theory 85). Dordrecht, The Netherlands: Springer.
- Dobrovie-Sorin, Carmen & Brenda Laca. 1996. Generic bare NPs. Ms. Université Paris VII & University of Strasbourg.
- Dobrovie-Sorin, Carmen & Brenda Laca. 2003. Les noms sans déterminant dans les langues romanes. In Danièle Godard (ed.), *Les Langues Romanes. Problèmes de la Phrase Simple*, 235-281. Paris : Éditions du CNRS.
- Dobrovie-Sorin, Carmen & Roberta Pires de Oliveira. 2007. Reference to kinds in Brazilian Portuguese: bare singulars vs. definite singulars. Paper presented at *Sinn und Bedeutung 12*, University of Oslo, 20-22 September.
- Doron, Edit. 2003. Bare singular reference to kinds. *Proceedings of SALT 13*, 73-90. Seattle: University of Washington.
- Enç, Mürvet. 1991. The semantics of specificity. *Linguistic Inquiry*, 22(1). 1-25.
- Espinal, M.Teresa. 2010. Bare nominals in Catalan and Spanish. Their structure and meaning. *Lingua* 120. 984-1009.
- Espinal, M.Teresa & Louise McNally. 2007. Bare singulars: Variation at the syntax-semantics interface. Paper presented at the *Workshop on Bare Nouns and Nominalizations*, University of Stuttgart, 22 June.

- Espinal, M.Teresa & Louise McNally. 2004. Introduction. *Catalan Journal of Linguistics* 3. *The semantics of nominals*. 7–11.
- Espinal, M.Teresa & Louise McNally. 2011. Bare nominals and incorporating verbs in Catalan and Spanish. *Journal of Linguistics* 47. 87-128.
- Farkas, Donka & Henriëtte de Swart. 2010. The semantics and pragmatics of plurals. *Semantics & Pragmatics* 3(6). 1–54.
- Gehrke, Berit & Louise McNally. 2012. Frequency adjectives and assertions about event types. Ms. Barcelona: Universitat Pompeu Fabra.
- Gerstner-Link, Claudia and Manfred Krifka. 1993. Genericity. In Joachim Jacobs, Arnim von Stechow, Wolfgang Sternefeld & Theo Vennemann (eds.), *Syntax: An International Handbook of Contemporary Research*, 966-978. Berlin: Mouton de Gruyter.
- Greenberg, Yael. 2003. *Manifestations of Genericity* (Outstanding dissertations in Linguistics). New York: Routledge.
- Heim, Irene. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. Amherst, MA: University of Massachusetts at Amherst dissertation.
- von Heusinger, Klaus. 2011. Specificity. In Klaus von Heusinger, Claudia Maienborn & Paul Portner (eds.), *Semantics. An International Handbook of Natural Language Meaning* (HSK 33.2), 1024-1057. Berlin: Mouton de Gruyter.
- Ionin, Tania, Sylvina Montrul & H elade Santos. 2011. An experimental investigation of the expression of genericity in English, Spanish and Brazilian Portuguese. *Lingua* 121. 963-985.
- Jespersen, Otto. 1927. *A Modern English Grammar on Historical Principles*. London: Allen & Unwin.
- Kamp, Hans. 1984. A theory of truth and semantic representation. In Jeroen Groenendijk, Theo M.V. Janssen & Martin Stokhof (eds.), *Truth, Interpretation and Information: Selected Papers from the Third Amsterdam Colloquium*, 1-42. Dordrecht: Foris. [Reprinted in Paul Portner and Barbara H. Partee (eds.), *Formal Semantics: The Essential Readings*, 189-222. Oxford: Blackwell].
- Kratzer, Angelika. 1995. Stage-level and individual-level predicates. In Carlson, Greg & Francis J. Pelletier (eds.), *The Generic Book*, 125-175. Chicago: The University of Chicago Press.
- Krifka, Manfred. 2012. Definitional generics. In Alda Mari, Claire Beyssade & Fabio Del Prete (eds.), *Genericity*, 372-389. Oxford: Oxford University Press.

- Krifka, Manfred, Francis J. Pelletier, Greg Carlson, Alice ter Meulen, Godehard Link & Gennaro Chierchia. 1995. Introduction. In Carlson, Greg & Francis J. Pelletier (eds.), *The Generic Book*, 1-124. Chicago: The University of Chicago Press.
- Laca, Brenda. 1990. Generic objects: some more pieces of the puzzle. *Lingua* 81. 25-46.
- Laca, Brenda. 1999. Presencia y ausencia de determinante. In Ignacio Bosque & Violeta Demonte (eds.), *Gramática Descriptiva de la Lengua Española I*, 891-928. Madrid: Espasa Calpe. Madrid.
- Lawler, John Michael. 1973. *Studies in English Generics* (University of Michigan Papers in Linguistics 1(1)). Ann Arbor: University of Michigan Press.
- Link, Godehard. 1983. The logical analysis of plural and mass terms: a lattice theoretical approach. In Rainer Bäuerle, Cristoph Schwarze & Arnim von Stechow (eds.), *Meaning, Use and Interpretation of Language*, 303-323. Berlin: Mouton de Gruyter.
- Longobardi, Giuseppe. 1991. Proper names and the theory of N-movement in Syntax and Logical Form. *University of Venice Working Papers in Linguistics* 9. 1-60. Venice: University of Venice.
- Longobardi, Giuseppe. 1994. Reference and proper names. *Linguistic Inquiry* 25(4). 609-665.
- Longobardi, Giuseppe. 1999. Bare nouns, proper names, and the syntax-semantics mapping: toward a unified parametric approach. *Rivista di Grammatica Generativa* 24. 45-76.
- Longobardi, Giuseppe. 2001. How Comparative Is Semantics? A unified parametric theory of bare nouns and proper names. *Natural Language Semantics* 9. 335-369.
- Longobardi, Giuseppe. 2005. Toward a unified grammar of reference. *Zeitschrift für Sprachwissenschaft* 24. 5-44.
- Löbner, Sebastian. 2011. Concept types and determination. *Journal of Semantics* 28. 279-333.
- Matushansky, Ora. 2008. On the linguistic complexity of proper names. *Linguistics and Philosophy* 31(5). 573-627.
- McNally, Louise & Gemma Boleda. 2004. Relational adjectives as properties of kinds. In Olivier Bonami & Patricia Cabredo Hofherr (eds.) *Empirical Issues in Syntax and Semantics* 5, 179-196. <http://www.cssp.cnrs.fr/eiss5/> (March 7th 2014).
- Montague, Richard. 1970. English as a formal language, in Bruno Visentini & Camillo Olivetti (eds.), *Linguaggi nella Società et nella Technica*, 188–221. Milan: Edizioni di Comunità. [Reprinted in Montague, Richard. 1974. *Formal Philosophy. Selected Papers of Richard Montague*. Edited and with an introduction by Richmond H. Thomason. New Haven/London: Yale University Press.]

- ter Meulen, Alice. 1980. *Substances, Quantities and Individuals*. Stanford, CA: Stanford University dissertation.
- Partee, Barbara. 1987. Noun phrase interpretation and type-shifting principles. In Jeroen Groenendijk, Dick de Jongh & Martin Stokhof (eds.), *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers*, 115-143. Dordrecht: Foris.
- Partee, Barbara & Mats Rooth. 1983. Generalized conjunction and type ambiguity. In Rainer Bäuerle, Cristoph Schwarze & Arnim von Stechow (eds.), *Meaning, Use and Interpretation of Language*, 361-383. Berlin: Mouton de Gruyter.
- Prasada, Sandeep & Elaine M. Dillingham. 2006. Principled and statistical connections in common sense conception. *Cognition* 99(1). 73-112.
- Rothstein, Susan. 2010. Counting and the mass count distinction. *Journal of Semantics*. 27(3). 343-397.
- Rullmann, Hotze & Aili You. 2006. General number and the semantics and pragmatics of indefinite bare nouns in Mandarin Chinese. In Klaus von Heusinger and Ken P. Turner (eds.) *Where Semantics Meets Pragmatics*, 175-196. Amsterdam: Elsevier.
- Sauerland, Uli, Jan Anderssen & Kazuko Yatsushiro. 2005. The plural is semantically unmarked. In Stephan Kepser & Marga Reis (eds.), *Linguistic evidence*, 413-434. Berlin: Mouton de Gruyter.
- Sharvy, Richard. 1980. A more general theory of definite descriptions. *The Philosophical Review* 89(4). 607-624.
- Spector, Benjamin. 2007. Aspects of the pragmatics of plural morphology: On higher-order implicatures. In Uli Sauerland & Penka Stateva (eds.), *Presuppositions and Implicatures in Compositional Semantics*, 243–281. Basingstoke, New York: Palgrave Macmillan.
- de Swart, Henriëtte. 1998. Aspect shift and coercion. *Natural Language and Linguistic Theory*. 16(2). 347-385.
- de Swart, Henriëtte. 2006. Aspectual implications of the semantics of plural indefinites. In Svetlana Vogeleer & Liliane Tasmowski (eds.), *Non-Definiteness and Plurality*, 161-189. Amsterdam: John Benjamins.
- de Swart, Henriëtte, Yoad Winter & Joost Zwarts. 2007. Bare nominals and reference to capacities. *Natural Language and Linguistic Theory*. 25(1). 195-222.
- Tsoulas, George. 2009. On the grammar of Number and mass terms in Greek. In Claire Halpert, Jeremy Hartman & David Hill (eds.), *Proceedings of the 2007 Workshop in*

- Greek syntax and semantics at MIT. MIT Working Papers in linguistics* 57. 131-146. Cambridge: MIT.
- Vergnaud, Jean-Roger & María Luisa Zubizarreta. 1992. The definite determiner and the inalienable constructions in French and in English. *Linguistic Inquiry* 23(4). 595-652.
- Zamparelli, Roberto. 1995. *Layers in the Determiner Phrase*. Rochester, NY: University of Rochester dissertation. [Published in 2000. New York: Garland].
- Zamparelli, Roberto. 2002. Definite and bare kind-denoting nouns phrases. In Frank Drijkoningen, Claire Beyssade, Paola Monachesi, Reineke Bok-Bennema (eds.), *Romance Languages and Linguistic Theory 2000. Selected Papers from Going Romance 2000*, 305–342. Amsterdam: John Benjamins.
- Zamparelli, Roberto. 2008. Bare predicate nominals in Romance languages. In Alex Klinge and Henrik H. Müller (eds.), *Essays on Nominal Determination: From Morphology to Discourse Management*, 101–130. Amsterdam: John Benjamins.