COLLECTIVE NOUNS WITHOUT GROUPS*

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1 Introduction

Nouns such as *deck*, *pile* or *group* are traditionally called *collective nouns*, to distinguish them from nouns such as *card*, *dish* or *boy* that are instead called *individual nouns*. Intuitively, the individual terms *those cards* and *those dishes* denote the *members* of the pile and the deck denoted by the collective terms *that deck of cards* and *that pile of dishes*. Thus, let me say that the former individual terms *correspond* to the latter collective terms. This paper addresses the following question: is it the case that a collective term and the corresponding individual term denote the same individual? In other words, is coreference a proper account of the intuitive relationship between a collective term and its corresponding individual term? or is there linguistic evidence that points towards a more tenuous, indirect relationship?

Most of the literature that has addressed this question has converged towards a negative answer, as reviewed in Section 3. For instance, Link (1983:p. 13) writes: "I consider the two individuals [denoted by the terms *the cards* and *the deck of cards*] as being distinct. [...] In general, [...] the introduction of a collective term [...] is indicative of connotations being added enough for it to refer to a different individual." This *non-coreferentiality hypothesis* provides a straightforward account for various linguistic environments documented in the literature where a collective term and the corresponding individual term behave differently, either in terms of acceptability or meaning. It is for this reason that this non-coreferentiality hypothesis has been endorsed by a number of authors, such as Bennett (1974), Simons (1982), Landman (1989a), Gillon (1992), Barker (1992), Schwarzschild (1996), Chierchia (1998), Winter (2001) among many others (but see Moltmann 1997, 2005 for a different view).

Yet, all these implementations of the non-coreferentiality hypothesis have the drawback of requiring a non-trivial enrichment of the ontology with an *ad hoc* class of singular individuals to be used as the dedicated denotation of collective terms. These new, special singular individuals are usually called *groups* (although Link also calls them "impure atoms" and Schwarzschild calls them "bunches"). This consideration motivates a careful investigation of the opposite *coreferentiality hypothesis*. As Landman (1989b:p. 742) himself points out, "it is not clear in normal contexts in what sense this deck of cards is more than just the sum of the individual cards, grabbed together as a group."[1] Building on this intuition, this paper thus tries to defend

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[1]Interestingly, Landman reports here the opposite intuition than that reported by Link in the passage above.

the hypothesis that a collective term such as *that deck of cards* and the corresponding individual term *those cards* do indeed denote the same plural individual, so that no new special singular individuals such as groups are needed for the semantics of collective nouns.

My argument in favor of this coreferentiality hypothesis is twofold. In Section 4, I argue that a collective term and the corresponding individual term can be mutually replaced in many environments, without affecting neither truth-conditions nor acceptability. Furthermore, I argue that such interchangeability holds also in the case of distributive predication. As distributive predication is peculiar to plural-denoting terms, I conclude that these data cannot be accounted for under the non-coreferentiality hypothesis that (morphologically singular) collective terms denote special singular individuals. In Sections 5 and 6, I develop the second half of my argument: I claim that the different behavior of a collective term and the corresponding individual term can be accounted for also under my coreferentiality hypothesis, by carefully exploiting the proper semantics of the linguistic environments that pull the two terms apart. I focus on two such cases: reciprocals and predicate non-sharing. The idea is that, despite the fact that the two terms *this pile of dishes* and *these dishes* corefer, they denote different individual concepts (for instance, there are worlds/situations where the dishes are not in a pile, so that the former term has no reference while the latter does) and furthermore they are built out of the two NPs *pile of dishes* and *dishes* that denote different properties (as shown by the fact that there can be three dishes and a single pile). I submit that reciprocals distinguish between *this pile of dishes* and *these dishes* because reciprocals are sensitive to the two different properties denoted by the two corresponding NPs. Furthermore, I submit that (non-reciprocal) non-sharable predicates distinguish between the two terms because these predicates have an intensional nature and are thus sensitive to the different individual concepts denoted by the two terms.[2]

2 Background on the Semantics for Plurals

This Section sets the background for the rest of the paper, summarizing some fairly standard assumptions about the ontology of plural individuals, nominal semantics and the mechanics of (collective and distributive) predication. Following Link (1983), I assume that the conjunction *and* in *John and Bill* denotes a *sum operation* (with suitable properties) on the domain of discourse $\mathscr{D}$. And that *John and Bill* indeed denotes the individual $j+b$ which is the sum of the individuals j and b denoted by the conjuncts *John* and by *Bill*. This sum operation defines a relation $\leq$ (with suitable properties) that holds between an individual and its parts, say between j and $j+b$ (see Landman 1991 for technical details). Once this *part-of* relation $\leq$ is in place, the elements of the domain of quantification $\mathscr{D}$ can be split into two classes: the class $\mathscr{A}t$ of *atomic* (or *singular*) *individuals*, namely those that have no proper $\leq$-parts; and the class $\mathscr{P}l$ of *plural individuals*, namely those that do have proper $\leq$-parts.

Suppose there are only three boys in the domain of qualification, say John, Bill and Tom. The noun *boy* should then denote the set of the three atomic individuals John, Bill and Tom, as stated in (1a). In the general case, I thus assume that a singular (count) noun denotes a set of atoms.

(1) a. $[\![\text{boy}]\!] = \{j, b, t\} \subseteq \mathscr{A}t$

[2]Landman (1989b:p. 742) argues that we must draw a "distinction between groups that are totally determined by their members [...] and groups that are not at all determined by their members", namely a distinction between collective nouns such as *group* and *pile* and those such as *committee* and *parliament*. If the distinction is indeed needed, then the proposal developed in this paper only applies to collective nouns such as *group*, while the issue of the proper semantics of collective nouns such as *committee* is left open.

b. $[\![\text{boys}]\!] = [\![\text{s}]\!]([\![\text{boy}]\!]) = \mathbf{Pl}(\{j,b,t\}) = \left\{ \begin{array}{ccc} & j+b+t & \\ j+b & b+t & j+t \\ j & b & t \end{array} \right\}$

Various authors have suggested that the corresponding plural noun *boys* should denote the set of all sums of these three boys. This can be obtained from (1a) by assuming that English plural morphology *-s* denotes a *pluralization operator* **Pl** that takes a property and closes it off w.r.t. the sum operation $+$. And that the denotation of *boys* is computed by applying this operator to the denotation of the singular noun *boy*, as illustrated in (1b).

The definite article *the* denotes Russell's *iota operator* (2): it takes a property *P*, computes the sum $+P$ of all the elements that fall within *P*, checks that this sum $+P$ belongs to *P* too and in that case returns indeed that sum. Because of the assumption (1a) that a singular count noun denotes a set of atoms, the singular definite *the boy* is only defined provided that there is a unique boy, thus capturing the uniqueness presupposition triggered by singular definites. Because of the assumption (1b) that a plural count noun is closed w.r.t. sum, the plural definite *the boys* is always defined and denotes the sum of all boys, thus capturing the intuitive universal force carried by plural definites.

(2) $[\![\text{the}]\!] = \lambda P_{\langle \text{e,t} \rangle} : +P \in P \,.\, +P$

Assumptions (1) and (2) entail that morphologically singular terms (such as *John* and *this dish*) denote singular individuals; while morphologically plural terms (such as *John and Bill* and *these dishes*) denote plural terms. This ontology/morphology correspondence is the core property of the nominal semantics just summarized.

Sentence (3a) attributes the property *met* neither to John nor to Bill but rather to the plural individual that is the sum of the two. This suggests that *met* denotes a property of plural individuals, as in (3b). Such predicates are called *collective*. The computation of the truth conditions for collective predication is straightforward: we just need to check whether the plural individual denoted by the subject term belongs to the predicate, as in (3c).

(3) a. John and Bill met yesterday.
b. $[\![\text{met}]\!] = \{\ldots, j+b, \ldots\} \subseteq \mathscr{P}l.$
c. $[\![\text{John and Bill}]\!] \in [\![\text{met}]\!]$.

The case of sentence (4a) is rather different. In this case, the sentence does attribute the property *tall* to both John and Bill. This suggests that *tall* denotes a property of atomic individuals, as in (4b). Such predicates are called *(inherently) distributive*. The computation of the truth conditions is slightly more involved in this case. As *John and Bill* denotes the plural individual $j+b$ while *tall* is only true of the singular individuals j, b, a straightforward computation as in (4c) would predict sentence (4a) to be always false.

(4) a. John and Bill are tall.
b. $[\![\text{tall}]\!] = \{\ldots, j, b, \ldots\} \subseteq \mathscr{A}t.$
c. ~~$[\![\text{John and Bill}]\!] \in [\![\text{met}]\!]$~~.
d. $[\![\text{John and Bill}]\!] \in \mathbf{Dist}([\![\text{tall}]\!])$.
where $\mathbf{Dist}([\![\text{tall}]\!]) = \{\ldots, j, b, j+b, \ldots\}$

Various authors have suggested to solve the difficulty by assuming that sentence (4a) contains a covert *distributive operator* **Dist**. For the sake of this paper, this can be construed in full analogy with the plural operator in the nominal domain: **Dist** takes a predicate and closes it off w.r.t. the sum operation $+$. In the case of (4b), $\mathbf{Dist}([\![\text{tall}]\!])$ thus also contains the plural individual $j+b$ and the computation of the truth conditions can then proceed as in (4d).

The semantics I have in place extends straightforwardly to relational nouns and transitive predicates. A singular relational noun like *mother* can be taken to denote a relation between atoms, as in (5a). The sum operation can be extended component-wise from individuals to pairs of individuals. This allows the closure operator **Pl** to be applied to relational nouns as well. The denotation of the plural relational noun *mothers* can thus be computed by applying this operator to the denotation of the corresponding singular, as in (5b).

(5) a. $[\![\text{mother}]\!] = \{(m,j),(s,b)\} \subseteq \mathscr{A}t \times \mathscr{A}t$

b. $[\![\text{mothers}]\!] = [\![\text{s}]\!]([\![\text{mother}]\!]) = \mathbf{Pl}(\{(m,j),(s,b)\}) = \left\{ \begin{array}{c} (m+s, j+b) \\ (m,j) \quad (s,b) \end{array} \right\}$

And the same goes of course for the distributive operator and transitive distributive predication. Sentence (6a) has a distributive reading captured by assumption (6b) on the denotation of the predicate *date*. The distributive operator **Dist** is thus needed as in (6c), in order to close off the set of pairs of atoms in (6b).

(6) a. Mary and Sue dated John and Bill.

b. $[\![\text{date}]\!] = \{(m,j),(s,b)\} \subseteq \mathscr{A}t \times \mathscr{A}t$

c. $\big([\![\text{Mary and Sue}]\!], [\![\text{John and Bill}]\!]\big) \in \mathbf{Dist}([\![\text{date}]\!])$
where $\mathbf{Dist}([\![\text{tall}]\!]) = \big\{\ldots,(m,j),(s,b),(m+s,j+b),\ldots\big\}$

In the rest of this paper, I investigate which modifications, if any, need to be made to the framework just sketched, in order to accommodate collective nouns.

3 The Non-coreferentiality Hypothesis

Various modern treatments of collective nouns can be viewed as alternative implementations of a proposal sketched in Russell (1903:p. 68). Russell's proposal consists of three ideas. *First*, Russell draws a distinction between a "class as a whole" and a "class as many": "a class, [...] in one sense at least, is distinct from the whole composed of its terms, for the latter is only and essentially one, while the former, where it has many terms, is [...] the very kind of object of which *many* is to be asserted." *Second*, he suggests that for every "class as many" there must be a corresponding "class as a whole", because "whatever is many in general forms a whole which is one." *Third*, he notes that the distinction between a "class as many" and a "class as a whole" corresponds to the natural language distinction between collective and individual terms: "*the army* and *the soldiers*, *the navy* and *the sailors*, *the Cabinet* and *the Cabinet Ministers*, all illustrate the distinction." In conclusion, Russell suggests that collective and individual terms denote objects of a different ontological nature (a "class as a whole" and a "class as many", respectively) that are related in some principled, functional way. Let me generically refer to this idea as the *non-coreferentiality hypothesis* between a collective term and its corresponding individual term. In this Section, I illustrate this hypothesis through Link's (1984) specific implementation (see Landman 1989a and Schwarzschild 1996 for variants) and I summarize the main linguistic arguments that have been put forward to support non-coreferentiality.

Link (1984:p. 247-248)[3] suggests that the ontology developed in Section 2, with its distinction between singular and plural individuals, provides a suitable framework to implement Russell's distinction between a "class as a whole" and a "class as many". To start, he suggests that we need to distinguish between the plurality made up by Tom and Bill and the group constituted by that plurality: the group "is essentially like [the plural individual] $t+b$ except that it denotes again an atom in the domain of individuals" (p. 250). He thus suggests that

[3]For the sake of clarity, I slightly change some of Link's (1984) terminology in the quotations that follow.

the ontology be enriched with "a further sort of object, the *group of individuals*." Indeed, he assumes that the set of atoms $\mathscr{A}t$ "is to consist of two disjoined sets: the set of pure atoms and the set of impure atoms" or *groups*. I will denote by $\mathscr{G}$ the subset of $\mathscr{A}t$ that consists of groups. The distinction between plurals and groups implements Russell's first idea, concerning the distinction between a "class as a whole" and a "class as many". Link then suggests that "for every usual plural individual $d \in \mathscr{P}l$, there is an atom that uniquely represents the group consisting of d" (p. 249-250). Thus, let's posit a mapping γ from the set of plural individuals $\mathscr{P}l$ into $\mathscr{G}$. The set $\mathscr{G}$ of groups can effectively be defined as the range within $\mathscr{A}t$ of this mapping γ. This map γ implements Russell's second idea, that every "class as many" comes with a corresponding "class as a whole". Of course, this assumption enlarges substantially the size of the domain of quantification and raises serious set-theoretic issues (see Landman 1989a for discussion). Finally, Link assumes that collective terms such as *that group of boys* or *that pile of dishes* denote that group in $\mathscr{G}$ that is the image under γ of the individual in $\mathscr{P}l$ denoted by the corresponding individual term *those boys* or *those dishes*, as stated in (7).

(7) $[\![\text{that group of boys}]\!] = \gamma([\![\text{those boys}]\!]) \in \mathscr{G} \subseteq \mathscr{A}t.$

Assumption (7) formalizes Russell's intuition that his distinction between a "class as a whole" and a "class as many" corresponds to the natural language distinction between collective and individual terms. Assumption (7) respects the morphology/ontology correspondence established in Section 2, according to which morphologically singular (plural) terms denote ontologically singular (plural) individuals: *that group of boys* is morphologically singular and indeed denotes an atom, although one with special properties, namely a group.

Three main linguistic facts seem to provide support for this hypothesis that a (morphologically singular) collective term and the corresponding individual term do not corefer, as the former denotes a singular individual while the latter denotes a plural individual. The *first argument* has to do with reciprocals, and is based on examples such as (8) and (9).[4]

(8) a. ⋆This pile of rocks is touching each other.
    b. These rocks are touching each other.

(9) a. The boys and the girls helped each other.
    b. The group of boys and the group of girls helped each other.

The two sentences (8) differ in acceptability: a collective (singular) term cannot be the antecedent of a reciprocal, contrary to the corresponding individual (plural) term. The two sentences (9) differ in truth conditions: sentence (9a) is intuitively true in a scenario where the boys helped each other and the girls helped each other, while sentence (9b) would be false is such a scenario, as it intuitively requires the boys to help the girls and vice versa. Reciprocals thus distinguish between a collective term and the corresponding individual term, both in terms of acceptability and meaning. This pattern (8)-(9) is straightforwardly accounted for by the assumption that collective terms denote atomic individuals: the semantics of reciprocals needs to access the parts in the denotation of the antecedent but collective terms denote (special) atoms that therefore have no parts.

The *second argument* has a similar flavor. If a collective term such as *the pack of dogs* and the corresponding plural individual term *the dogs of that pack* denote different individuals, then we clearly expect *predicate non-sharing* such as those in (10)-(11): different individuals have different properties and thus enter into different predication contexts.

(10) a. The dogs in this pack are tall.

[4] Example (9) is adapted from Gillon (1992) through Chierchia (1998).

b. *This pack of dogs is tall.

(11) a. This group of boys has two members.

b. *These boys have two members.

On the contrary, the argument proceeds, if a collective term and the corresponding individual term are coreferential, then they should be interchangeable in any predication context, leaving data such as (10)-(11) unexplained.

Finally, the *third argument* looks at agreement patterns. For instance, Barker (1992:p. 88) points out that a collective term "is always capable of triggering singular agreement marking on the verb", contrary to the corresponding individual term. Schwarzschild (1996:p. 162-163) makes the same point using determiners. He considers (12) and points out that "prenominal [...] numerals [...] combine with plurals but not with singular collectives."

(12) a. Five members.

b. *Five committee.

(13) a. Alcuni piatti.
Some dishes

b. *Alcuna pigna di piatti.
Some pile of dishes

(14) a. Nessuna pigna di piatti.
No pile of dishes

b. *Nessun piatti.
No dishes

Analogously, the italian determiner *alcuni* ('some') in (13) combines with the individual plural noun *piatti* ('dishes') but not with the collective singular noun *pigna* ('pile'); vice versa, the italian determiner *nessuno* ('no') in (14) combines with the collective singular noun *pigna* but not with the individual plural noun *piatti*.

4 The Coreferentiality Hypothesis

According to the non-coreferentiality hypothesis just considered, *those boys* and *that group of boys* refer to different individuals. Yet, Landman (1989a:p. 587-588) notes that, "if we consider collective readings [...], the sharp distinction [between collective and individual terms] seems to disappear. To the question *Who carried the piano upstairs?*, the two answers (15a) and (15b) seem to provide exactly the same information."

(15) a. Those boys carried the piano upstairs (together).

b. That group of boys carried the piano upstairs.

Chierchia (1998:p. 64) makes the same point: "the question is whether there is any difference in meaning between sentence (15a), on its *collective reading*, and sentence (15b), where we explicitly refer to groups. In so far as I know, no difference can be detected [...] since the intended meaning that [(15a) on its collective meaning] seeks to capture is the one whereby [the boys] together, *as a group*, do the lifting [...]."

Landman and Chierchia develop a semantics that reconciles this pervasive pattern of logical equivalences with the non-coreferentiality hypothesis. Here is a sketch of their proposal. The distinction between collective and distributive predicates has been characterized in Section 2 in terms of the distinction between singular and plural individuals: collective predicates denote properties of plural individuals; distributive predicates denote properties of singular individuals. Landmand and Chierchia suggest that, once groups have been introduced into the ontology, this initial characterization should be modified. Assume that all predicates denote properties of singular individuals, both the collective and the distributive ones. The crucial difference between the two can then be construed as follows: distributive predicates denote properties of pure atoms in $\mathscr{At} \setminus \mathscr{G}$, like those denoted by *John* or *that boy*; while collective predicates denote properties of groups in $\mathscr{G}$, like those denoted by *that group of boys*. When we try to interpret sentence (15a) straightforwardly as in (16a), we thus run into a *sortal mismatch*: *John and Bill* denotes a plural individual while the predicate denotes a property of groups. The mapping γ then comes to the rescue: it solves the sortal mismatch by mapping the plural individual denoted by *those four boys* into the corresponding group, so that sentence (15a) ends up with the truth conditions (16a′). The interpretation of sentence (15b) proceeds straightforwardly, yielding (16b). By virtue of Link's semantics (7) for collective terms, the two formulas (16a′) and (16b) are identical, thus accounting for the logical equivalence of the two corresponding sentences (15).

(16) a. ~~⟦those boys⟧ ∈ ⟦carry the piano⟧~~.

a′. γ(⟦those boys⟧) ∈ ⟦carry the piano⟧.

b. ⟦that group of boys⟧ ∈ ⟦carry the piano⟧.

In a nutshell, Landman and Chierchia's account for the equivalence illustrated in (15) by systematically reducing collective readings to "group readings". Indeed, as Bennett (1974:p. 142) puts it, it is plausible "to treat *together* in a [...] sense which is roughly expressed by *as a group*."

In the rest of this Section, I will try to argue that Landmand and Cherchia's strategy to cope with equivalences such as (15) on the background of the non-coreferentiality hypothesis is, at the same time, too weak and too strong. These considerations will pave the way to the opposite coreferentiality hypothesis. As noted in Section 3, predicate non-sharing such as the one illustrated in (11) has been argued in the literature to support the hypothesis that a collective term such as *this group of boys* and the corresponding individual term *these boys* do not corefer. In fact, this non-coreferentiality hypothesis predicts the two sentences (11) to have the truth conditions (17). Plausibly, the predicate *have two members* denotes a property of groups. Thus, (17b) is always false, because *these boys* denotes a plural individual and not a group. While *this group of boys* denotes a group, making (17a) contingent. The different acceptability of the two sentences (11) thus follows straightforwardly.

(17) a. ⟦this group of boys⟧ ∈ ⟦have two members⟧

b. ⟦these boys⟧ ∈ ⟦have two members⟧

Yet, assume with Landman and Chierchia that *carry the piano* (in its collective reading) denotes a property of groups. Then, there is no semantic difference between the two predicates *carry the piano* and *have two members*: both denote properties of groups. If the γ operator can apply in the case of *carry the piano* in (15a) in order to repair the sortal mismatch, there is no reason why it shouldn't apply also in the case of *have two members* in (11b). This way, we would get the truth-conditions (17b′), instead of (17b).

(17) b′. γ(⟦these boys⟧) ∈ ⟦have two members⟧

And again, Link's assumption (7) on the semantics of collective terms would make the two formulas (17a) and (17b′) equivalent, thus impeding any (semantic) account for the different acceptability of sentences (11). The general point here is that Landman and Chierchia's semantics endowed with a freely applying γ operator is too *strong*, as it wipes away any benefits that derive from having collective and individual terms denote different individuals.

Furthermore, I think that Landman and Chierchia's proposal is at the same time too *weak*. As noted above, they deal with logical equivalences on the background of the non-coreferentiality hypothesis by developing the idea that collective readings should be reduced to group readings. Of course, this approach hinges on the empirical generalization that logical equivalences such as (15) should be limited to collective predication and should not extend to distributive predication. But that turns out not to be the case, as shown by the minimal pair (18).

(18) a. Yesterday evening at the party, those boys wore a yellow T-shirt.
 b. Yesterday evening at the party, that group of boys wore a yellow T-shirt.

These two sentences are both fine and logically equivalent. Winter (2001:p. 259) shows that, without a distributive operator, "there [would be] no lexical assumption on the denotation of the verb *wear* that [could] guarantee that (18a) is true when every girl is wearing a *different* T-shirt, as intuitively required." The two sentences (18) are therefore instances of distributive predication. They thus show that logical equivalences between a collective term and the corresponding individual term are attested also in the case of distributive predication. Let me strengthen my point with further data (19).

(19) a. Because of the heat, the pack of dogs drank at the spring.
 b. At the airport, the group of surviving tourists hugged relatives and friends.
 c. Only with suspicion did the pack of hounds eat the food offered by the visitor.
 d. When the queen appeared, a group of tourists leant out of the window to see better.
 e. A group of tourists drowned in the sea because of a sudden congestion.
 f. Because of the epidemic, the whole pack of dogs got sick.
 g. A flock of birds landed on the sea.
 h. The commander spoke with such a low voice that only the first rank of soldiers correctly understood the order.
 i. A small group of canaries is chirping on a tree next to my window.
 j. When the teacher arrived, a group of students was standing in front of the window.
 k. At the end of the race, the pack of dogs was very tired / hungry.
 l. I couldn't sleep because a pack of dogs barked all night under my window.
 m. After the long race, the pack of dogs crouched to rest.

I submit that the predicates in (19) are all inherently distributive. As neither truth-conditions nor acceptability of these sentences change when the collective term is replaced with the corresponding plural individual term, these data strengthen my point that logical equivalences are widespread and not limited to the context of collective predication.

Let me take stock. Consider pairs of a collective term and the corresponding individual term, such as those in (20). They give rise to a pattern of logical equivalences that is hard to account for if the two terms do not corefer. In fact, the devices that can be put in place to account for such logical equivalences undercut the benefits of the non-coreferentiality hypothesis. Furthermore, these logical equivalences are more widespread than it has been suggested in the literature. In the sense that they are not limited to collective predication but extend to distributive predication too. As distributive predication is peculiar to plural-denoting terms, I conclude that a (morphologically singular) collective term cannot denote an atomic individual.

(20)	a.	that deck of cards	the cards of that deck.
	b.	that pile of dishes	the dishes of that pile.
	c.	that couple of newlyweds	that bride and the bridegroom.

These conclusions pave the way to the hypothesis that a collective term and the corresponding individual term in (20) do indeed corefer. As Landman (1989b:p. 742) himself points out, "it is not clear in normal contexts in what sense this deck of cards is more than just the sum of the individual cards, grabbed together as a group." And what else could a pile of dishes be, besides a plurality of dishes, displayed in a special way? Or why should a couple of newlyweds be any different from the plurality made up by the bride and the bridegroom? Coreferentiality is the *null hypothesis* about the denotation of collective nouns, as it dispenses with new individuals such as *groups* and with the foundational challenges that they raise for natural language ontology.

I thus assume that a collective noun such as *group*, *pile* or *deck* denotes the property of those plural individuals whose singular parts are in a group or in a pile or make up a deck, as illustrated in (21a). The denotation of the corresponding plural noun *piles* or *decks* is obtained by applying the plural operator **Pl**, just as for the case of individual nouns such as *dishes* or *cards*. The NP *pile of dishes* denotes the property of individuals that are a plurality of dishes and furthermore are arranged in a pile, as in (21b). This is is easy to get compositionally, for instance assuming that *of* is semantically vacuous and that the denotation of *pile of dishes* is computed through Heim and Kratzer's (1998) rule of *predicate modification*. The standard semantics (2) for the definite article works analogously for collective and individual NPs, as in (21c).

(21) a. $[\![\text{pile}]\!] = \{d \in \mathscr{P}l \,|\, \text{the atoms of } d \text{ are arranged in a pile}\}$.
b. $[\![\text{pile of dishes}]\!] = \lambda x.[\![\text{pile}]\!](x) \wedge [\![\text{dishes}]\!](x)$.
c. $[\![\text{the pile of dishes}]\!] = [\![\text{the}]\!]([\![\text{pile of dishes}]\!])$.

According to (21), the morphologically singular term *the pile of dishes* denotes a plural individual. Thus, this semantics for collective nouns breaks with the core tenet of the framework reviewed in Section 2, namely that singular/plural morphology corresponds to the the ontological distinction between singular/plural individuals. A different theoretical framework for nominal semantics is needed, along the lines of Magri (2007). In this paper, I leave these broader issues aside.

The semantics in (21) predicts that the collective term *that pile of dishes* and *those dishes* denote the same individual. In the rest of this paper, I want to defend this coreferentiality hypothesis against the facts summarized at the end of Section 3. The intuitive idea of the account is as follows. Although the two terms *that pile of dishes* and *those dishes* denote the same individual, the two corresponding NPs *pile of dishes* and *dishes* do not denote the same properties. Reciprocals distinguish between collective and individual terms as illustrated in (8)-(9) because they are sensitive not only to the individual denoted by the antecedent term but also to the property denoted by the corresponding NP. Furthermore, although the two terms *that pile of dishes* and *those dishes* happen to denote the same individual in the situation considered, they denote different individual concepts (for instance, there are certain situations where the dishes are arranged one next to the other, so that the collective term has no denotation). I will thus try to argue that non-sharable predicates such as those in (10)-(11) have an intensional nature that makes them sensitive to the different individual concepts denoted by collective and individual terms.[5]

5 Reciprocals

As anticipated in Section 3, collective terms behave in a peculiar way with reciprocals, as shown by the minimal pairs (8)-(9), repeated in (22)-(23). The two sentences (22) differ in acceptability: a (singular) collective term cannot be the antecedent of a reciprocal, contrary to the corresponding (plural) individual term. The two sentences (23) differ in truth conditions: sentence (23a) is intuitively true in a scenario where the boys helped each other and the girls helped each other, while sentence (23b) would be false and instead requires helping across the two groups.

(22) a. *The pile of rocks is touching each other.
     b. The rocks in that pile are touching each other.

(23) a. The boys and the girls helped each other.
     b. The group of boys and the group of girls helped each other.

These facts seem *prima facie* hard to account for under my coreferentiality hypothesis. Of course, the ungrammaticality of (22a) could be imputed to a morpho/syntactic constraint against morphologically singular antecedents of reciprocals. But such a constraint would be of no help with the contrast in (23), that clearly calls for a semantic treatment. What we need is thus a semantic devise that prevents reciprocals from accessing the single rocks in the case of (22a) and the single boys and girls in the case of (23b).

Here is an informal sketch of the strategy that I will pursue in this Section. The two sentences (24) are fully equivalent, if uttered pointing to John, who happens to be both a boy and a student. But the two sentences (25) are not equivalent, even if both uttered pointing to the student John. In fact, (25a) asks for some *boy* different from John while (25b) asks for some *student* different from John. Thus, pronominal *other* is somehow sensitive not only to the individual denoted by the terms *this boy* or *this student* but also to the property denoted by the corresponding NPs *boy* and *student*.

(24) a. This boy is running in the garden.
     b. This student is running in the garden.

(25) a. I don't like this boy; show me another.
     b. I don't like this student; show me another.

Heim et al. (1991) suggest that "reciprocal expressions have no semantic properties peculiarly their own and [that] their meaning instead arises from the compositional interaction of the meanings that their constituent parts have in isolation" that is "from the nonreciprocal usage of *other* and *each*." It is therefore fair to assume that also *other* that appears in reciprocals' *each other* is sensitive to the property introduced by its antecedent NP. This sensitivity provides a handle to account for the special behavior of collective terms with reciprocals under the coreferentiality hypothesis. In fact, although the two terms *that pile of dishes* and *those dishes* corefer, the corresponding properties *pile of dishes* and *dishes* do not corefer. The different behavior of collective and individual terms with reciprocals can thus be made to follow from

[5]In this paper, I will not deal with agreement facts, illustrated in (12)-(14). A proper account of these facts requires a modification of the traditional semantics for plurals sketched in Section 2, along the lines of Magri (2007).

the fact reciprocal *other* has a hidden slot for a sortal and that the two terms fill this slot with different properties. The rest of this Section spells out the details.

I will focus on what Langendoen (1978) calls *elementary reciprocal sentences*, like *The boys helped each other*. In order to tackle the problem of their LF and truth-conditions, let me consider their counterpart in Italian. Belletti (1982) notes the contrast in (26): the structure is ungrammatical without the reflexive clitic *si* ('themselves').

(26) a. I ragazzi si aiutano l'un l'altro
The boys themselves help each other

b. *I ragazzi aiutano l'un l'altro
The boys help each other

Taking this fact at face value, I suggest to compute the truth-conditions of sentence (26a) out of the LF (27a) along the lines of (27b). Let me make my assumptions explicit. I assume that reciprocal predication is standard transitive predication, where the two arguments of the transitive predicate *aiutano* ('help') are the antecedent DP *i ragazzi* ('the boys') and the reflexive clitic *si* ('themselves') coreferential with the antecedent DP. I borrow from Heim et al. (1991:p. 66) the assumption that *ogni* ('each') is an operator that applies to the antecedent DP *i ragazzi* ('the boys') and introduces a distribution to the subpluralities of boys. Since this job is already accomplished by the distributivity operator **Dist** in the framework adopted here, I will simply ignore *ogni/each* from now on. Finally, I assume that *altro* ('other') is a modifier of the predicate *aiutano* ('help').

(27) a. [[L'uno [I ragazzi]$_i$] [altro aiutano] si$_i$]
[[*Each* [*The boys*]$_i$] [*other help*] *themselves*$_i$]

b. $[\![[_{IP} \text{i ragazzi}_i \; [_{VP} \; [\text{altro aiutano}] \; \text{si}_i]]]\!] = 1 \Leftrightarrow$
$\Leftrightarrow \big([\![\text{i ragazzi}]\!], [\![\text{si}]\!] \big) \in \mathbf{Dist}\big([\![\text{altro}]\!] \cap [\![\text{aiutano}]\!] \big)$

I will assume that the syntax and semantics (27) extend to the case of English elementary reciprocal sentences, despite the fact that they contain no overt object clitic *si/themselves*.

Now I need to make explicit the semantics for *altro/other*. To this end, it is useful to look at adjectival and pronominal usage of non-reciprocal *other*, illustrated in (28).

(28) a. John came out, and [$_{DP}$ no *other* doctor] went in.

b. I don't like this picture, show me [$_{DP}$ an*other*].

Heim et al. (1991) point out that both the DPs *no other doctor* and *another* in (28) are "semantically incomplete." The phrase *no other N(oun)* in (28a) means "no N different from *x*", which is incomplete as it requires some value to be supplied for *x* (say *John*). Also the phrase *another* in (28b) means "an N different from *x*", which is "doubly incomplete" as it requires both a value for N (say *picture*) and for *x* (say *this picture*). Heim *et al.* "refer to *x* and N — the two implicit arguments of *other* — as its *contrast argument* (i.e. *x*) and its *range argument* (i.e. N), where, as noted, the former argument standardly will be an [...] individual, the latter a property (= the meaning of a common noun) [...]." That the range argument of *other* is a property is shown by the adjectival usage of non-reciprocal *other*, illustrated in (28a): in this case, the range argument is explicitly realized as the N *doctor*, namely a constituent of type $\langle e,t \rangle$. I will thus assume the semantics (29) for non-reciprocal *other*: it takes a property P that serves as the range argument and an individual x that serves as the contrast argument; it presupposes that the contrast argument x satisfies the range argument P; and it returns the set of those individuals y in the set P that do not *overlap* with x (i.e. x and y are individuals that share no atoms, encoded with the notation $x \perp y$).

(29) $[\![\text{other}]\!] = \lambda P_{\langle e,t\rangle} . \lambda x_e . \lambda y_e : P(x) . P(y) \wedge x \perp y$

Based on Heim *et al.* (1991; 69) assumption that "the *other* found in *each other* and *one another* has the properties of pronominal [non-reciprocal] *other*", I assume that the semantics (29) extends to reciprocal *other*.

To complete this background on the proper semantics of reciprocals, I now need to make explicit my assumptions on how the proper property is assigned to the range argument of reciprocal *other*. In the case of non-reciprocal *other*, factors like prosody and context play a role in this assignment. For instance, depending on whether sentence (30) is pronounced with focus on *pile* or on *rocks*, it can man either "show me other piles" or "show me other rocks". But the semantics of reciprocal *other* seems to be insensitive to the prosody of its antecedent. A different, specific assignment mechanism is thus needed for the range argument of reciprocal *other*.

(30) I don't like this pile of rocks. Show me some others.

To this end, I will call into duty the version of the *copy-theory of movement* developed in Fox (1999). Here is a rather informal sketch, that will suffice for my purposes. Various authors have suggested that the subject *the boys* in (31a) is not base generated in the high position where it sits at Surface Structure. Rather, it is generated in a more embedded position and then raised leaving behind a coindexed trace, as in (31b). For the sake of explicitness, let me identify the embedded position where the subject is base generated with [Spec, VP] and its higher landing position with [Spec, TP], although the proper syntactic labels of these positions play no role here. According to more recent versions of the theory of syntactic movement (Labeaux 1988), what is left in situ is not a trace but rather a full copy of the dislocated subject, as in (31c). Unfortunately, the latter structure is not interpretable. To overcome this difficulty, Fox develops a *trace conversion rule* that yields the desired interpretation. This rule can be effectively restated as follows: the determiner in the subject copy is deleted, as in (31d); and the two properties *boys* (provided by the copy) and *tall* (provided by the predicate) within the VP are interpreted intersectively through *predicate modification*. The truth conditions of the sentence (31a) thus become "the boys are tall boys", which are equivalent to the intended truth conditions "the boys are tall", thanks to determiners' conservativity.

(31) a. The boys are tall.
b. $[_{\text{TP}}$ [the boys]$_{\text{i}}$ $[_{\text{VP}}$ t_{i} are tall]]
c. $[_{\text{TP}}$ [the boys]$_{\text{i}}$ $[_{\text{VP}}$ [the boys]$_{\text{i}}$ are tall]]
d. $[_{\text{TP}}$ [the boys]$_{\text{i}}$ $[_{\text{VP}}$ [~~the~~ boys]$_{\text{i}}$ are tall]]

I wish to suggest that the range argument of *other* in elementary reciprocal sentences is the property denoted by the (determiner-less) copy of the subject antecedent left in situ in [Spec, VP].[6]

I am now in a position to provide a purely semantic account for the different acceptability of sentences (22), repeated in (32). According to (27a), the corresponding LFs are (32a.i) and (32b.i), enriched here with the stranded, determiner-less copy of the antecedent. Consider a scenario where there are four rocks a, b, c, and d arranged into this pile $a+b$ and that pile $c+d$. The semantics in (27b) predicts the truth conditions (32a.ii) and (32b.ii). These two

[6]Here, I have reformulated Fox's original proposal only for the sake of clarity, as the reformulation seems to me to bring out more clearly the idea of my account. My proposal is fully compatible with Fox's original formulation of the trace conversion rule, as far as I can see. Furthermore, Fox's original formulation makes the anaphoric relation between *other* and the copy completely straightforward.

formulas only differ because of the range argument of *other*, which is the property ⟦rocks⟧ in the former case and the property ⟦pile of rocks⟧ in the latter case. This difference follows from my assumption that reciprocal *other* enters into an anaphoric relation with the stranded copy of the antecedent (here simply represented through coindexation) and that the property denoted by the latter provides the range argument.

(32) a. These rocks are touching each other.
   i. [$_{IP}$ [these rocks]$_i$ [$_{VP}$ [~~these~~ rocks]$_i$ [other$_i$ touch] themselves]]
   ii. $a+b \in \mathbf{Dist}\big(\llbracket\text{other}\rrbracket(\llbracket\text{rocks}\rrbracket) \cap \llbracket\text{touch}\rrbracket\big)$
   iii. $\llbracket\text{rocks}\rrbracket = \{a, b, c, d, a+b, b+c, a+c, \dots\}$
   iv. $\llbracket\text{other}\rrbracket(\llbracket\text{rocks}\rrbracket) = \{(a,b), (b,a), (a,c), (c,a), (d,a), \dots\}$

b. This pile of rocks is touching each other.
   i. [$_{IP}$ [this pile of rocks]$_i$ [$_{VP}$ [~~this~~ pile of rocks]$_i$ [other$_i$ touch] itself]]
   ii. $a+b \in \mathbf{Dist}\big(\llbracket\text{other}\rrbracket(\llbracket\text{pile of rocks}\rrbracket) \cap \llbracket\text{touch}\rrbracket\big)$
   iii. $\llbracket\text{pile of rocks}\rrbracket = \{a+b, c+d\}$
   iv. $\llbracket\text{other}\rrbracket(\llbracket\text{pile of rocks}\rrbracket) = \{(a+b, c+d), (c+d, a+b)\}$

Sentence (32a) is predicted to be true provided there are parts of $a+b$ that stand in the relation $\llbracket\text{other}\rrbracket(\llbracket\text{rocks}\rrbracket)$ in (32a.iv) and touch each other. This would be the case if a touches b and b touches a. Analogously, sentence (32b) is predicted to be true provided there are parts of $a+b$ that stand in the relation $\llbracket\text{other}\rrbracket(\llbracket\text{pile of rocks}\rrbracket)$ in (32b.iv) and touch each other. But that can never be the case, because the relation $\llbracket\text{other}\rrbracket(\llbracket\text{pile of rocks}\rrbracket)$ does not hold among parts of $a+b$. The unacceptability of sentence (32b) thus follows from the fact that it is always false.

In order to extend the account to the contrast in (23), some more preliminaries are needed concerning the mechanics of the copy theory of movement with conjoined subjects. To this end, consider sentence (33a), under the collective construal where only a single lifting happened, that involved the two boys John and Bill and the two girls Mary and Sue. The corresponding LF is provided in (33b): the conjoined subject is raised to its surface position, leaving in situ a copy whose two determiners are deleted for interpretability reasons.

(33) a. The boys and the girls lifted the piano (together).
   b. [$_{IP}$ [the boys and the girls]$_i$ [$_{VP}$ [~~the~~ boys and ~~the~~ girls]$_i$ lifted the piano]]

We cannot straightforwardly interpret *and* in the subject copy stranded in [Spec, VP] as boolean conjunction: as the two properties denoted by *boys* and *girls* are disjoint, we would get the empty set, as in (34a). Even if we interpret this instance of *and* as boolean disjunction as in (34b), we still don't get the right result: the resulting property lacks the plural individual $b+j+m+s$, that we crucially need in the denotation of the VP to get the collective construal of (33a).

(34) a. ⟦~~the~~ boys and ~~the~~ girls⟧ $= \llbracket\text{boys}\rrbracket \cap \llbracket\text{girls}\rrbracket = \emptyset$
   b. ⟦~~the~~ boys and ~~the~~ girls⟧ $= \llbracket\text{boys}\rrbracket \cup \llbracket\text{girl}s\rrbracket = \{b, j, b+j\} \cup \{m, s, m+s\}$

We need the copy of the conjoined subject stranded in [Spec, VP] to denote the property that consists of all the individual boys, and all the individual girls, and all the corresponding sums (sums of boys, sums of girls, and mixed sums), as in (35).

(35) ⟦~~the~~ boys and ~~the~~ girls⟧ $= \{b, j, m, s, b+j, m+b, s+t, m+s, ..., b+j+m+s\}$

This can be obtained by taking conjunction *and* in (35) to denote the point-wise extension of the sum operation + from individuals to sets of individuals.[7]

I am now in a position to provide a purely semantic account for the different truth conditions of sentences (23), repeated in (36). Consider a scenario where there is a group of two boys John and Bill and a group of two girls Mary and Sue. As assumed above, the range argument of reciprocal *other* is provided by the copy left in situ by the raised subject antecedent. Thus, the range argument of *other* is (36a.ii) and (36b.ii), respectively.

(36) a. The boys and the girls helped each other.
   i. $[_{\text{IP}}$ [the boys and the girls]$_{\text{i}}$ $[_{\text{VP}}$ [~~the~~ boys and ~~the~~ girls]$_{\text{i}}$ [other$_{\text{i}}$ help] themselves]]
   ii. ⟦~~the~~ boys and ~~the~~ girls⟧ $= \{j, b, m, s, j+b, b+m, a+c, \ldots\}$
   iii. ⟦other⟧(⟦~~the~~ boys and ~~the~~ girls⟧) $= \{(j,b), (b,j), (s,m), (m,s), (b,s), \ldots\}$

b. The group of boys and the group of girls helped each other.
   i. $[_{\text{IP}}$ [the group of boys and the group of girls]$_{\text{i}}$ $[_{\text{VP}}$ [~~the~~ group of boys and ~~the~~ group of girls]$_{\text{i}}$ [other$_{\text{i}}$ help] themselves]]
   ii. ⟦~~the~~ group of boys and ~~the~~ group of girls⟧ $= \{j+b, s+m, j+b+m+s\}$
   iii. ⟦other⟧(⟦~~the~~ group of boys and ~~the~~ group of girls⟧)$=\{(j+b, s+m), (s+m, j+b)\}$

The range argument (36a.ii) contains individual boys and individual girls. This leads to the interpretation (36a.iii) for the reciprocal, that allows for helping to happen between the two boys and between the two girls. But the range argument (36b.ii) only contains the two groups. This leads to interpretation (36b.ii) for the reciprocal, that only allows helping in between the two groups.

6 (Non-reciprocal) Predicate Non-sharing

Also various non-reciprocal predicates seem to be able to pull apart a collective term and the corresponding individual term, either in terms of acceptability or meaning (see Schwarzschild 1996 for a through review). This *predicate non-sharing* comes in two varieties. The first variety consists of predicates that go with a collective term but not with the corresponding individual term. For instance, the predicates in (37a)-(38a) are unacceptable with individual terms. Furthermore, the predicates *tall* and *recent* in (39a) and (40a) yield false sentences with the individual term under the collective reading whereby it is the pile and the series, not the single dishes or the single books, which is tall and recent.

(37) a. *These boys have three members.
   b. This group of boys has three members.

(38) a. *The names had too many entries.
   b. The list of names had too many entries.

(39) a. These dishes are tall. *false when the dishes are not tall, even though their pile is*
   b. This pile of dishes is tall. *true when the pile is tall, even though the dishes are not*

[7] This is not quite enough. In fact, the point-wise extension of + to the two sets ⟦boys⟧ and ⟦girls⟧ returns a set that does not contain individual boys nor individual girls. An easy fix would be to assume that the denotation of nouns always contains a dummy element ε that is the null element w.r.t. the sum operation +, in the sense that $\varepsilon + d = d$ for every individual d. This technical difficulty might admit a simpler solution on the background of Fox's original formulation of the trace conversion rule.

(40) a. The books of this series are recent. *false when the books are old*
b. This series of book is recent. *true when the series is recent, but the books is old*

The other variety of predicate non-sharing goes the other way around: it consists of predicates that go with an individual term but not with the corresponding collective term. For instance, the predicates in (41b)-(43b) yield unacceptability with collective terms. Furthermore, the predicates *tall* and *recent* in (44b) and (45b) yield false sentences with the collective term under the reading where it is the dishes and the books, not the pile or the series, which are tall and recent.

(41) a. These dogs are fat.
b. *This pack of dogs is fat.

(42) a. These players have foreign sounding last names.
b. *This team has foreign sounding last names.

(43) a. The cards on the table are numbered consecutively.
b. *This deck of cards is numbered consecutively.

(44) a. These dishes are tall. *true when the dishes are tall*
b. This pile of dishes is tall. *false when the dishes are tall, not the pile*

(45) a. The books of this series are recent. *true when the books are recent*
b. This series of book is recent. *false when the books are recent, but the series old*

In this Section, I suggest that (non-reciprocal) predicate non-sharing between a collective and the corresponding individual terms can be accounted for also under the hypothesis that they corefer, once non-sharable predicates are properly characterized.[8]

As shown in Section 4, not every predicate is non-sharable. For instance, the predicate *lift the piano* is sharable, at least in its collective reading, as shown by the intuitive equivalence of the two sentences (15). It has been suggested in the literature that the divide between sharable and non-sharable predicates coincides with the divide between collective and distributive predicates. But I have tried to argue that this empirical characterization of (non-)sharable predicates is incorrect, as there seem to exist sharable distributive predicates and non-sharable collective ones. Towards a better characterization of (non-)sharable predicates, I submit the paradigm (46).

(46) a. ?This pack of dogs is tall.
?This pack of dogs is intelligent.
?This pack of dogs is fat.
*This pack of dogs is (a) labrador.
b. This pack of dogs is hungry.
This pack of dogs is tired.
This pack of dogs is sick.

Plausibly, the predicates in (46) are all inherently distributive. Why are the sentences in (46b) fine while the sentences in (46a) are unacceptable? What is the difference between a predicate like *tall* in (46a) and a predicate like *hungry* in (46b)? Building on Carlson (1977), I submit that the relevant difference is that the former is an *individual-level predicate* (ILP), as it expresses

[8]An easy way out for the cases in (39)-(40) and (44)-(45) would be to assume that these adjectives *tall* and *recent* involve comparison classes, and that the choice of the collective vs. individual subject term affects the choice of the comparison class. But this approach would not extend to the remaining data on predicate non-sharing.

a property that is permanent or stable; while the latter is a *stage-level predicate* (SLP), as it expresses a property that is transient or episodic. In other words, I propose the following conjecture: non-sharable predicates are ILPs. Indeed, the examples of sharable predicates listed in (19) are all SLPs. While the following non-sharable predicates are all ILPs.

(47) a. #This group of girls is unmarried.
b. #This row of boys has dark hair.
c. #This pile of clothes is machine washable.
d. #This row of buildings is cosy.
e. #This line of trees is (a) fir (firs).
f. #This group of men is aboriginal.
g. #This group of guests is teetotal.
h. #This sequence of events is accidental.
i. #This pile of dishes is made of ceramic.
j. #This row of knives is very sharp.
k. #This row of pizzas is very ample.
l. #This pile of pieces of furniture is very high.
m. #This pile of lemon is very sour.
n. #This group of candidates is professor.
o. #This group of girls is ugly, untruthful, blind, ...
p. #This pile of rocks is short.
q. #This pile of books is unreadable.

Admittedly, there might be other factors that play a role into the sharability of a predicate, besides the ILP/SLP divide. For instance, *animacy* seems to play a role (that is why in (46) I have used *dogs* rather than *boys*). As an initial attempt, in the rest of this Section I would like to focus on this preliminary, tentative characterization of non-sharable predicates. And try to develop an account for non-sharable ILPs that is compatible with my coreferentiality hypothesis. The idea is that, despite the fact that a collective term and the corresponding individual term corefer, they denote different individual concepts. And ILPs are sensitive to this difference, contrary to SLPs, because of their inherent intensional nature.

I will implement this idea on the background of Chierchia's (1995) semantics for ILPs, that seems particularly well suited to the task. Three ingredients of Chierchia's semantics will play a key role in my analysis. The first ingredient is Chiarchia's assumption that an ILP, just like any SLP, has a *davidsonian argument* that ranges over Kratzer's (1989) situations $s \in \mathscr{S}$. The second ingredient is Chierchia's assumption that the davidsonian argument of ILPs is always bound at Logical Form (LF) by a *generic operator* GEN_{ILP} inherently associated with the ILP through some proper mechanism of agreement. The third ingredient is that the generic operator GEN_{ILP} that comes with ILPs differs from the generic/habitual operator GEN_{SLP} that yields the habitual reading of SLPs (as in *John smokes*) along two dimensions. Both generic operators GEN_{ILP} and GEN_{SLP} have a (quasi) universal force. And they share the same syntactic structure, whereby they take two arguments, namely the *restrictor* and the *nuclear scope*. Yet, the generic operator GEN_{ILP} that goes with ILPs has a modal nature that the habitual operator GEN_{SLP} that goes with SLPs lacks. Furthermore, the two operators differ sharply w.r.t. the content of their restrictor. The restrictor of the generic operator GEN_{SLP} that triggers the habitual reading of SLPs can contain overt material (like the property of situations $[\![\text{after dinner}]\!]$ in the case of the sentence *John smokes after dinner*) or other covert material. On the contrary, Chierchia assumes that the restrictor of the generic operator GEN_{ILP} that goes with ILPs can only contain a special binary relation **in** that corresponds to the property of an individual *being located* (namely exist) in a certain situation. This latter assumption captures the intuition that an ILP ought to hold of a certain individual without breaks nor restrictions. To illustrate, sentence (48a) with the ILP *tall* receives the truth-conditions (48b), that say that at every situation where John is located, he happens to be tall in that situation.

(48) a. John is tall.
b. $\text{GEN}_s\big[\mathbf{in}\big([\![\text{John}]\!], s\big)\big]\big[[\![\text{tall}]\!]\big([\![\text{John}]\!], s\big)\big]$

Chierchia's assumption that the restrictor of the generic operator cannot be modified by overt or covert material seems at first sight too strong, in light of sentences such as *John knows Latin since he was 7 year old*. Following Maienborn (2001, 2004), I assume that these tense modifiers that can occur with ILPs are *frame-setting*, and thus do not get into the restrictor of the generic operator.

On the background of Chierchia's semantics for ILPs just sketched, I will now add a specific assumption on collective nouns. Consider a scenario where there are three dishes *a*, *b* and *c* and they make up a pile. The existence condition for *these dishes* is that these three dishes *a*, *b* and *c* exist individually, as stated in (49a). The existence condition for *this pile of dishes* is more demanding: the dishes *a*, *b* and *c* need to exist individually and need furthermore to be arranged in a pile, as stated in (49b). Thus, the set of situations in (49b) is a proper subset of that in (49a).

(49) a. $\mathbf{in}\big([\![\text{these dishes}]\!]\big) =$ the set of situations where *a*, *b* and *c* exist$= \Omega_{\text{dishes}}$
b. $\mathbf{in}\big([\![\text{this pile of dishes}]\!]\big) =$ set of situations where *a*, *b*, *c* exist and are in a pile$= \Omega_{\text{pile}}$

In order for this assumption (49) to make sense on the background of my coreferentiality hypothesis, I thus need to assume that the special relation **in** that goes into the restrictor of GEN_{ILP} holds between an *individual concept* and a situation, not between an *individual* and a situation. As the two individual concepts $[\![\text{these dishes}]\!]$ and $[\![\text{this pile of dishes}]\!]$ are different, the two corresponding sets of situations $\mathbf{in}\big([\![\text{these dishes}]\!]\big)$ and $\mathbf{in}\big([\![\text{this pile of dishes}]\!]\big)$ can be different. I abbreviate the two sets of situations in (49a) and (49b) as Ω_{dishes} and Ω_{pile}, respectively.

I am now ready to go back to predicate non-sharing between a collective and the corresponding individual term. Let me start with the contrast in (39). Here, we are considering the ILP *tall* in a scenario where it is the pile, not the single dishes, which is tall. For the sake of clarity, let me write $tall_{\text{pile}}$ to single out this specific reading of the predicate. Consider again a scenario where there are three dishes *a*, *b* and *c* that form a pile. The truth-conditions of sentences (39a) and (39b) are (50a) and (50b), respectively. The restrictor of the generic operator is (49a) and (49b) respectively, namely the set of situations where these dishes *a*, *b* and *c* individually exist and the set of situations where they exist and are in a pile. The nuclear scope consists of those situations *s* where the predicate holds of the individual $a+b+c$. Because of the reading that we are focusing on, the ILP $tall_{\text{pile}}$ is true of the plurality $a+b+c$ only in those situations where the three dishes are in a pile. Namely only in those situations that are in Ω_{pile}. It is not true in situations outside of that restrictor. The truth conditions in (50a) are thus always false, because the restrictor of the generic operator is *too large*. The truth conditions in (50b) are instead true in the scenario considered, as the restrictor of the generic operator is just right: they say that in every situation where the pile exists, it is tall.

(50) a. $\text{GEN}_s[\Omega_{\text{dishes}}(s)][a+b+c \in [\![\text{tall}_{\text{pile}}]\!]]$

b. $\text{GEN}_s[\Omega_{\text{pile}}(s)][a+b+c \in [\![\text{tall}_{\text{pile}}]\!]]$

This account straightforwardly extends to the unacceptability of sentences (37a)-(38a). In fact, these sentences too correspond to truth-conditions analogous to (50a) where the restrictor of the generic operator is too large. For instance, sentence (37a) ends up with truth conditions that say that, in every situation where the boys are located (including situations where they are not in a group), their plurality has three members, which cannot be, given that the predicate holds of the plurality only in situations where the children are in a group. The unacceptability of these sentences follows from the fact that they are systematically false.

The second type of predicate non-sharing is dealt with analogously. Let me start with the contrast in (44). Here, we are considering the ILP *tall* in a scenario where it is the single dishes, not the pile they make up, which are tall. For the sake of clarity, let me write $tall_{\text{dishes}}$ to single out this specific reading of the predicate. Consider again a scenario where there are three dishes *a*, *b* and *c* that form a pile. The truth-conditions of sentences (44) are again (50), that I have repeated in (51), making it explicit that we are now focusing on the reading $tall_{\text{dishes}}$ where it is the dishes that are tall (furthermore, I have added the distributivity operator). Because of this reading that we are focusing on, the ILP $tall_{\text{dishes}}$ is true of the plurality $a+b+c$ in all those situations where the three dishes *a*, *b* and *c* exist, no matter whether they are in a pile or not. The truth conditions in (51b) are thus true, but weaker than they should, as the restrictor of the generic operator is *too small*. These truth conditions are thus ruled out by a pragmatic process of *conditional strengthening*, detailed in von Fintel (2000) and Magri (2009). The truth conditions in (51a) are instead pragmatically fine in the scenario considered, as the restrictor of the generic operator is just right: they say that in every situation where the dishes exist, they are tall.

(51) a. $\text{GEN}_s[\Omega_{\text{dishes}}(s)][a+b+c \in \mathbf{Dist}([\![\text{tall}_{\text{dishes}}]\!])]$
b. $\text{GEN}_s[\Omega_{\text{pile}}(s)][a+b+c \in \mathbf{Dist}([\![\text{tall}_{\text{dishes}}]\!])]$

This account extends to the unacceptability of sentences (41b)-(43b). In fact, these sentences too correspond to truth-conditions analogous to (51b) where the restrictor of the generic operator is too small. For instance, sentence (41b) ends up with truth conditions that say that, in every situation where the dogs are located and organized in a pack, they are tall, which is pragmatically deviant, as it does not capture th fact that the dogs remain tall also when not in a pack. The unacceptability of these sentences thus follows from the fact that they are systematically pragmatically deviant.

7 Conclusions

In this paper, I have defended the hypothesis that the intuitive relationship between a collective term such as *this pile of dishes* and the corresponding individual term *these dishes* can be properly formalized by assuming that they denote the same plural individual. Thus, the environments that can distinguish between the two terms are either sensitive to the different NPs *pile of dishes* and *dishes* or else sensitive to the different individual concepts denoted by the two terms. The first option is illustrated by reciprocals. In fact, reciprocal *other* has a slot for a range argument that is filled with the two different properties provided by these two different NPs. And the second option is illustrated by non-reciprocal non-sharable ILPs, that are sensitive to the individual concepts because of their intrinsically modal nature. In particular, I have suggested that ILP non-sharing arises from a *mismatch* between the restrictor and the nuclear scope of the generic operator that comes with ILPs. Two types of predicate non sharing are thus predicted, that correspond to the cases where the restrictor is *to large* or *too small* relative to the nuclear scope. These two cases correspond, respectively, to the two types of observed predicate non-sharing: predicates that apply to collective terms but not to the corresponding individual ones and predicates that apply to individual terms but not to the corresponding collective ones. In conclusion, the main virtue of the proposed approach is that it makes very tight predictions concerning the environments that can be expected to pull apart a collective and the corresponding individual terms.

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