# Constraints on Quantificational Domains: Generic Plural des-Indefinites in French

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# CONSTRAINTS ON QUANTIFICATIONAL DOMAINS: GENERIC PLURAL DES-INDEFINITES IN FRENCH*

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**Abstract**

The current literature on pluralities is mainly concerned with definite plurals in existential contexts and the implicit assumption is that indefinite plurals are to be analyzed in the same way, as sums of individuals (Link 1983, Landman 2000) in the general case or as groups in more specific cases (see in particular collective readings). We will argue that although plural indefinites can be modeled as sums of individuals in those contexts in which they are either bound by existential closure or indirectly bound by an operator that quantifies over events, they cannot do so when they are directly bound by an adverbial quantifier; in the latter context, plural indefinites can only be represented as groups: binary quantifiers cannot denote a relation between two sets of sums, but only a relation between two sets of groups. This generalization will be shown to follow from an individuability constraint on quantification. Quantification requires individuability and, as argued by Landman (1989a,b) only groups, but not sums, are individuable entities. But one may still wonder whether the generic quantifier can access the members of sums, which are known to be accessible to distributive predication. To put it differently, one should explain why it is not possible to randomly fix a sum and to allow the generic adverb to quantify over its members. We will claim that it is impossible for generic sentences to restrict the generalization to a particular domain. Quantification over (groups of) individuals will be distinguished from quantification over events combined with the indirect binding of a variable supplied by an indefinite (plural). Such indirectly bound plural indefinites can be modeled as sums of individuals. The generic readings of French plural indefinites headed by *des* 'some' will provide us with the core testing ground. The analysis will shed new light on the generic readings of English bare plurals.

## 1 Overview

The current literature on pluralities is mainly concerned with definite plurals in existential contexts and the implicit assumption is that indefinite plurals are to be analyzed in the same way, as sums of individuals (Link 1983, Landman 1989a,b) in the general case or as groups in more specific cases (see in particular collective readings). We will argue that although plural indefinites can be modeled as sums of individuals in those contexts in which they are bound by existential closure, they cannot do so when they are bound by an adverbial quantifier; in the latter context, plural indefinites can only be represented as groups. This constraint will allow us to account for the restricted distribution of French plural indefinites headed by *des* 'some' in generic contexts, and in particular for the unacceptability of examples such as **Des carrés ont quatre côtés* '**Des** squares have four sides' or **Des chats sont intelligents* '**Des** cats are intelligent.' As explained in detail by Landman (2000), sums are derived entities whose members are available (or can be accessed (Simons, 1987; Moltmann, 1997)), whereas groups

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are primitive entities such that their members are not available (or cannot be accessed). Because sums are derived entities, they are not stable through time, which means that they are not individualizable and as such they cannot be quantified over (given Quine's (1953) theory of ontological commitment[1] and its consequences related to the individuability constraint on quantification). This is however not sufficient to rule out the aforementioned examples. We still need to understand why the generic operator (and adverbial quantifiers in general) cannot have access to the members of the sum. In other terms, we have to understand why it is not possible to fix a sum and to allow the generic quantifier to access the members of the sum. We will claim that the generic quantification cannot be relativized to a randomly fixed sum, or a restricted domain.

In all cases considered up to this point, in which plural indefinites are arguably *directly* bound by the generic operator ("**truly generics**"), individual or habitual predicates are mandatory. The individual bounded are plural entities. In those contexts in which plural indefinites are *indirectly* bound by an operator that quantifies over events (*Des éléphants blancs se promenant dans la rue ont toujours/parfois suscité une très vive curiosité*, '*White elephants strolling in the street have always/sometimes arousen curiosity')*, the generic reading is compatible with number-neutralization, i.e. it allows the generalization to hold for singular individuals and not necessarily for pluralities. We label this second kind of cases as "**pseudo generics**". This kind of cases either requires that a frequency adverb be present or that there be a nominal modifier. We will argue that since events are counted, and not individuals, singular or plural entities are concerned by the generalization.

Insofar as the distinction between directly and indirectly bound plural indefinites is crucial, the account proposed here also indirectly argues against the uniform analysis of adverbs of quantification as quantifiers over events[2] (Rooth 1985, 1995, Schubert, Lenhart & Pelletier 1987, de Swart 1991), and in favor of more flexible approaches according to which they may quantify over either individuals or events (Lewis 1975, Kamp 1981, Heim 1982, Chierchia 1995b, Krifka & alii 1995).

In this paper we consider truly and pseudo generic indefinites in turn, focusing on the first type. The paper is structured as follows: in section 2 we introduce the core data and previous accounts. In section 3 we show that generic plural indefinites cannot be represented as sums. In section 4 we introduce groups distinguishing them from sums. In section 5 we account for the data introduced in section 2. We turn to pseudo generics in section 6.

## 2 The genericity of French plural indefinites headed by *des*

It is a well-known fact that the generic reading of plural indefinites in French is subject to fairly strict constraints, which may slightly vary depending on the type of plural determiner. We will concentrate here on *des*-indefinites, which constitute the closest plural counterparts of indefinites headed by singular indefinite articles. We will leave aside other plural determiners such as *plusieurs, certains*, 'several, some' etc., as well as cardinals (for an insightful description of the basic data, see Corblin (1987), from whom we borrow most of the examples).

The core empirical data are given below. The generic reading of *des*-indefinites is impossible in (1), but possible in (2).

(1) a.*Des carrés ont quatre côtés / '***des*** *squares have four sides*'

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[1] A sentence S is committed to the existence of an entity just in case either (i) there is a name for that entity in the sentence or (ii) the sentence contains, or implies, a generalization where that entity is needed to be the value of the bound variable. In other words, one is committed to an entity if one refers to it directly or implies that there is some individual that is that entity.

[2] Although event-based and situation-based accounts are technically different, in many particular cases they coincide in empirical coverage. In this paper we will use an event-based notation.

b.*Des chats noirs sont intelligents. / '***des*** *black cats are intelligent'*

(2) a. Des droites convergentes ont un point en commun / '***des*** *convergent lines have a point in common'*

b. Des pays limitrophes ont souvent des rapports difficiles / '***des*** *neighboring countries frequently have difficult relations'*

## 2.1 Generic plural indefinites cannot express generalizations over atomic individuals

Corblin (1987: 57-58) observes that generic cardinal indefinites cannot express generalizations over atomic individuals: "Il n'existe pas d'interprétation générique distributive stricte des indéfinis nombrés." ("There is no strictly distributive generic reading for cardinal indefinites"). Corblin's (1987: 57-58) explanation relies on a pragmatic principle that basically says that examples of the type in (3) *can* be assigned (representations corresponding to) generic readings, but such readings are blocked (or "neutralized", in Corblin's terminology) because they can be expressed in a more direct way by using the corresponding example built with a singular indefinite (see (3a))

(3) a. Une tortue vit longtemps / '*A turtle has a long life-span*'

b. *Deux/trois ... tortues vivent longtemps / '*Two/three... turtles have a long life-span*'

The same principle would account for similar restrictions shown by *des*-indefinites. Examples such as (4b) would be blocked by (4a), built with a singular indefinite:

(4) a. Un carré a quatre côtés / '*A square has four sides*'

b. *Des carrés ont quatre côtés / '***Des*** *squares have four sides*' (=1)

In what follows we will argue, following Dobrovie-Sorin & Laca (1998) and Dobrovie-Sorin (2003), that the unacceptability of examples such as (3b) and (4b) is not due to pragmatic principles, but rather to formal constraints: an LF such as (4') is ill-formed (as indicated by #) because the variables in the restriction and in the nuclear scope range over different types of entities (pluralities[3] and atomic individuals), and as such cannot be bound by the same operator.

(4') b. # GEN X (X is a plurality of squares) [x has four sides]

Whether the variables are plurality-variables (notated by capital letters) or atomic variables depends on the lexico-syntactic properties of a given example: in (4), the indefinite is plural, and therefore it supplies a plurality-variable, whereas the main predicate selects atomic individuals, hence it introduces variables over atomic individuals in the nuclear scope of the tripartite configuration.

The analysis sketched above correctly predicts that generic plural indefinites can combine with i-level predicates that select *pluralities* as in (2).

(2') a. GEN X (X is a plurality of convergent lines) [X has a point in common]

# 3 Generic plural indefinites cannot be represented as sums

Though appealing, the account sketched above must be refined. First and foremost, we need to make explicit what is meant by 'plurality': is it groups or sums that are involved in the

[3] Dobrovie-Sorin and Laca (1998) use the term *group*. However, since they use it in a non technical way, we prefer to substitute it here with *pluralities*, which is neutral as to whether sums or groups in the technical sense are meant. The technical definition of both *sums* and *groups* are about to become crucial in the rest of this paper.

analysis of generic plural indefinites? In order to answer this question, we will define each of these notions in turn and see which one is needed for a better understanding of the data at hand. In § 3.1 we show that the notion of sum provides an adequate modelization of plural indefinites. In § 3.2 and § 3.3 we show that unfortunately, an account of *generic* plural indefinites cannot rely on a modelization in terms of sums, which means that in the representations provided in (2a')-(4'b), the pluralities notated as Xs cannot be viewed as sums of individuals.

### 3.1 The notion of sum

Let us assume that "plural nouns [in particular, plural indefinite NPs][4] represent sum individuals, that is, individuals which consist of other individuals" (Krifka & alii (1995:27)).

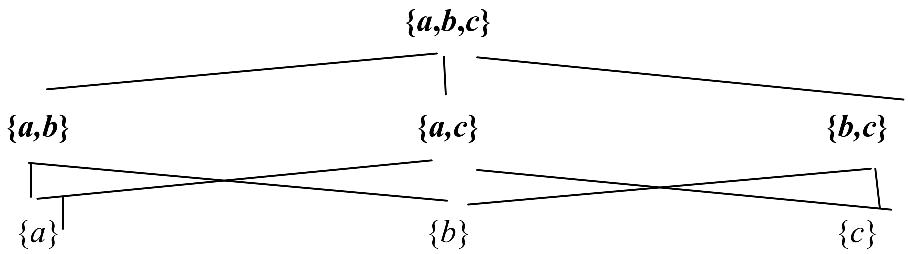
Let *D* be a domain of entities, and let *a*, *b*, *c*, … be entities in *D*. A sum of such entities, is, under set theories, nothing but any set of such entities; under union theories (Schwarzschild 1996), sums correspond to no matter what union of any set of these entities. Leaving aside the differences between union and set theories, a long-standing tradition in mathematics and philosophy, in particular, set theory and the mereological theories based on it (Leśniewski 1916), agrees that there exists a *principle of universal existence of sums*, which states that for any two elements there is a sum of these elements. This is so because a sum requires no particular principle of composition other than set formation or set union, nor any coherence relation. There is for instance a sum of my computer and me, a sum of my computer and my cup. Consequently, there is also a sum of my computer, my cup and myself[5].

We adopt the standard representation for sums. It is possible to associate to a set *E* the set of its parts, or its poset, notated P(E). E.g. *E*={a,b,c},

$$P(E)= \{\emptyset, \{a\},\{b\},\{c\},\{a,b\},\{a,c\},\{b,c\}, \{a,b,c\}\}.$$

*P(E)* defines a lattice.

Posets and lattices are currently used to represent the domain of pluralities (Scha (1981), Landman, 2000:96sqq.).




We will be using the term **sum** to refer to any element in the lattice whose cardinality is > 1.

**'Random sum'** refers to the procedure of picking a sum in the lattice. A random sum is a sum whose identity cannot be foreseen. **'Maximal sum'** refers to a particular sum in the lattice, the set of all elements in the domain.

It is important to emphasize that, by definition, the elements of a sum are *available* or *accessible* (Simons, 1987; Moltmann, 1997; Landman, 2000). This means that sum-individuals are compatible with distributive predication, where each member of the sum satisfies the predicate.

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[4] We may remain agnostic here as to the exact syntactic label (NP, NumP or DP) of nominal projections.

[5] It is important to note that Link (1983) considers sums as individuals. In 1984 the author explicitly introduces the notion of group, which are also individual entities. Landman (1989a) criticizes this point that he considers as an incoherence, and distinguishes between sums as "non-individuals' and groups "as individuals". In this paper we adopt the latter point of view.

Sums are currently used for modeling plural indefinites. As shown in examples such as (5), indefinite plurals allow distributive predication over their atomic elements:

(5) a. Pendant l'excursion, des enfants étaient trop fatigués pour marcher / d*uring the trip, **des** children were too tired to walk*

b. Sur la table, des assiettes étaient sales / *On the table, **des** plates were dirty*

The possibility of the distributive reading is expected if we assume that indefinite plurals can be represented as sums. Because predicates such as *tired* or *dirty* select atomic individuals, the collective reading is blocked and only the distributive reading is possible.

As we show in the following subsections, the analysis proposed here for non-generic plural indefinites cannot be extended to generic plural indefinites. We will thus be led to conclude that sums are not appropriate for modeling generic plural indefinites.

### 3.2 Problem 1: Generic quantification over sums

Let us begin by showing that using sums in order to represent generic plural indefinites leads to unsolvable problems. Consider (6) vs (7):

(6) De vrais jumeaux se ressemblent dans les plus petits détails / '***de** genuine twins look alike down to the smallest details'*

(7) *De bébés se ressemblent dans les plus petits détails jusqu'à l'âge de 3 mois / '***des** babies look alike down to the smallest details until the age of 3 months'*

If we assume that plural indefinites in generic contexts are to be represented as variables over sums of individuals, we incorrectly predict that the sentence in (7) should be acceptable, since (7') is a well-formed LF, in which no conflict arises between the variable in the restriction and in the nuclear scope:

(7') GEN X (X is a sum of babies) [**X** resemble each other]

Similarly, given the representation in (8'), (8) should be acceptable, contrary to fact:

(8) *Des droites sont parallèles / *'**des** lines are parallel.'*

(8') GEN X (X is a sum of lines) [**X** are parallel]

In other words, the representations in (7')-(8') are legitimate if we assume that generic plural indefinites are to be represented as sums. But under this analysis we are left with no explanation for the unacceptability of the corresponding examples.

### 3.3 Problem 2: Generic quantification over the members of sums

Given the characterization of sums summarized in § 3.1 above, it seems that we cannot use sums in order to explain why examples such as (4b) are unacceptable. If, indeed the members of a sum are accessible, the GEN operator should be able to quantify over the members of the sum, as shown in (4"b) Consequently, we are left without an explanation for the unacceptability of (4b):

(4'') b. ∃X [(X is a sum of squares) [GEN x (x is an atom in X) [x has four sides]]]

### 3.4 Conclusions

The contrast between (6)-(7) cannot be explained if we assume that generic plural indefinites are to be represented as sums of individuals: both of the examples contain sums in subject position and main predicates that select pluralities. And yet, the example in (6) is acceptable, whereas (7) is not.

The unacceptability of (1) indicates that generic plural indefinites cannot express generalizations over atomic individuals. This empirical generalization cannot be captured if we translate generic plural indefinite as sums, because members of sums are accessible, which should allow for generic quantification over the atomic individuals composing the sum supplied by the indefinite plural.

We are thus led to conclude that, sums are not adequate for representing generic *des*-indefinites.

## 4 Generic plural indefinites represented as group-variables

In what follows we propose to represent generic plural indefinites as groups. We will first define the ontological status of groups in comparison with sums (4.1), then we will clarify their respective properties regarding predication (4.2), characterize the type of nominal predicate that may denote sets of groups (4.3), and finally consider the difference between sums and groups w.r.t. predication (4.4).

### 4.1 Introducing groups in the ontology: primitive and derived entities

Since sums cannot be used to represent generic plural indefinites, we need to refine our ontology and to assume that the domain of reference contains (at least) two types of primitive entities: singular individuals and group individuals. Sums are by definition derived entities obtained by pluralization of primitive entities, which can be individuals (9a) or groups (9b).

(9) a. The boys carried a piano upstairs *(each boy…))*

b. The mafias become more and more dangerous *(each mafia))*

(10) summarizes the types of entities in the ontology we will be assuming from now on.

(10) Types of entities:

| ENTITIES | *Singular* | *Plural* |
|---|---|---|
| *Primitives (individuals)* | Singular individuals *x* | Group individuals |
| *Derived* | | Sums |

### 4.2 Groups, sums and distributivity

Groups crucially differ from sums in that they form an *indivisible whole* (e.g., among many others, Simons, 1987; Moltmann, 1997; Landman, 2000, Mari, 2005). This means that their members are not accessible, unlike the members of a sum. Groups can be expressed in language via singular nominal predicates such as *committee*, *press*, *mafia* …

(11) a. The committee gathers at 6:00 PM

b. The orchestra played this concerto many times this year

The members of the committee can be replaced or change in number and identity in the course of the time or vary from meeting to meeting, the committee as an abstract entity remains the same. Similarly for the orchestra.

As we will see in a moment, only some plural *NPs* can denote groups.

### 4.3 Nominal predicates that denote sets of groups: coherence relations and stability

Any random two elements can form a sum, but not a group. Strong coherence relations are required for group formation (Landman 1989b, Simons 1987, Moltmann 1997, Mari, 2003). Consequently, only certain plural nominal predicates denote sets of groups. Under the perspective of their ontological existence, sums are *unstable objects*, open to extensions and reductions, whereas groups are *stable objects*. This explains why sums satisfy the type of inference shown in (13) (see Hackl, 2002 for details):

(13) If A and B are children

C and D are children

A and B and C and D are children

This type of inference does not hold for the pluralized relational predicates illustrated in (14)

(14) If A and B are twins and

C and D are twins

# A and B and C and D are twins

We may then conclude that, when pluralized, (a subclass of) relational nouns may provide descriptions for stable plural entities, i.e., groups: this possibility is due to the fact that relational nouns denote a relation that holds among the entities involved in that relation, which provides a coherence criterion for groups. We may thus state the following two generalizations:

(15) a. Pluralized sortal (i.e., object-referring) nouns can only provide descriptions for sums.

b. Only pluralized relational nouns may provide descriptions for groups.

### 4.4 Groups, individuability and quantification

One important consequence that follows from the ontological definition of sums and groups is that these two types of entities behave differently with respect to quantification. Along the lines of Quine (1953), we can make the following hypothesis:

(12) Quantification requires individuation.

This hypothesis allows us to make interesting predictions that will be shown to be correct in section 5. Individuability can be defined as stability through time. Singular individuals are indeed stable entities and similarly, groups: no matter what the individual elements of an orchestra are at a given moment in time, the orchestra remains the same. It follows that only primitive entities are individuable and can be quantified over. Sums, which are derived entities are not.

Summarizing. The domain we consider from now on contains entities of two kinds: primitive and derived. Primitive entities consist of singular individuals and group individuals; sums are derived entities. Sums and groups are kinds of pluralities. Groups forbid accessibility to their members, whereas sums allow it. Consequently, these entities behave differently with respect to predication. Distributive predication obtains when a predicate applies to a sum. Collective predication obtains when a predicate applies to a group (Landman, 2000). The ontological distinction between sums and groups further correlates with a different behavior regarding quantification. It is possible to quantify properly only over primitive entities: singular individuals and group individuals.

## 5 Deriving the Empirical Generalizations

Assuming the distinction between sums and groups sketched above, let us now go back to the data introduced in previous sections.

### 5.1 Quantifying over groups (not over sums)

Let us first consider examples of the type in (2) repeated here. The theory correctly predicts that LFs such as (2") are well-formed, since pluralized relational predicates may provide descriptions for groups and quantification over groups is allowed:

(2) a. Des droites convergentes ont un point en commun.

'***des*** *convergent lines have a point in common.'*

b. Des pays limitrophes ont souvent des rapports difficiles.

'***des*** *neighboring countries have difficult relations'*.

(2") a. GEN X (X is a group of convergent lines) [X has a point in common]

b. Most X (X is a group of neighboring countries) [X have difficult relations]

It remains to be explained why *droites* 'lines', in contradistinction with *droites parallèles* 'parallel lines', cannot supply a group-variable. As stated above, only certain predicates, namely (a subset of) pluralized relational nouns can supply descriptions for groups. The nominal predicates in (14) are relational, whereas *droites* 'lines' is not. Non-relational nouns can only supply sum variables, which cannot be bound by a quantifier (see (12)), hence the unacceptability of (8).

(8) *Des droites sont parallèles / *'**des** lines are parallel.'*

(8') # GEN X (X is a sum of lines) [X are parallel]

The contrast between (6) and (7) can be explained in the same way. A plural predicate such as *twins* is relational, and as such can provide a description for groups, whereas *babies* is sortal, and as such can only provide the description of a sum-variable, which cannot be bound by a quantifier:

(6) De vrais jumeaux se ressemblent dans les plus petits détails / '***des*** *genuine twins look alike down to the smallest details'*.

(7) *De vrais bébés se ressemblent dans les plus petits détails jusqu'à l'âge de 3 mois / '***des*** *genuine babies look alike down to the smallest details until the age of 3 months'*.

(6') Gen X (X is a group of genuine twins) [X look alike down to the smallest details]

(7') # GEN X (X is a sum of genuine babies) [X look alike down to the smallest details]

### 5.2 Quantifiers cannot access the members of a random sum

The constraint stated above says that GEN cannot quantify over sums. This means that GEN cannot bind a sum-variable, but nothing prevents the quantifier from quantifying over the atoms of the sum.

Why is it that in LFs such as (16'), the GEN operator cannot look inside the sum that is in the restriction? In other words, the question is, why can we not derive representations of the type in (4''') from that in (4") ?

(4'') b. # GEN X (X is a sum of squares) [x has four sides]

(4’”) b. # GEN x (x is an atom of any/a random sum of squares) [x has four sides]

The non-availability of (4b’”) is to be compared to the possibility of having sums with existential readings, such that the members of the sum can be accessed:

(5) Pendant l’excursion, des enfants étaient trop fatigués pour marcher / *during the trip,* ***des*** *children were too tired to walk*

Let us observe that (5) becomes ungrammatical if a floated quantifier is used:

(16) *Pendant l’excursion des enfants étaient tous/chacun trop fatigués pour marcher / *during the trip,* ***des*** *children were* ***all/each*** *too tired to walk*

The contrast between (5) and (16) could be explained as follows (Dobrivie-Sorin and Mari, 2006): the distributivity observed in predicational configurations, which is an effect of a pluralized predicate applying to a sum, does not extend to quantificational structures ((16) is a quantificational structure, due to the presence of a floated quantifier).

However, it can be also legitimately argued that (5) also involves a quantificational structure. Letting X being a domain of children who participate to a trip, the sentence states that some of the children, involving quantification over individuals.

(16’) ∃x in X (x is a child and x is tired)

Similarly, for generic sentences one could suggest that it should be possible to fix a random sum X as the domain of quantification and to quantify over its members, rewriting (4’”) as (4’”’):

(4’”’) b. # GEN x in X (x is a square) [x has four sides] or, equivalently,

# ∃X [(X is a sum of squares) [GEN x (x is an atom in X) [x has four sides]]]

We claim that it is this restriction to a random sum that makes the LF unacceptable. It is a characteristic feature of generic statements where GEN binds individuals and not events to be context independent. The restriction to a particular sum infelicitously overrides this requirement. We can state then the following restriction:

(17) *Restriction for GEN*: the generic quantification is not domain dependent.

One might also wonder under what conditions the constraint can be made more general and extended to (17). In other words, one could expect that the constraint apply not only to the generic quantification, but also to the universal one. The hypothesis we suggest is that it is not possible to apply different quantifications to the same set of entities. Accordingly, (16) is ill-formed:

(16’) # ∃X [(X is a sum of children) and [∀x in X (y is tired)]]

This hypothesis requires further development and a close investigation of the data, since, in a discourse, switching from existential to universal quantification is possible, if not common: *Some children were playing on the ground. They were all under 18* (Asher, p.c.).

## 6 Pseudo-generic plural indefinites

We have so far shown that those plural indefinites that are directly bound by a Q-adverb are to be represented as group-variables and correspondingly express generalizations over groups. In what follows we will examine plural indefinites that are indirectly bound by a Q-adverb that quantifies over events.

## 6.1 Adverbial quantification over events and indirect binding of plural indefinites

Consider the examples in (18):

(18) a. Des pipelettes ne se supportent pas longtemps / '***des*** *chatterboxes won't stand each other for a long time.*'

b. Des petites filles sont souvent en train de te préparer une surprise / '***des*** *small girls are often up to mischief.*'

Let us first see whether these examples can be analyzed as involving direct quantification over (groups of) individuals. In other words, can they be assigned representations such as those in (18')?

(18') a. GEN X (chatterboxes (X)) [X won't stand each other for a long time]

b. MOST X (small girls (X)) [X are up to mischief]

These LFs are not legitimate representations: (i) X cannot be a sum-variable because sums cannot be quantified over and their members are not accessible for quantification either; (ii) X cannot be a group-variable because *chatterboxes* and *small girls* are not relational predicates. Besides being illegitimate, the readings that can be read off these representations ('not supporting each other characterizes any random group of chatterboxes') do not correspond to the intuitive readings that speakers associate with (18a) and (18b): 'whenever chatterboxes are together, they don't stand each other for a long time' or 'whenever small girls are together they are up to mischief'. This discrepancy between the intuitive meanings of (18) and the meanings corresponding to LFs of the type in (18') indicates that they are not adequate representations of (18). We may then conclude that the examples in (18) do not rely on direct quantification over (groups of) individuals.

Examples of this type can instead be represented as relying on quantification over events combined with the indirect binding of the plural indefinite, represented as a Skolem term co-varying with the event:[6]

(18") a. GENe (be together (e, f(e)) $\wedge$ chatterboxes (f(e)) $\wedge$ $|f(e)| \geq 2$) [do not stand each other for a long while (e, f(e))]

b. MOST e (be together (e, f(e)) $\wedge$ young girls (f(e)) $\wedge$ $|f(e)| \geq 2$) [up to mistchief (e, f(e))]

Besides being well-formed, these LF's correctly capture the intuitive readings that speakers associate with these examples: "whenever (two or more) chatterboxes are together, they don't stand each other; whenever (two or more) young girls are together, they prepare a surprise."

We still need to make explicit the mapping rule that allows us to derive (18") from (18):

(19) Plural indefinites may supply an event predicate paraphrasable by "be together at t."

Let us now make sure that this representation of plural indefinites is unable to rescue the type of examples examined in section 3.2, in particular (7), repeated here:

(7) *De vrais bébés se ressemblent dans les plus petits détails jusqu'à l'âge de 3 mois.

'***des*** *genuine babies look alike down to the smallest details until the age of 3 months'*.

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[6] For the sake of clarity the LFs given in (18") do not explicitly indicate that the events in the restriction and in the nuclear scope are not identical, but rather sub-events of a plural event. This simplification does not affect the main argument.

(7’) # GENe (be together $(e, f(e)) \wedge$ sum of babies $(f(e)) \wedge |f(e)| \geq 2$) [resemble each other $(e, f(e))$]

The LF in (7’) is ill-formed because the e-variables in the restriction and in the nuclear scope range over different types of events: episodic events and stable/permanent events, respectively. In sum, although plural indefinites can always be translated in terms of the event-predicate ‘be together’, such a translation leads to a legitimate representation only if the predicate mapped onto the nuclear scope is an s-level predicate.

Let us next consider the examples in (20), due to Heyd (2002), who observed that the generic reading of *des*-indefinites is facilitated by the presence of a nominal modifier[7]. She furthermore observes the contrast between (20) and (21):

(20) a. Des lions blessés sont vulnérables / '***des** lions injured are vulnerable*'

b. Des enfants malades sont grincheux / '***des** children ill are irritable*'

(21) a. (*)Des maladies cardiaques sont dangereuses (taxonomic reading only) / '***des** illnesses cardiac are dangerous*'

b. (*)Des éléphants d'Afrique ont de grandes oreilles (taxonomic reading only) / '***des** elephants from Africa have big ears*'

According to Heyd, adjectives modifying the subject of a characterizing sentence can be represented as event-predicates occurring in the restriction of GEN only if they can function as sentential predicates. Because modifiers such as *blessé* ‘injured’ and *malade* ‘ill’ can function as sentential predicates, the examples in (20) can be represented as in (20’):

(20') a. GEN x (x is injured $\wedge$ x is a lion) [x is vulnerable]

b. GEN x (x is ill $\wedge$ x is a child) [x is irritable]

These representations can be rewritten as in (20”), where the adjective supplies the event-predicate and the nominal predicate restricts the value of the Skolem term depending on the event. Let f be a Skolem function:

(20’’) a. GENe (wounded $(e,f(e)) \wedge$ lions $(f(e))$) [vulnerable $(e,f(e))$]

b. GENe (ill $(e,f(e)) \wedge$ children $(f(e))$) [irritable $(e,f(e))$]

Modifiers such as *cardiaques* ‘cardiac’ and *d'Afrique* ‘from Africa’ cannot function as sentential predicates (**Ces maladies sont cardiaques; *Ces éléphants sont d'Afrique*)[8], and therefore they cannot provide the descriptive content of an event-variable, so that the examples in (21) can only be represented as in (21’), with a complex nominal predicate in the restriction:

(21') a. # GEN (X is *cardiac illnesses*) [x is dangerous]

b. # GEN (X is *elephants from Africa*) [x has big ears]

Predicates such as *cardiac illnesses* and *elephants from Africa* cannot provide a restriction for (stable) groups of individuals, but can only refer to sums of individuals, and sums cannot be quantified over, nor are their atoms accessible to quantification.

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[7] Note that the necessity of a modifier does not hold for existential *des*-indefinites: French allows preverbal subject des-indefinites in examples such as *Des enfants étaient en train de jouer dans la rue* "Children were playing in the street".

[8] It so happens that the modifiers in (20) are s-level predicates, whereas those in (21) are i-level. Although this contrast may be relevant for a fully developed analysis of these examples, we will not take it into account here. In other words, weassume, as does Heyd, that s-level and i-level modifiers are treated alike in this kind of examples.

Given the analysis proposed here, one may wonder whether examples such as (2) are to be analyzed as relying on quantification over groups of individuals, as proposed in section 5.1 above (see the LF in (2'a)) or as relying on quantification over events, as shown below, in (2''a):

(2") a. GEN X (X is a group of convergent lines) [X have a point in common]

(2"') a. GEN e (be convergent (e) ∧ group of lines (f(e)) [have a point in common (e)]

Both analyses appear to be adequate for (2). However, we may find acceptable examples with unmodified plural indefinites allowing the generic reading (see Carlier, 2000):

(22) a. Des soeurs rivalisent souvent / 'des sisters are often rivalize'

b. Des jumeaux ont souvent des affinités / 'des twins often share affinities'

Since these examples do not contain a nominal modifier, they can only be analyzed as relying on quantification over (groups of) individuals. Such a representation corresponds to the intuitive reading: 'most groups of sisters are groups of rivals, most groups of twins are groups of people showing affinities among each other'.

The analysis sketched in this Section and the one proposed by Heyd (2002) are alike insofar as nominal modifiers that can function as sentential predicates are analyzed as supplying the restrictive term of a generalization over events. The two proposals differ, however, regarding the existence of "truly generic" indefinites. Heyd (2002) follows the view (see in particular Rooth 1985, 1995 and de Swart 1991) that Q-adverbs can only quantify over events (adverbial quantification over individuals is always indirect), whereas we assume that Q-adverbs may also directly quantify over individuals. The problem with the current view adopted by Heyd is that it cannot explain why examples of the type in (22) are grammatical.

### 6.2 Indirect binding and number neutralization

Corblin (1987) observed that "strictly distributive" readings (i.e., generalizations over atomic individuals) are marginally possible with *des*-indefinites:

(23) a. Méfie-toi, des guêpes énervées sont un danger terrible / '*Take care, excited wasps are a terrible danger.*'

b. Des éléphants blancs se promenant dans la rue ont toujours/parfois suscité une très vive curiosité / w*hite elephants strolling in the street have always/sometimes arousen curiosity* or '*Always/sometimes if white elephants stroll in the street they arouse curiosity.*' (adapted from Longobardi, 2000)

The sentence in (23a) may be interpreted as a warning against groups of excited wasps, but also against a single wasp. In (23b), the curiosity may have been induced not only by groups of elephants strolling in the street, but also by a single elephant.

The existence of examples of the type in (23) immediately raises the following question: How can we distinguish between those generic sentences that allow and those that do not allow number neutralized readings for *des*-indefinites? Corblin (1987: 75-76) suggests that in the unmarked case, *des*-indefinites are number-neutral. Number neutralization would be blocked in a quite circumscribed environment: when the main verb denotes a property that "notoriously characterizes each member of a given class of individuals"[9]. This

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[9] Corblin (1987) does not define the notion of "property that notoriously characterizes each member of a class", but one may suggest that the relevant properties are those that should be listed among the defining properties of the individuals of

characterization cannot help us understand the unacceptability of examples such as (24)-(25): they are built with predicates that cannot be viewed as defining properties of the individuals they are predicated of, and yet they block number neutral readings.

(24) *Des enfants marchent rarement avant 10 mois / '***des*** *children rarely walk before the age of 10 months'*

(25) *Des chats sont intelligents / '***des*** *cats are intelligent*'

The puzzle regarding the number-neutral readings of generic bare plurals can be solved under the analysis proposed in this paper, which crucially distinguishes between truly generic plural indefinites (i.e., plural indefinites that are directly bound by a Q-adverb) and pseudo-generic plural indefinites (i.e., plural indefinites that are indirectly bound by a Q-adverb that quantifies over events). In sections 5.1. and 5.2. above we have explained why the former can only express generalizations over groups. In what follows, we now explain why bound plural indefinites allow for number-neutralization. Let us consider the LF representations of examples of the type shown in (23):

(23') b. GEN e (stroll in the street (e, f(e)) $\wedge$ white elephants (f(e))) [arouse curiosity (e,f(e))]

According to this representation, the Q-adverb counts events rather than participants to the event, the number of which may vary from one event to the other. Hence the effect of number-neutralization. In sum, number neutralization is allowed for those plural indefinites that are indirectly bound by a Q-adverb that quantifies over events.

## 7 Conclusion

We have shown that an adequate analysis of the generic readings of plural *des*-indefinites in French can be given only if we assume a flexible analysis of Q-adverbs, according to which they can quantify not only over events but also over (atomic or group) individuals. We have argued that those plural indefinites that are directly bound by a relational quantifier cannot be represented as sums: (i) sum-variables cannot be bound by a quantifier and (ii) the atoms of random sums are not accessible to GEN. Plural indefinites can be modeled as sums of individuals only in those contexts in which they are either bound by existential closure or indirectly bound by a binary quantifier. Directly bound *des*-indefinites translate as variables ranging over groups of individuals, and as such they express generalizations over those groups. Direct quantification over groups of individuals is subject to quite strong constraints (the main predicate must be an i-level predicate that selects groups and the nominal predicate must be relational), a fact that explains why truly generic readings of plural indefinites are difficult to obtain. It is instead much easier to find examples of plural indefinites that are indirectly bound by a quantifier over events. All that is needed is to supply the restrictive term of the quantifier with an event predicate, and this can be achieved via various mapping rules, which are subject to less strict constraints.

One issue that we have not discussed in this paper and we leave open for future work is to understand why modalities improve the acceptabilities for examples involving sums:

(24) Des étudiants peuvent travailler dans cette salle / '***des*** *students are allowed to work in this room'*

A hypothesis that remains to be proved and worked out in detail is that in these cases quantification over individuals is indirectly induced by quantification over worlds, paralleling

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which they are predicated: having four (equal) sides can be viewed as an essential property of squares. This suggestion is due to Francis Corblin (personal communication (2002)).

cases in which quantification over individuals is indirectly induced by quantification over events.

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