Analyticity and 'in virtue of' generalizations in French

In a recent work on generic des-indefinites in French, in order to explain the difference between (1a) and (1b), Dobrovie-Sorin and Mari (2006) have argued that des introduces a group variable and not a sum variable (contra, e.g., Krifka, 1995). The authors argue that sortal pluralized nouns denote sums whereas relational reciprocal nouns denote groups. (2a) is acceptable since $twin$ is a reciprocal relational noun denoting a group. (2c) and (1b) are not acceptable since $babies$ and $squares$ denote a sum. According to the authors, sums cannot be bound by GEN, since sums are not objects (Landman, 2000).

This account encounters some problems. The data in (3) and (4) do not match the predictions : (3) should be ungrammatical since $monks$ denotes a sum and (4) grammatical since $brothers$ denotes a group. Moreover, there are other facts that the above-mentioned account cannot explain, and which cut across the distinction between sums and groups.

1 Some other data

First, indefinite generics in French, both singular and plural, are compatible only with $analytic$ properties (5a) and (6a) vs. (5b) : the generalization holds tautologically or by definition, and not by fact (i.e. synthetically). *Ca/Ce* can rescue generic statements with singular (5c) and plural indefinites, no matter what property, and no matter whether sums (7) or groups (8) are involved. Second, modal properties are compatible with NPs headed by des denoting sums (9b). Finally, when the NPs are modified by non sentential predicates groups are not required (10b).

In the discussion that follows, we get rid of the distinction between sums and groups, and assume, along the lines of Corblin (1987) and Krifka (1995), that des introduces a set of unspecific cardinality and that it cannot be used whenever the generalization is more straightforwardly expressed by the singular form (hence (1b) is out).

2 IS sentences without accommodated properties

Instead of considering kinds of entities, our account of singular and plural generic indefinites in French considers kinds of properties and is based on the difference established by Greenberg (2002) between IS and BE sentences (which correspond, respectively, to singular indefinite and bare plural generics in English), which we only slightly modify. According to Greenberg, IS sentences involve, likewise BE sentences, a modal quantification over possible worlds (Kratzer, 1991), but they are only compatible with an "in virtue of" accessibility relation, i.e. the interpretation specifies in virtue of what property the generalization holds (BE sentences are also compatible with "descriptive" generalizations). According to Greenberg, IS sentences require that a property be accommodated (in (11), "has a four genetic makeup"), which establishes a link between the properties denoted by the NP and the VP. In our account, instead of introducing an extra property we consider that IS sentences, which cover both generic singular and plural indefinites in French, are true by virtue of the fact that the description of the NP entails the property denoted by the VP (12). It follows that IS sentences are to be associated with intensional contexts, which do not require that the occurrence of the property be observed or that there exist actual entities that satisfy the property. (Note that BE sentences correspond to definite plural generics in French).

3 Analytical generalizations

In the absence of operators, the above-defined IS sentences require that the VP express analytic properties of subjects : (4a) is unacceptable since this requirement is not fulfilled. To enlarge the range of possible generalizations beyond tautologies or definitions, it is required that an intensionalizer be explicitly introduced in the sentence. Ca, modalities and restrictive modifiers accompanied by non-descriptive predicates fulfill this task.

(1) *Ca* allows to enlarge the number of possible generalizations enabling all kinds of properties, still respecting the "in virtue of"/intensional requirement of IS sentences (vs. "descriptive", extensional generalizations).

It has been shown that *ça* has a classificatory power with respect to its antecedent (Kleiber, 1984). In this classificatory process, it opens up the possibility of establishing a whole list of properties which are presented as inherent to the classification. The interpretation of (5c) is given in (13).

(2) Similarly, the use of modalities allows to attribute a $capacity/duty$, ... to entities that satisfy a certain description. Note that the modality (deontic, epistemic ...) does not determine the force of the modal quantification over possible worlds, which is always maximal ($\forall w'$) in virtue of the analyticity of the relation between the NP property and the $capacity/duty$, ... expressed. (9a) which involves a descriptive generalization is ungrammatical. (9b) is interpreted as in (14).

(3) Finally, when a subclass is identified by means of non-sentential modifiers analyticity is obained provided that the VP property (i) characterizes the whole subclass ; (ii) is non-descriptive (e.g evaluative (10b) and (15) vs. (10c), where 'rares' requires observation).

Data and references

(1) a. Un carré a quatre côtés *'a square has four sides*'

b. *Des carrés ont quatre côtés *"des' squares have four sides'*

(2) a. Des jumeaux se ressemblent dans les moindres détails / *"des' twins look alike down to the smallest details'*

b. GEN X (X is a group of twins) [X look alike down to the smallest details]

c. (*)Des bébés se ressemblent dans les moindres détails / *"des' babies ...'* (only existential)

d. # GEN X (X is a sum of babies) [X look alike down to the smallest details]

(3) a. Des moines prient ensemble au couvent *"des' monks pray together at the convent'*

b. # GEN X (X is a sum of monks) [X eats at the convent]

(4) a. *Des frères se ressemblent dans les moindres détails *"des' brothers ...'*

b. GEN X (X is group of brothers) [X look alike down to the smallest details]

(5) a. Un chien est un animal à quatre pattes *'A dog is a four legged animal'*

b. *Un chien est intelligent *'a dog is intelligent'*

c. Un chien, c'est intelligent *'A dog, 'ça' is intelligent'*

(6) a. Des rectangles sont des carrés *"des rectangles are 'des' squares'*

(7) a. Des bébés, ça se ressemble dans les moindres détails *"des' babies, 'ça' ...'* (vs. (2c))

b. Des carrés, ça a quatre côtés *"des' squares, 'ça' ...'* (vs. (1b))

(8) a. *Des jumeaux vivent dans la même ville *"des' twins live in the same town'*

b. Des jumeaux, ça vit dans la même ville *"des' twins, 'ça' live in the same town'*

(9) a. (*)Des étudiants travaillent dans cette salle (only existential) *"des' students work in this room'*

b. Des étudiants peuvent travailler dans cette salle *"des' students can work in this room'*

(10) a. (*)Des maladies sont dangereuses (only existential reading) *"des' illnesses are dangerous'*

b. Des maladies cardiaques sont dangereuses *"des' cardiac diseases are dangerous'* (*Des maladies sont cardiaques *"des' diseases are cardiac'*)

c. (*)Des maladies cardiques sont rares en Afrique *"des' cardiac diseases are rare in Africa'* (existential only)

(11) Greenberg's analysis (2002) of singular indefinites (IS sentences) :
$\forall w'[\forall x[(\text{dog}(x, w') \rightarrow$ has a four genetic makeup $(x, w') \rightarrow$ (has four legs $(x, w')]]$ Paraphrase : In all worlds where every dog has a *4 legged genetic makeup*, every dog has four legs (for sake of clarity, in this abstract, we do not consider restrictions to situations within possible worlds).

(12) $\forall w'[\forall x[(\text{dog}(x, w') \rightarrow$ has the dogness property $(x, w') \rightarrow$ (has four legs $(x, w')]]$ Paraphrase : In all accessible worlds where every dog has the property of dogness, it has the property of having four legs

(13) $\forall w'[\forall x[(\text{dog}(x, w') \rightarrow$ has the property of having a set of associated properties to dogness $(x, w') \rightarrow$ (is intelligent $(x, w')]]$ Paraphrase : In all accessible worlds where every dog has the property of having a set of associated properties to dogness, every dog also has the property of being intelligent

(14) $\forall w'[\forall x[(\text{student}(x, w')] \rightarrow$ has the property of having the permission of using that room $(x, w') \rightarrow ($ can use that room $(x, w')]]$ Paraphrase : In all accessible worlds where every student has the property of having the permission of using a particular room, s/he can use that particular room.

(15) $\forall w'[\forall x[(\text{diseases}(x, w') \wedge$ is cardiac $(x, w') \rightarrow$ (is dangerous$(x, w')]]$ Paraphrase : In all accessible worlds where a desease is of cardiac type, that disease is dangerous

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