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Indefinites, Quantifiers and Pluractionals: What Scope Effects Tell Us about Event Pluralities¹

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Abstract

In this paper, I will examine the way in which two Spanish aspectual periphrases contributing pluractional aspectual operators interact with indefinite, quantified and plural noun-phrases, with the aim of arriving at a better understanding of these aspectual operators. I will show that, although temporal pluractional operators of the sort proposed by Van Geenhoven (2004, 2005) can adequately capture the temporal structure of the derived eventuality descriptions contributed by two Spanish motion-verb periphrases, they should not be allowed to enter into scopal interactions with nominal arguments. The very peculiar pattern of interaction with plural and quantified NP arguments labelled ‘distribution’ has parallels in the nominal domain. These parallels provide strong support for the relevance of the distinction between sums and groups in the event domain. They show, furthermore, that pluractional aspectual operators – of the type represented by these two Spanish periphrases – crucially differ from frequency adverbs such as *repeatedly*, *occasionally*.

1. Introduction

This paper adds one further case of interaction between verbal ‘aspect’ and noun-phrase interpretation to a list that has become impressively long over the last decades. I will examine the way in which two Spanish aspectual periphrases contributing pluractional aspectual operators interact with indefinite, quantified and plural noun-phrases, with the aim of arriving at a better understanding of these aspectual operators. If pluractional markers in fact give us “an analog in the domain of events to the more familiar phenomenon of plurality in the domain of individuals“ (Lasersohn 1995: 240), it is to be expected that their semantics will be beset by all the complexities pertaining to the interpretation of plural nominal expressions, compounded in this case by the notorious difficulties involved in determining what the identity conditions for singular, atomic events are. I will try to show that the very characteristic pattern of interactions we find in the case under discussion has parallels in the nominal domain. These parallels provide, in my view, strong support for the relevance of the distinction between sums and groups in the event domain: the periphrases under discussion exhibit the same pattern of interactions with nominal expressions that also characterizes collective nouns, which are quite uncontroversially taken to denote sets of groups, i.e. plural

¹ This paper is part of an ongoing project on aspect in Romance. Its original version was first presented at the International Conference on Indefinites and Weak Quantifiers, Brussels 2005. Part of the material had been previously presented at the Workshop on Event Structure, Leipzig 2004 and at the Journée de Linguistique, Nantes 2004. I would like to thank the audiences for their helpful comments. I’m indebted to Patricia Cabredo-Hofherr, Jean Lowenstamm and Ora Matushansky, as well as to two anonymous reviewers, for their careful reading of previous versions of this paper, and I gratefully acknowledge financial support from the Fédération TUL (CNRS-FRE 2559) for the program ‘Architecture de la Phrase’.

entities that are only indirectly related to the sums of members they consist of. The parallels show, furthermore, that pluractional aspectual operators – at least those of the type represented by these two Spanish periphrases – crucially differ from frequency adverbs such as *repeatedly*, *occasionally* and their ilk, in that the latter, but not the former, are scope-bearing elements.

The paper is organized as follows. In section 2, I will introduce the main characteristics of the Spanish periphrases under discussion and I will show that pluractional operators of the sort recently proposed by Van Geenhoven (2004, 2005) go a long way toward capturing the temporal structures contributed by these periphrases. In section 3, I will present Van Geenhoven’s account of the interactions between pluractional operators and nominal arguments. In section 4, I will show that the pattern of interactions exhibited by the Spanish periphrases do not conform to the predictions of Van Geenhoven’s account, but has an unexpected parallel in some readings – or better, verification situations – that arise when noun phrases headed by collective nouns interact with plural or quantified arguments. Building on this observation, an analysis of these pluractionals is sketched in which their output are predicates of singular events, which are associated with events pluralities (sums) in the same way in which collective nouns, although predicates of singular individuals, are associated with a plurality of ‘members’.

2. Motion-verb periphrases as the expression of temporal pluractional operators

Among a wealth of monoclausal verbal constructions traditionally classified as ‘aspectual periphrases’, the Romance languages exhibit constructions with motion verbs and the gerund such as those illustrated in (1).² Only Spanish and Portuguese distinguish between a construction with a verb of non-oriented motion (*andar*, roughly ‘walk’) and a verb of oriented motion (*ir*, roughly ‘go’), which are conflated in the other languages, as shown by the correspondences among the examples below.

- (1) a. *Anda molestando a la gente.* (Sp.)
 Walk.PR.3S disturbing to the people
 ‘S/he is giving people trouble.’
 b. *La situació **iba empeorando**.*
 The situation go.IMPF worsening
 ‘The situation was getting worse.’
 c. *Té ordre d’**anar molestant** la gent.* (Cat.)
 Has order of go disturbing the people
 ‘S/he has orders to keep giving people trouble.’
 d. *La situació **anava empitjorant** progressivament.*
 The situation go.IMPF worsening progressively
 ‘The situation was gradually getting worse.’
 e. *Cosí non **vado scocciando** la gente.* (Squartini 1998: 217) (It.)
 So not go.PR.1S disturbing the people
 ‘This way I’m not giving people any trouble.’

² The following abbreviations are used in translation: PL: person plural, S: person singular; IMPF: imperfective past, PS: simple (perfective) past; IMPF: imperfective past, FUT: future; REFL: reflexive clitic; LOC-be: locative copula.

- f. *La situación andava peyorando.* (Squartini 1998: 211)
 The situation go.IMPF worsening
 ‘The situation was getting worse.’

These periphrases are usually treated on a par with *estar* + Gerund as expressions of ‘progressive’ aspect (Espunya 1998, Bertinetto 2000), although some descriptions point to important differences between their behavior and that of the genuine progressive periphrasis (Squartini 1998). In previous work, I have argued extensively that Romance aspectual periphrases distribute over at least two different levels of structure, a higher, ‘functional’ level at which time-relational aspect (in the sense of Smith 1991, Klein 1995, Demirdache & Uribe-Etxebarria 2002) is expressed, and a lower, ‘lexical’ level, at which the temporal structure of the basic eventuality description is modified or determined, giving rise to a derived eventuality description (Laca 2002, Laca 2004a). The distribution and the semantics of these two motion-verb periphrases clearly identify them as eventuality modification periphrases, whereas *estar* + Gerund, as the genuine expression of progressive aspect, patterns as a bona fide expression of time-relational aspect (Laca 2004b). Thus, whereas *estar* + Gerund cannot be preceded by other eventuality modification periphrases, *andar* / *ir* + Gerund can be embedded, for instance, under an aspectualizer like *empezar* ‘begin’ or under the repetitive periphrasis *volver a* + Inf. (roughly ‘again’):

- (2) a. *El avión empezaba a *estar / ir perdiendo altura.*
 The plane begin.IMPF to *LOC-be/ go losing height
 ‘The plane was beginning to lose altitude gradually.’
 b. *Volvió a *estar / andar diciendo mentiras.*
 Returned SP.3S to *LOC-be/ walk telling lies
 ‘S/he started telling lies again.’

Furthermore, whereas *estar* + Gerund can combine with almost any type of eventuality description, *andar* / *ir* + Gerund are characteristically subject to more specific selectional restrictions, which moreover follow partially complementary patterns. Both generally reject states and achievements, and *andar* does not combine with degree achievements, whereas *ir* is unacceptable – or loses its ‘periphrastic’ interpretation – when combined with activities:

- (3) a. *Estaba / ??iba / ??andaba siendo víctima de una alucinación.*
 LOC.be.IMPF/ ??go.IMPF/ ??walk.IMPF being victim of a hallucination
 ‘(S)he was suffering a hallucination.’
 b. *Estás/ ??vas / ??andas cometiendo el peor error de tu vida.*
 LOC.be.PR.2S/ ??go.PR.2S/??walk.PR.2S committing the worst mistake of your
 life
 ‘You are committing the worst mistake of your life.’
 c. *El río estaba/ iba / ??andaba creciendo.*³
 The river LOC.be.IMPF/ go.IMPF/ ??walk.IMPF growing
 ‘The river was rising [more and more / ??on and off].’
 d. *María estaba/ ??iba / andaba trabajando.*
 María LOC.be.IMPF/ ??go.IMPF/ walk.IMPF working
 ‘Maria was working.’/ ‘Maria was working here and there/ on and off’

³ The only possible interpretation of *El río andaba creciendo* is one attributing a sort of erratic behavior to the river, its level rising, going down again, rising again and so forth. I take the described situation to be strange enough to warrant the mark of anomaly.

Thirdly, *estar* + Gerund, which is very close in meaning to the English progressive, exhibits a clearly time-relational semantics. Most of the meaning effects it gives rise to can be accounted for by assuming that it involves a relation between the running time of the event (EvT) and a distinguished interval of ‘visibility’ (AssT), such that the latter is properly included in the former and does not contain either the initial or the final boundary of the former.⁴ By contrast, *andar* + Gerund and *ir* + Gerund contribute temporal structures which look intuitively very much like those of some lexical verbs. *Andar* + Gerund displays a number of analogies with ‘frequentative’ verbs, such as *nibble*, *clatter*, as well as with the activity readings of semelfactives (*knock on the door for some time*, *jump for hours*). *Ir* + Gerund is very similar to predicates of gradual change, in particular to the durative readings of degree achievements (*lengthen*, *ripen*, *rise*), whose characteristic quirks as to the telic/atelic distinction it shares.

Linear position, selectional restrictions and temporal-structure – as opposed to time-relational– semantics strongly support the assumption that *andar* / *ir* + Gerund belong to the realm of eventuality modification periphrases. Eventuality modification periphrases contribute ‘aspectual operators’ in the sense of de Swart (1998): they take eventuality descriptions with a given, possibly underdetermined temporal structure as input and give eventuality descriptions with a specific and possibly different temporal structure as output. On the basis of the analogies just mentioned, I will label the operator contributed by *andar* + Gerund *FREQ*(uentative), that contributed by *ir* + Gerund *INCR*(emental).

Quite a number of facts indicate that the temporal structures resulting from the application of *FREQ* and *INCR* show some of the hallmarks of temporal pluractionality, so that these operators can be conceived of as temporal pluractional markers. Lasersohn (1995) constitutes the first attempt at a formal treatment of pluractional markers. In it, verbs modified by pluractional markers are assumed to be predicates of sets of events of the sort denoted by the modified verb whose cardinality is higher than some threshold *n* and such that the events in the set have different participants, locations or running times. Temporal pluractionality arises when the events in the set *X* are required to have distinct, non-overlapping running times ($\tau(e)$):

$$(4) \quad V\text{-PA}(X) \Leftrightarrow \forall e, e' \in X [V(e) \ \& \ \neg \tau(e) \circ \tau(e')] \ \& \ \text{card}(X) \geq n$$

(adapted from Lasersohn 1995: 251-256)

The overall incompatibility of our periphrases with achievements, and the coercion effects by which such combinations can be salvaged, can be accounted for by the requirement as to non-overlapping running times. Since a glass breaking to pieces is an instantaneous ‘once-only’ event, it will never give rise to a set of subevents of breaking with non-overlapping running times (5a). However, waking up, though instantaneous, can be repeated and can also be conceived of as a process of becoming more and more awake than before. (5b) is salvaged by the first interpretation, (5c) by the second, both involving waking subevents with non-overlapping running times:

$$(5) \quad a. \text{ El vaso se ??iba/} \quad \text{se ??andaba} \quad \text{haciendo añicos.}$$

⁴ The English progressive is analysed as contributing this type of relation between a ‘progressive interval’ and the interval of the eventuality by Dowty (1979: Chap. 3) - with the important and necessary addition of a modal component. A similar analysis is proposed in Smith (1991) for the imperfective aspectual viewpoint (the label ‘imperfective’ being in this case somewhat misleading). As to the time-relational nature of ‘higher’ (syntactic) aspects, see Smith (1991), Klein (1995), Demirdache & Uribe-Etxebarria (2002).

- The glass ??REFL-go.IMPF/ ?? REFL-walk.IMPF making pieces.
 ??‘The glass was gradually/ slowly/ repeatedly breaking to pieces.’
- b. *El paciente se andaba despertando.*
 The patient REFL-walk.IMPF waking
 ‘The patient woke up on and off.’
- c. *El paciente se iba despertando.*
 The patient REFL-go.IMPF waking
 ‘The patient was gradually/ slowly waking up.’

The requirement of a plurality of subevents with non-overlapping running times is stricter than a mere requirement of duration. There is a host of idiomatic adverbial expressions, such as *in one sweep*, *in one gulp*, etc. which cannot actually be said to be instantaneous, since they are compatible with protracted events, but which seem to preclude a subdivision of the running time of the event. Such adverbial expressions are incompatible with **FREQ** or with **INCR** (6c). Furthermore, as observed by Espunya (1998: 25), **INCR** is incompatible with what she dubs “once only” frequency adjuncts (6d):

- (6) a. *María leyó La Guerra y la Paz de un tirón.*
 María read PS The War and the Peace of a pull
 ‘María read *War and Peace* in one sitting.’
- b. *María se estaba leyendo La Guerra y la Paz de un tirón.*
 María REFL-LOC-be.IMPF reading The War and the Peace of a pull.
 ‘Mary was about to read up *War and Peace* in one sitting’
- c. *María fué / anda leyendo La Guerra y la Paz (*de un tirón).*
 María go. PS / walk PR reading The War and the Peace (*of a pull).
 ‘María gradually read / is reading *War and Peace* (*in one sitting).’
- d. **Iremos amortizando la deuda en un único pago.*
 go.FUT.1PL paying up the debt in a single payment
 *‘We will gradually pay up our debt in one single payment’

Temporal pluractionality is but one specific form pluractionality can take, and it is the most relevant for a theory of aspect. In two recent papers, Van Geenhoven (2004, 2005) has convincingly shown that a number of commonly used, but poorly understood traditional ‘aspectual’ categories, such as continuative, frequentative or gradual aspect, can be quite precisely described by defining pluractional operators. These attach to verbs to return temporal structures which stipulate how the running times of the V-events (the subintervals at which the basic verb holds) are distributed over the overall running time or interval of validity of the pluractional. In her view, these pluractional operators can be thought of as the verbal counterparts of Link’s (1983) star operator on nouns, which is the closure of a predicate of atoms under the sum operation.

The semantics of frequentative pluractionals is captured by an operator dubbed ‘crystal star’, which ensures that the interval at which the frequentative holds comprises more than one subinterval at which the basic verbs holds, each of these V-subintervals being preceded or followed by a subinterval at which the basic verb also holds and any two V-subintervals being separated by a hiatus or gap (a non-V subinterval) which must not exceed some contextually determined length.

- (7) **FREQUENTATIVE**: $\Psi^t V(x)$ at $t = 1$ iff

$$\exists t' (t' \subseteq t \ \& \ V(x) \text{ at } t' \ \& \ \textit{number}(t') > 1 \ \& \ \forall t'' (t'' \subseteq t' \ \& \ V(x) \text{ at } t'' \rightarrow \exists t''' (t''' \subseteq t' \ \& \ (t''' > t' \vee t''' < t') \ \& \ V(x) \text{ at } t''') \ \& \ \exists t'''' (t'' < t'''' < t' \vee t' > t'''' > t'')) \ \& \ \neg V(x) \text{ at } t'''' \ \& \ 0 < \textit{length}(t''') \leq n)) \quad (= \text{Van Geenhoven 2004 (63)}).$$

This operator, originally proposed for the analysis of the West Greenlandic Eskimo marker *tar-* and extended to the analysis of frequentative interpretations in English, seems to capture nicely the semantics of our *FREQ*, which involves either repeated occurrences of a V-event ('over and over', or repeated action reading, as in (8a)) or temporal gaps in the development of a single V-event ('on and off', or intermittent action reading, as in 8(b-c)):

- (8) a. *María anda preguntando por ti.*
 María walk.PR asking about you
 'María is/ has been asking [repeatedly] about you.'
 b. *María anda pensando en casarse.*
 María walk.PR thinking in marry-INF.REFL
 'María is thinking about getting married.'
 c. *María anda leyendo La Guerra y la Paz.*
 María walk.PR reading The War and the Peace
 'María is/ has been reading *War and Peace* [on and off].'

The intermittent action reading with accomplishments exemplified in (8c) can appear problematic, if we assume that [*read (María, War-and-Peace) at t'*] entails that *War and Peace* has been read to the end. However, most accomplishments are actually underspecified as to the telic/atelic distinction, their telic interpretation being cancellable, as in *Mary read War and Peace for hours* or *Mary read War and Peace, but she actually got no further than the seventh chapter*.⁵ If the telic interpretation is cancelled in cases such as (8c), [*read (María, War-and-Peace) at t'*] does not require completion and the conditions given for *FREQ* in (7) can be fulfilled by accomplishments in intermittent action readings. Note that accomplishments with non-cancellable telic interpretations are predicted not to give rise to such readings. This prediction is borne out by the following examples, which involve the reflexive as an overt telicity marker (9a-b) (see Nishida 1994) and a 'right-headed' accomplishment (10a-b):

- (9) a. ??*María se leyó La Guerra y la Paz, pero sólo por la mitad.*
 María REFL-read.SP The War and the Peace, but only by the half
 ?? 'María read up *War and Peace*, but only halfway.'
 b. ??*María se anda leyendo La Guerra y la Paz.*
 María REFL-walk.PR reading The War and the Peace
 ?? 'María has been reading up *War and Peace*.'
- (10) a. ??*Demolieron la torre durante horas.*
 Tear-down.SP.3PL the tower for hours
 ?? 'They tore down the tower for hours.'
 b. ??*Andan demoliendo la torre.*
 Walk.PR.3PL tearing-down the tower
 ?? 'They have been tearing down the tower.'

⁵ For a discussion of the general mechanisms involved in atelic interpretations of telic verbs, see Hay, Kennedy & Levin (1999) and Rothstein (2004a, 2004b). The mechanisms suggested are different in both cases, but both predict that accomplishments will be able to shift quite freely to activities.

Van Geenhoven does not propose an operator for gradual and successive aspect, although she explicitly assumes that both are to be treated in terms of pluractionality. Intuitively, INCR (which subsumes gradual and successive aspect) establishes a monotonic mapping between successive subintervals and some linearly ordered set O such that, as time progresses, the values in O uniformly increase or decrease.⁶ The ‘plus star’ defined in (11) is a first, oversimplified attempt to capture this temporal structure. The truth conditions ensure that the interval at which the incremental holds comprises more than one subinterval at which the basic verbs holds, each of these V -subintervals being preceded or followed by a subinterval at which the basic verb also holds. INCR does not require temporal gaps (non- V subintervals), but it does require that there is a function whose values uniformly increase or decrease in the V subintervals.

- (11) **INCREMENTAL** : \cong ${}^t V(x)$ at $t = 1$ iff
 $\exists t' (t' \subseteq t \ \& \ V(x)$ at t' & number $(t') > 1 \ \& \ \forall t' (t' \subseteq t \ \& \ V(x)$ at $t' \rightarrow \exists t'' (t'' \subseteq t' \ \& \ (t'' > t' \vee t'' < t') \ \& \ V(x)$ at $t''))$
 & $\exists f$ from $(V(x)$ at t) into a set O with linear ordering \leq_O such that $\forall t', t'' (t' \subseteq t \ \& \ t'' \subseteq t \ \& \ V(x)$ at $t' \ \& \ V(x)$ at $t'' \ \& \ t' < t'' \rightarrow f(V(x)$ at $t') \leq_O f(V(x)$ at $t'')$)

The values in the range O can be, among various other things, the degrees to which an object possesses a property (12a), or the elements of an incremental chain of ‘participants’ of the action, an incremental chain of material parts of an object in (12b) or an incremental chain of subsets of a set in (12c-d):

- (12) a. *El río iba creciendo.*
 The river go.IMPF growing
 ‘The river was rising more and more/ gradually.’
 b. *María fue leyendo La Guerra y la Paz.*
 María go.SP reading The War and the Peace.
 ‘María gradually read *War and Peace*.’
 c. *Los invitados fueron saludando al dueño de casa.*
 The guests go.SP greeting to-the host
 ‘The guests successively greeted the host.’

⁶ I’m grateful to one of the reviewers for raising a number of very relevant questions concerning the difference between *andar* and *ir* + Gerund in Spanish. A full description of both periphrases cannot be undertaken in this paper, which centers on their interaction with nominal arguments. However, the following remarks might provide some useful background. First of all, the difference between frequentative and incremental pluractionals seems to be overtly coded in some languages (see for instance Van Geenhoven 2005 on West Greenlandic Eskimo). Second, most of the differences between *andar* and *ir* + Gerund, in the first place their expressing a frequentative and an incremental meaning, respectively, but also the fact that the former gives rise to clearly atelic descriptions, whereas the latter shows quirky behavior as to the telic/atelic distinction (see footnote 9 below), and the fact that the former cannot apply ‘above’ the subject (see footnote 18 below) and seems to require an overt subject (**Anduvo lloviendo* is not a possible rendering of *It has been raining on and off*), are obviously linked to the properties of *andar* and *ir* as lexical verbs. *Andar* ‘walk’ is a verb of non-oriented motion, which patterns as an activity as far as its temporal structure is concerned, and as a genuine intransitive, as to its argument structure. By contrast, *ir* ‘go’ is a verb of oriented motion, patterning as an accomplishment wrt. temporal structure and as an inaccusative wrt. argument structure. It is furthermore associated with a linear directed path structure as defined in Krifka (1998), which can easily be transferred to dimensions other than space.

- d. *Se va poniendo la camisa, la chaqueta y la corbata.*
 REFL-go.SP.3S putting on the shirt, the jacket and the tie
 ‘He succesively puts on his shirt, his jacket and his tie.’

3. The scope of pluractional operators

The temporal structure contributed by *FREQ* and by *INCR* requires a plurality of subintervals at which the basic verb holds, for short, a plurality of (temporally non overlapping) V-events. Expressions contributing pluralities are known to exhibit intricate interactions with other nominal expressions, which have been extensively discussed in the literature on plurals and on scope.

Van Geenhoven (2004) describes in detail some particularly telling patterns of interaction between pluractionals and nominal arguments, which – as we will see – have parallels in the nominal domain. Her account of these patterns builds on the scope attributed to pluractional operators, on the mechanism of argument-incorporation and its consequences on scope, and on the requirement that the output of a pluractional be a cumulative (unbounded, atelic) temporal structure.

Strikingly parallel patterns of interaction seem to characterize the overt frequentative markers in West Greenlandic Eskimo and the frequentative interpretations arising when achievements are combined with *for*-adverbials (as in *John found his son’s tricycle in the driveway for six weeks*). In both cases, the pluractional involved cannot ‘multiply’ singular participants, but it can enter into a particular sort of distributive dependency with a plural participant. Thus, (13a) has only an absurd reading, in which the same bomb explodes more than once, whereas (13b) is not absurd, since different bombs can be associated with each V-event in the plurality contributed by the pluractional.

- (13) a. ? *Qaartartoq sivismik qaaqattaarpoq* [=VG 2004 (30)]
qaartartuq sivismik qaar-qattaar-puq
 bomb.ABS lengthy.INS explode-QATTAAR- IND.[-tr].3SG
 ‘A/the bomb exploded again and again for a long time.’
 b. *Qaartartut sivismik qaaqattaarput* [=VG 2004 (31)]
qaartartu-t sivismik qaar-qattaar-put
 bomb.ABS.PL lengthy.INS explode-QATTAAR- IND.[-tr].3SG[sic!]
 ‘Bombs exploded again and again for a long time.’

The same pattern had already been observed by Dowty (1979: 78-82) for examples involving achievements and *for*-adverbials. Whereas (14a) only has the absurd reading in which the same flea is repeatedly discovered, (14b) allows for different fleas being involved in each V-event:

- (14) a. ? Mary discovered a flea on her dog for six weeks. [=VG2004 (100)]
 ‘Mary discovered a flea and she discovered it again and again for six weeks.’
 b. Mary discovered fleas on her dog for six weeks [=VG2004 (102)]
 ‘Mary discovered a flea and she discovered another flea and... again and again for six weeks.’

In this case, a plurality of events is not overtly contributed by a pluractional marker, but it arises as a phenomenon of aspect shift, which is required in order to salvage the combination of an instantaneous verb with an adverbial measuring a duration. Van Geenhoven assumes

that aspect shift involves insertion of a silent verb-level **FREQ** operator, whose definition is identical to that of the frequentative introduced above under (7).⁷

Dowty (1979: 82) suggested that the distributive dependency we obtain in (14b) is a scope phenomenon, with the bare plural necessarily taking narrow scope with regard to the universal quantifier which, in his treatment, is contributed by the *for*-adverbial. Although it is in fact the case that existential bare plurals are characterized by narrow scope, it is not less true that singular indefinite expressions can normally have narrow scope, so that the absence of parallel effects in (14a) is not explained by this suggestion. He also suggested that the interpretation of some combinations of achievements with *for*-adverbials involve a silent frequency adverb, *John found his son's tricycle in the driveway for six weeks* being interpreted as *John found his son's tricycle in the driveway [every morning, once in a while, frequently...] for six weeks*. But then the problem arises as to why overt frequency adverbs can give rise to multiplication effects on indefinite arguments, whereas silent ones cannot. In fact, the absurd reading of (14a) disappears in (15a-b), in which different fleas can be associated with each V-event:

- (15) a. Mary discovered a flea on her dog every morning for six weeks.
b. Mary discovered now and then a flea on her dog for six weeks.

Van Geenhoven's proposal is designed to solve two main problems: (i) how to account for the distribution of 'parts' of a plural participant over the different V-events in the event plurality contributed by a pluractional operator; (ii) how to account for the different effects obtained with pluractional operators on verbs (affixes, silent operators), on the one hand, and with frequency adverbs, on the other.

The first problem is tackled by defining a 'frequentative participant' operator **FREQ-P**, a version of the operator in (7) that requires not only a multiplicity of V-subintervals but also a multiplicity of 'individual parts' of a participant distributing over the interval of validity of the frequentative.⁸ **FREQ-P** has a crucial selectional restriction: it can only apply if the participant involved is 'distributable'. Being 'distributable' means having cumulative reference and having atoms/singularities in its denotation, a conjunction of properties that bare plurals have, but singular (and cardinalized) indefinites lack. The **FREQ-P** operator, furthermore, can only combine with the version of the verb that semantically incorporates the relevant argument, thus allowing the nominal expression in the argument-role to be interpreted as a property. Since in the incorporated version, the existential quantifier on the incorporated argument is contributed by the verb, the **FREQ-P** operator – as any other operator affecting the verb – will have scope over it. The distribution effect in (13b) and (14b) results thus from the joint action of incorporation and application of the **FREQ-P** operator. Singular (and cardinalized) indefinites can be incorporated – in fact, in Van Geenhoven's framework, all narrow scope weak indefinites are incorporated – but since they are not 'distributable', they are incompatible with **FREQ-P**. They will only combine with the purely

⁷ Van Geenhoven's introduction of a silent **FREQ** operator as a means of accounting for aspect shift is congenial to the proposal advanced in de Swart (1998), in which a number of coercion effects are accounted for by the optional introduction of silent aspectual operators that change the original temporal structure of an eventuality description.

⁸ For the two-argument verb *dial*, the truth conditions of the crystal star operating at the same time on temporal intervals and on the internal argument are the following:

$$\Psi^{t,y} \text{dial}(x,y) \text{ at } t = 1 \text{ iff } \exists t' \exists y' (t' \subseteq t \ \& \ y' \leq y \ \& \ \text{dial}(x, y') \text{ at } t' \ \& \ \text{number}(t') > 1 \ \& \ \text{number}(y') > 1 \ \& \ \forall t'' \forall y'' (t' \subseteq t \ \& \ y'' \leq y \ \& \ \text{dial}(x, y'') \text{ at } t'' \rightarrow \exists t''' \exists y''' (t''' \subseteq t' \ \& \ (t''' > t' \vee t''' < t') \ \& \ y''' \leq y \ \& \ \text{dial}(x, y''') \text{ at } t''' \ \& \ \exists t'''' (t'' < t'''' < t' \vee t'' > t'''' > t') \ \& \ \neg \exists y'''' (y'''' \leq y \ \& \ \text{dial}(x, y''') \text{ at } t'''')))))$$

temporal **FREQ** operator, and the only available readings for (13a) and (13b) will be the absurd readings, in which **FREQ-V** applies to a single object.

As to the second problem, frequency adverbs such as *every five minutes*, *regularly*, *occasionally*, *repeatedly* are assumed to contribute temporal pluractional star operators,⁹ but unlike the affixal markers or the silent **FREQ**, they can either apply to the verb or to the whole VP. When they compose with the verb, we get ‘wide scope’ for an indefinite participant (16a), when they compose with the whole VP, they have scope over the indefinite participant, which is thus subject to multiplication effects (16b):

- (16) a. [[occasionally meet] a sailor]]
 b. [occasionally [meet a sailor]]

To sum up, this analysis predicts two patterns of interaction between temporal pluractional operators and nominal arguments, which I will label ‘multiplication’ and ‘distribution’. Multiplication is handled by means of a standard scope mechanism, whereas distribution is accounted for by a particular version of a pluractional operator, **FREQ-P**, which can only combine with the incorporating version of a verb if the nominal description restricting the incorporated argument has the property of cumulative reference. The necessary conditions for multiplication and for distribution assumed in Van Geenhoven’s proposal are summarized in (17):

(17)

	multiplication	distribution
condition on operator	VP-level (adverbs)	V-level (affixes, covert)
condition on nominal argument	weak indefinites (variation)	weak indefinites (incorporation) cumulative reference

Note that weak indefinites are required in both cases, but for different reasons. They are necessary conditions for multiplication because they exhibit variation, i.e., they have different witness sets. Thus, expressions such as *a flea*, *three fleas* or *many fleas* can be subject to multiplication effects, but not expressions such as *all the fleas*, *every flea* or *each flea*. On the other hand, they are necessary conditions for distribution because distribution effects are made dependent on incorporation, incorporation requires the argument to be interpreted as a predicate, and this possibility is not normally open to definites or to quantified expressions. As to the cumulative reference requirement for distribution, the intuition behind it is that the overall output of a pluractional operator should be a cumulative, unbounded plurality of events.¹⁰ This condition not only ensures that singular indefinites cannot get distributed over

⁹ This assumption is not extended to ‘genuine’ adverbs of quantification, like *usually*, *always*. The class of frequency adverbs at stake here closely corresponds to those adverbs that never allow for relational or ‘restricted quantification’ readings, as identified in Molendijk & de Swart (1998). They are discussed under the label ‘setting dependent quantifiers’ in Doetjes (2002).

¹⁰ In fact, Van Geenhoven (2004) assumes not only that pluractionals are atelic, but that atelicity itself is a matter of unbounded pluractionality. Since I cannot take up the issue in this paper, I will only advance the following remarks. First, there is indeed a clear link between **FREQ** and **INCR** and atelicity or **S-cumulativity** as defined in Rothstein (2004b), **S-cumulativity** of a predicate **P** being characterized as the fact that the sum of two distinct **P**-events always gives rise to a singular **P**-event under conditions of temporal adjacency and identity of arguments. Note that the characterization of the temporal structures given in (7) and (11) above allows for **S-cumulativity**. Second, the output of *andar* + Gerund is clearly atelic according to all standard tests, whereas the output of *ir* + Gerund is sensitive to the perfective/non-perfective nature of the tense it combines with. Third, it

V-intervals by the *FREQ-P* operator, but it also ensures that expressions like *three fleas*, which also lack the property of cumulative reference, won't be distributed. In fact, as handled by Van Geenhoven, this requirement effectively prevents distribution of all nominal expressions other than bare plurals.¹¹

(17) does not make room for distribution effects with frequency adverbs, and this possibility is in fact explicitly excluded by Van Geenhoven, who states that the bare plural fleas in (18) “does not receive an interpretation in which individual fleas are distributed over the subevent times that are distributed by *repeatedly*”:

(18) Mary discovered *fleas* on her dog *repeatedly* for a month. [=VG (123)]

However, frequency adverbs have been known for some time to give rise to ‘dependent plurality’ interpretations of bare plurals, such as those exemplified in (19) (cf. Roberts 1987, Kamp & Reyle 1993), so that one can safely assume that this possibility also exists for an example like (18)

- (19) a. Trains are regularly leaving for Amsterdam from this platform.
 b. Over the last few months, Fred has often worn loud neckties.
 c. Mary has been occasionally dating professional pilots for some time.

It would not be difficult to accommodate this fact in Van Geenhoven's framework. It would suffice to allow frequency adverbs at V-level to introduce in some cases a participant-oriented version of the pluractional operator they contribute, whose definition and properties would parallel those of the *FREQ-P* counterpart to silent *FREQ*. On the contrary, as we will presently see, the behavior of the Spanish pluractional aspectual operators under discussion clearly runs counter to the predictions of this framework, and cannot be so easily accommodated.

4. Scope effects and the nature of event pluralities

4.1 Motion verb periphrases and nominal arguments

FREQ and *INCR* behave insofar as predicted by Van Geenhoven's account of V-level operators as they do not give rise to multiplication effects with indefinite NPs, whereas they do give rise to distribution effects with bare plurals:¹²

is not the case that verbs need a pluractional operator in order to be cumulative, in the same way in which only pluralized count nouns are cumulative: verbs are cumulative from the start. It is S-cumulativity that is at stake here, and S-cumulativity is a matter of having a particular temporal structure. Thus, the parallels between Link's plural star operator and pluractional star operators should not be overstretched. Cumulativity follows as a consequence from the definition of Link's plural star operator (closure of a set of atoms under the sum operation), but it is only allowed as a possibility by the temporal structures contributed by pluractional star operators. For a discussion of pluractionality in which (S)-cumulativity is expressed as an additional condition on the output of a pluractional, see Yu (2003).

¹¹ Since expressions like *some fleas*, though having *prima facie* cumulative reference, seem to have wide scope over the covert frequentative operator, Van Geenhoven follows Zucchi & White (2001) in the assumption that a maximalization component renders them non-cumulative.

¹² The meaning effects at play can most clearly be tested with ‘once-only’ achievements not easily coercible into accomplishments (see Rothstein 2004a). As achievements, they preclude the intermittent action readings which

- (20) a. ?? *El zorro anduvo matando una gallina.*
 The fox walk.SP killing a hen
 ‘The fox has been killing a hen.’
 b. ?? *Con el tiempo, el club fue perdiendo un socio.*
 With the time, the club go. SP losing a member
 ‘The club gradually lost a member.’
- (21) a. *El zorro anduvo matando gallinas.*
 The fox walk.SP killing hens.
 ‘The fox has been killing hens.’
 b. *Con el tiempo, el club fue perdiendo socios.*
 With the time, the club go. SP losing members.
 ‘The club gradually lost members.’

But, crucially, *FREQ* and *INCR* also give rise to distribution effects with NPs that are not good candidates for semantic incorporation, most notably definites and universally quantified NPs. Thus (22a) and (22b) are no less acceptable than (21a) and (21b), and this apparently for the same reason: individual parts of the object NP can be associated with each V-event and thus distributed over the whole interval of the pluractional. This ensures that no single hen gets killed more than once or intermittently, and that no single club member is gradually or successively lost:

- (22) a. *El zorro anduvo matando las gallinas.*
 The fox walk.SP killing the hens.
 ‘The fox has been killing the hens.’
 b. *Con el tiempo, el club fue perdiendo (a) todos sus socios.*
 With the time, the club go. SP losing (to) all its members.
 ‘As time went by, the club gradually lost all its members.’

Such distribution effects also arise with distributive universal quantifiers and with coordinations of NPs. Thus, (23a) does not require for any of John’s friends to get more than one phone-call. Analogously, the linear order required for interpreting (23b) can be a chain of subsets of the set denoted by the coordination, that required for interpreting (23c) a chain of subsets of the set of pieces of clothing:

- (23) a. *Juan anda llamando por teléfono a cada uno de sus amigos.*
 Juan walk. PR calling by phone to each one of his friends
 ‘Juan is phoning every one of his friends.’
 b. *Juan se va poniendo la camisa, la chaqueta y la corbata.*
 Juan REFL-go. PR putting on the shirt, the jacket, and the tie
 ‘Juan successively puts on his shirt, his jacket, and his tie.’
 c. *El empleado va sacando cada prenda y desplegándola.*
 The clerk go PR taking-out each piece of clothing and unfolding-it
 ‘The clerk takes out/ is taking out each piece of clothing and unfolds/
 unfolding it.’

are possible with *FREQ* (see (8b-c) above), since they are not coercible into accomplishments, they cannot develop the gradual change readings which are possible with *INCR* (see (5c) above). Finally, since they cannot be repeated for the same participant, they give rise to absurd readings with singular participants.

It is at first sight tempting to correlate this peculiar behavior of *FREQ* and *INCR* with the fact that they have periphrastic (as opposed to affixal) expression. The syntactic structure of verbal periphrases has been a much debated matter for decades, and it would be impossible to summarize the main issues of the debate in these pages. However, there seem to be very strong arguments supporting an analysis of periphrastic structures as cases of a VP embedded under a higher V (the periphrastic 'auxiliary'). Even those authors who favor a verbal-complex structure counterpart for the analysis of 'restructured' periphrases (for a recent proposal, see Abeillé & Godard 2003) do not predict semantic differences between the VP-embedding cases and their verbal-complex counterpart. If periphrases combine with whole VPs, and are not restricted to V-level modification, the pluractional operators they contribute could have scope not only over the verb (and possibly its semantically incorporated argument) but over the verb and all its arguments, whatever their nature. We could thus obtain distribution effects over participants which are not incorporated, the structures in question for (23a-c) being schematically represented as follows:

- (24) a. *FREQ* [llamar por teléfono a cada uno de sus amigos]
 b. *INCR* [ponerse la camisa, la chaqueta y la corbata]
 c. *INCR* [sacar cada prenda]

This line of explanation seems all the more appealing if we take into account the fact that pluractional markers sitting directly on the verb, such as the Czech distributive prefix *PO-* described by Filip (1999) and Filip & Carlson (2001), do not seem to give rise to distribution effects with universally quantified arguments.¹³ According to the data in Filip (1999), (25b), with an argument introduced by a distributive universal determiner, is as at least as doubtful as (25a), with a singular argument, and for exactly the same reasons, whereas (25c) with a bare plural argument is acceptable:

- (25) a. *PO-zamykal* ??*zásuvku*. [= Filip 1999, Chap.5 (63)]
 DISTR-lock. PAST.3.SG drawer. SG.ACC
 ?? 'He locked a/the drawer [gradually/successively].'
 b. *PO-zamykal*??*kazdou* *zásuvku* [= Filip 1999, Chap.5 (66)]
 DISTR-lock PAST.3.SG each/every drawer. SG.ACC
 ≠'He locked each/every drawer [gradually/successively].'
 c. *PO-zamykal* *zásuvky*. [= Filip 1999, Chap.5 (9b)]
 DISTR -lock. PAST.3.SG drawer. PL.ACC
 'He locked each drawer [successively, one after the other].'

Unfortunately, however tempting the correlation between the level of application of the pluractional operator and apparent scope effects might be, it takes only a moment reflection to see that this cannot be the right explanation for the particular pattern of interactions with participants we have just seen in the case of Spanish frequentative and incremental periphrases. According to (17), a VP-operator would be expected to produce multiplication effects on an indefinite argument, as frequency adverbs do, but it would not be expected to produce distribution effects with definite plural or universally quantified

¹³ Note, however, that this does not seem to hold for the Russian distributive prefix *PERE-*, which apparently allows for distribution effects with 'all', but not with 'each/every'. A relevant example, for which I thank Tatiana Jakovleva, is: *U Ivanovih pere-byvali vse nasi druzja* 'All our friends successively visited the Ivanov family.'

arguments. In fact, the behavior of ‘scope-bearing’ pluractional operators, such as frequency adverbs, is exactly the inverse of what we observe in the case of *FREQ* and *INCR*. Thus, (26a) is acceptable because multiplication is a possible option for a frequency adverb, and (26b) is strange because distribution over a quantified argument is not. Conversely, (27a) is strange because multiplication is not an option for *FREQ* or *INCR*, and (27b) is acceptable because distribution over a quantified argument is possible.

- (26) a. Mary occasionally discovered a typo in the manuscript.
 b. ??Mary occasionally discovered every typo in the manuscript.
- (27) a. ??*María andaba/ iba descubriendo un error en el manuscrito.*
 María walk. IMPF/go. IMPF discovering a typo in the manuscript
 ??’Maria was / was gradually discovering a typo in the manuscript.’
 b. *María andaba/ iba descubriendo todos los errores/cada error del*
 María walk. IMPF/go. IMPF discovering all the typos/ every typo in the
 manuscrito
 manuscript
 ’Maria was / was gradually discovering all the typos/ every typo in the
 manuscript.’

It is not the case that periphrastic expressions (as opposed to adverbial expressions) *per se* preclude multiplication. Spanish has a habitual periphrasis, *sol(er) + Infinitive*, whose distribution and meaning largely parallel those of the English *used-to* construction. However, unlike *used-to*, *sol(er) + Infinitive* requires a plurality of V-events, being for instance incompatible with states unless there are repeated occurrences of those states. This periphrasis behaves as a ‘scope-bearing’ operator, in as far as it can induce multiplication effects, and it precludes distribution over quantified arguments:

- (28) a. *Para las fiestas, solían matar un cordero.*
 For the holidays, use. IMPF.3PL to kill a lamb
 ‘For the holidays, they used to kill a lamb’
- b. *Para las fiestas, solían matar todos los corderos*
 For the holidays, use. IMPF.3PL to kill all the lambs
 ‘For the holidays, they used to kill all the lambs/ every lamb’.

The interactions of *FREQ* and *INCR* with nominal arguments are puzzling in yet another respect. When exploring the conditions that license internal or dependent readings for *the same N*, Laca & Tasmowski (2001) noticed that not only plural arguments or locational adjuncts could contribute the event plurality required for these readings to arise, but that durational adverbials, verbs of the *REMAIN*-type and repeated-action verbs had the same effect.¹⁴ Thus, *the same N* can get an internal reading in contexts like the following:

¹⁴ Note that the limited possibilities of obtaining internal readings for *the same* cast some doubt on the idea that verbs (predicates of events), being ‘inherently pluralized’, need no particular star operators, temporal or not, in order to denote (sets of) pluralities of events. It is true that *read a paper* in the distributive reading of *Mary and John read a paper* is predicated of two distinct events, and the same holds for *Mary read a paper [twice]*. But if we could interpret any sentence as asserting the existence of a plurality of events, we would also get an internal reading for *the same* in a sentence like *Mary read the same book*, which is clearly not the case.

- (29) a. John has worked for the same company since 1980/ for twenty-five years.
 b. Inertia is what makes a body remain in the same place.
 c. Harping on the same complaint won't make you popular.

We surmised that these temporal structures explicitly required taking into account more than one subinterval, and thus contributed to create the event plurality on which internal readings of *the same N* build. The temporal structure of *FREQ* and *INCR* is, as argued in section 1 above and as captured by the definitions proposed under (7) and (11), clearly based on a plurality of distinct, non-overlapping subintervals. But, unexpectedly, the Spanish periphrases under discussion do not license internal readings for *the same N*. (30a) and (30b) below only have an external reading, in which the second argument, which saturates the interpretation of *same* has to be retrieved from the context:

- (30) a. *Juan fue calentando la misma sopa.*
 Juan go.SP heating up the same soup
 'Juan gradually heated up the same soup.'
 b. *María anda leyendo el mismo libro.*
 Maria walk.PR reading the same book.
 'Maria has been reading the same book [on and off].'

To sum up, the interaction of our Spanish periphrases with nominal arguments is unexpected on several accounts. They do not behave like V-level pluractional markers, since they give rise to distribution effects with non-incorporated arguments (definite and universally quantified NPs). They do not behave like VP-level frequency adverbs, since they do give rise to distribution effects with quantified arguments, on the one hand, and do not give rise to multiplication effects with indefinite arguments, on the other. And, finally, although they undoubtedly require a plurality of non-overlapping subintervals, they do not license internal readings for *the same*.

4.2 Sums and groups in the event-domain

A comparison of the behavior of temporal pluractionals with the behavior of nominal plural expressions as regards their interaction with other nominal expressions can be expected to shed some light on the apparently mysterious patterns that emerged in the previous discussion. The patterns concerning plural nominal expressions are complex, but fairly well understood. In fact, research on plurals has concentrated for over two decades on the distinction among distributive, collective and cumulative readings of sentences, and the adequacy of alternative formal treatments is generally put to the test of accounting for the precise frontiers among these readings (see Scha 1981, Link 1983, Link 1991, Landman 1989, Landman 1996, Landman 2000 among many others).

Relying on work by Landman (1989, 1996, 2000), I will assume that there is a crucial difference between the interpretation of pluralities as sums, which are sets and give rise to distributive readings, and their interpretation as groups, which are individuals (impure atoms) related to sums by a function of 'member specification' and give rise to collective readings. Landman (1996) convincingly argues that (total) cumulative readings, as in *Three boys invited four girls* are based on the sum-interpretation of the plural expressions involved and differ from standard distributive readings in the fact that none of the two plural expressions

has scope over the other.¹⁵ Although failing the conjunction test for distributivity, since the sentence can be verified in situations in which it is not true of every one of the three boys involved that he invited four girls, *three boys* is not interpreted as a group (impure atom) but as a sum, giving rise to plural predication. I will extend this analysis to the interpretation of plural expressions that license ‘dependent plurals’, as in:

- (31) a. Unicycles have wheels.
b. The schoolboys were wearing red ties.

Dependent plural readings often arise when world knowledge – or lexical meaning– imposes a one-to-one mapping, with the relation between two sets being interpreted as a bijection. Although the licenser of a dependent plural fails the conjunction test for distributivity, sentences (31a-b) are cases of genuinely plural predication and the licensers are interpreted as sums.¹⁶ I will loosely refer to the sum-interpretation involved in cumulative readings and dependent plural licensers as ‘scopeless distributive interpretation’.

The type of interactions of frequency adverbs with singular indefinites and with bare plurals which we have labelled ‘multiplication’ and ‘distribution’, respectively, have parallels in sentences with two nominal arguments. Thus, similar effects are obtained in each pair of examples (32a-b) and (33a-b):

- (32) a. Mary repeatedly discovered a typo in the manuscript.
b. The schoolboys were wearing a red tie.
- (33) a. Mary repeatedly discovered typos in the manuscript.
b. The schoolboys were wearing red ties.

Both (32b) and (33b) – in their most plausible interpretation – illustrate ‘distributive’ readings of the plural subject NP. (32b) is an instance of a wide-scope distributive reading giving rise to multiplication of the indefinite argument in the object position. (33b), with a dependent plural in the object position, is an instance of a ‘scopeless distributive’. The first is paralleled by the multiplication effect in (32a) – in its most plausible interpretation, in which no typo is discovered twice. The second is paralleled by the possible distribution down to single typos in (33a), assuming that the sentence can be verified in a situation in which each or some of the discover-events involved a single typo.

The question arises if the mysterious pattern of interactions exhibited by motion verb periphrases also has parallels in the nominal domain. I would like to suggest that the behavior of collective nouns in two-argument sentences offers such a parallel, thus providing a decisive clue for understanding what the output of *FREQ* and *INCR* is. In fact, collective nouns,

¹⁵ Cumulative readings are those readings in which two sets A and B are related to each other in such a way that each member of set A is in relation R with some member of set B and each member of set B is in relation R with some member of set A. The total cumulative reading of *Three boys invited four girls* requires each of the three boys to have invited some of the four girls and each of the four girls to have been invited by some of the three boys.

¹⁶ Note that this ‘distributive’ interpretation of the licenser of a dependent plural is explicitly assumed in the treatment proposed by Kamp & Reyle (1993: 330-332, 356-375), who avoid the undesirable consequence of a unicycle having more than one wheel by way of introducing ‘number-neutral’ discourse referents. For a treatment of dependent plurals showing the analogies between cumulative and dependent plural readings as instances of non-iterative quantification, see Bosveld-de Smet (1998: 154-156, 250-254), who also stresses the distributive basis of dependent plural readings.

although they can combine in the singular with predicates of pluralities, and thus in some sense qualify as ‘plural’, never give rise to multiplication effects. Moreover, they do not license internal readings for *the same N*.¹⁷ Thus, (34a) only alludes to one building, and *the same book* in (34b) can only get an external interpretation, with the second argument being retrieved from context:

- (34) a. Her family owns a building in the neighborhood.
b. Her family lives in the same neighborhood.

Remember that the absence of multiplication effects characterizes *FREQ* and *INCR*, which is the reason for the absurd interpretation of (35a), and that *FREQ* and *INCR* do not license internal readings for *the same N*, as shown in (35b):

- (35) a. ?? *El zorro anduvo matando una gallina.*
The fox walk.SP killing a hen
‘The fox has been killing a hen.’
b. *María anda leyendo el mismo libro.*
Maria walk.PR reading the same book.
‘Maria has been reading the same book [on and off].’

The most puzzling fact about *FREQ* and *INCR* was their ability to give rise to ‘distribution’ not only with regard to bare plural arguments, but also with regard to definites, universally quantified arguments and conjunctions, as shown by the examples repeated here for convenience in (36a-d):

- (36) a. *El zorro anduvo matando las gallinas.*
The fox walk.SP killing the hens.
‘The fox has been killing the hens.’
b. *Juan anda llamando por teléfono a cada uno de sus amigos.*
Juan walk.PR calling by phone to each one of his friends
‘Juan is phoning every one of his friends.’
c. *El empleado va sacando cada prenda y desplegándola*
The clerk go.PR taking-out each piece of clothing and unfolding-it
‘The clerk takes out/ is taking out each piece of clothing and unfolds / unfolding it.’
d. *Juan se va poniendo la camisa, la chaqueta y la corbata.*
Juan REFL go.PR putting on the shirt, the jacket, and the tie
‘Juan successively puts on his shirt, his jacket, and his tie.’

Surprisingly, collective nouns seem to be able to give rise to ‘distribution’ under the same conditions. Thus, sentences (37a-d) can be verified by situations involving no ‘joint ownership’ of any building by the family as a group: it suffices that single buildings be in the individual possession of some members of the family.

- (37) a. Her family owns buildings in the neighborhood.

¹⁷ Internal readings for *the same N* become possible if the collective noun is modified by adjectives or quantity expressions underlining the individual part-structure associated with the collective noun, as in *her whole family*, *part of her family*, *two thirds of her family* (Laca & Tasmowski 2001). Moltmann (1992) assumes that expressions of this sort qualify as quantified antecedents for *the same*.

- b. Her family owns most buildings in the neighborhood.
- c. Her family owns every building in the neighborhood.
- d. Her family owns the Flatiron, the Empire State and the Chrysler building.

I would like to make it clear that I do not assume these non-joint-ownership situations to be particular ‘readings’ of collective nouns. But they are undoubtedly situations that can be adequately described by the sentences (37a-d). How many members of the family should be in the own-relationship with one or more buildings for such situations to verify (37a-d) is to a good extent indeterminate. We would probably hesitate to credit the family with ownership of every building if in fact the owners are only one brother and a second cousin. But this indeterminacy is typical of ‘partial distributivity’ situations, and ‘partial distributivity’ situations are yet another flavor of collective readings, in which a singular predication applies to a singular individual (Landman 1996).

If this analogy holds, it is particularly revealing as to the true nature of the derived eventuality descriptions obtained by application of *FREQ* and *INCR* to a VP. As stated in section 2, they require a plurality of non-overlapping V-subintervals, or, couched in the language of events, a plurality of V-events with non-overlapping running times. We know, from the nominal domain, that pluralities can be conceived extensionally as sums/sets, or intensionally as groups, i.e., singular individuals related to the set of their members by the function of member specification, but which are more than the sum of their parts. It is moreover quite uncontroversial that collective nouns denote sets of groups. When talking about ‘event pluralities’, the distinction between sums/sets of events, on the one hand, and groups of events, on the other, is not usually drawn, and talk about ‘event pluralities’ seems to switch easily between both.¹⁸ However, the different patterns of interaction with nominal arguments arising with frequency adverbs, on the one hand, and with *andar/ir* + Gerund, on the other, strongly suggest that the distinction between sums and groups is also relevant in the event domain.

Capitalizing on the analogous patterns of interaction that characterize collective nouns and the eventuality descriptions obtained by application of *FREQ* and *INCR*, I would like to suggest that the latter are predicates of groups of events. Groups of events ‘consist of’ a plurality of events of the type described by the basic verb in the same way in which the groups in the denotation of a collective noun ‘consist of’ a plurality of members. The main difference is, obviously, that in the case of temporal pluractionality, the associated pluralities obey a particular temporal configuration, which is accurately captured by the definition of Van Geenhoven’s star operators. Van Geenhoven (2005) suggests a parallel between pluractional morphemes on the verb – interpreted as star operators – and the plural morpheme *-s* on nouns – standardly interpreted in terms of Link’s star operator. In the light of the analogies we have just seen, *andar* + Gerund and *ir* + Gerund do not behave as the plural morpheme *-s*, but rather correspond to the derivational morphemes used to derive collective nouns from count nouns, as in *brotherhood*, *shrubbery*, or, perhaps more perspicuously, as classifier-like collective nouns that map pluralities onto impure atoms, like *bunch*, *group*, *series* etc. (Chierchia 1998).¹⁹ The parallels with the temporal structure of some lexical verbs

¹⁸ However, the notion of singular events built out of sums of ‘event-parts’ has been around for some time, in particular in the treatment of telicity proposed by Krifka (1992, 1998) and in subsequent work by Rothstein (2004b).

¹⁹ I’m indebted to one of the reviewers for raising the very relevant question as to the possible similarity of *FREQ* and *INC* to mass classifiers rather than group classifiers. The option of treating the output of *andar* or *ir* + Gerund as having its denotation in the mass domain is not open to me, since I adhere to Rothstein’s position, according to which VPs always denote sets of eventualities in the count domain (see Rothstein 2004b: 159-161).

mentioned in section 2 can be taken literally: we are dealing in both cases with predicates of events that constitute ‘impure atoms’. No scope effects are involved in examples like (36a-d) other than the fact that *FREQ* and *INCR* can operate on an eventuality description like *putting on his shirt, his jacket, and his tie* or *phone every one of his friends*, which can or must be interpreted ‘conjunctively’ as an instance of plural (distributive) predication.²⁰

Frequency adverbs, on the other hand, do not shift event pluralities into group-events. In fact, they show precisely the same interactions with participants that hold for quantificational, distributive NPs: they never give rise to the effect we have called ‘distribution’ with quantificational NPs, as shown by the parallelly absurd readings of (38a-b):

- (38) a. ?Mary occasionally discovered every typo in this manuscript.
b. ?Most of my friends own every building in this neighborhood.

The hypothesis according to which the eventuality descriptions obtained by application of *FREQ* and *INCR* are predicates of groups of events provides an explanation for a further interesting scope effect that arises with cardinalized time-adverbials such as *twice, four times*, an effect that would be entirely unexpected if, as assumed by Lasersohn (1995), they were predicates of sets of events of the type denoted by the basic verb. Cardinalized time adverbials, although they are in principle compatible with *andar* + Ger., can never specify the cardinality of the events in the set. Thus, (39) can, with some effort, be interpreted as in (39-i) – with *FREQ* applying to *tocar el timbre seis veces* – or as in (39ii) – with *FREQ* applying to *tocar el timbre*. Crucially, it cannot mean that the cardinality of the bell-rings in *andar tocando el timbre* equals six:²¹

- (39) ??*El cartero ha andado tocando el timbre seis veces.*
The postman has walked ringing the bell six times
‘The postman has been ringing the bell six times.’
(i) The postman has been ringing the bell six times an indefinite number of times.
(ii) On six occasions, the postman has been ringing the bell.
(iii) ≠The postman has rung the bell six times.

In this view, the difference between activities, on the one hand, and achievements or accomplishments, on the other, is that the former only have atoms relative to a particular context, whereas the latter are naturally atomic. The output of *andar* + Gerund is an activity (what counts as an impure atom depends on the context), that of *ir* + Gerund shows the same quirkiness as to the activity/accomplishment distinction that also characterizes degree predicates (see Hay, Kennedy & Levin 1999). As the reviewer accurately points out, the parallel with classifier-like collective nouns should not be overstretched: *to examine a group of students* is a telic (naturally atomic) event description, whereas *andar examinando a los estudiantes*, lit. ‘to walk examining the students’ is clearly atelic, and *ir examinando a los estudiantes*, lit ‘to go examining the students’ is ambiguous between a telic and an atelic construal.

²⁰ There is, however, a difference between *ir* and *andar* + Gerund that deserves to be further explored. *Ir* + Gerund can apply ‘above’ the subject, as in *Cada uno fue tomando una silla* (‘Every one successively took a chair’), but *andar* + Gerund cannot.

²¹ Yu (2003) observes the same incompatibility for Chechen frequentatives and he points out that it is quite widespread cross-linguistically, but Van Geenhoven (2004) discusses one example that could be interpreted as meaning that this does not hold for the West-Greenlandic Eskimo marker *-tar*, namely *Marluriariluni quersortarpoq* with the possible interpretation ‘He coughed twice’ (her ex. (64), §4.2).

This parallels a further well known property of collective nouns – which are the clearest example of group-denoting expressions: the fact that the cardinality of the set of their members – i.e., of the plurality they extensionally correspond to – cannot be predicated of them. Thus, the impossibility of reading (39-iii) parallels the inacceptability of (40a-b):

- (40) a. *Her family is four.
b. *This group is ten.

According to the line of reasoning we are pursuing, the impossibility of counting the events in the event plurality contributed by *andar* + Gerund is simply a consequence of the fact that this event plurality is a group.

The analogy could be stretched even further. Collective nouns come in several different guises. Some of them are clearly intensional, as for instance *committee*, *jury*, other much less so, in particular those functioning in classifier-like constructions, as for instance *group*, *bunch*, *gang*. Among the latter, quite a number contribute specific indications as to the spatial distribution or arrangement of the plurality they consist of, as in *a row of chairs*, *a line of trees*, just like *FREQ* and *INCR* give specific indications as to the temporal distribution of the plurality of V-events denoted by the derived eventuality description. As noticed by Rothstein (2004b), many of these classifier-like collective nouns, even if they are grammatically count nouns, have the property of cumulativity: adding a row of chairs to a row of chairs – if the conditions on the arrangement are preserved – can result in something that can again be described as *a row of chairs*. Possibly, the S-cumulativity characterizing temporal pluractionals (see footnote 10) is of the same nature.

5. Concluding remarks

In this paper, I have tried to show that, although temporal pluractional operators of the sort proposed by Van Geenhoven (2004, 2005) can adequately capture the temporal structure of the derived eventuality descriptions contributed by two Spanish motion-verb periphrases, they should not be allowed to enter into scopal interactions with nominal arguments. The effect we have labelled ‘distribution’ is no more of a scope effect than the parallel interpretations that may arise when a collective noun seems to interact with a plural or universally quantified nominal expression in two-argument sentences. Such parallels lead me to assume that the sum/group distinction is also relevant in the event domain. Scope effects show, moreover, that the event pluralities contributed by periphrastic aspectual operators radically differ from those contributed by frequency adverbs: in the first case we are dealing with groups of events, whereas in the second case, only sums of events are at stake.

Let me conclude by pointing out a possible consequence of the analysis sketched out in this paper. Although many formal accounts of pluractionality rely on event semantics, temporal pluractionality, as accurately pointed out by Van Geenhoven (2004), does not offer conclusive evidence for it, since an interval semantics account seems to fare equally well. However, the difference between periphrastic aspectual operators and frequency adverbs that emerges from our analysis could hardly, if at all, be couched in the language of interval semantics, unless we were prepared to countenance such entities as “group intervals”, as distinct from intervals as sets. If we assume, however, that the pluractional event descriptions contributed by *andar* and *ir* + Gerund are predicates of groups of events, it is possible to combine the insights contained in Van Geenhoven’s definition of temporal pluractional operators with an event semantics à la Lasnik. For X a set (a sum) of events, \uparrow the operation of group formation mapping a set (a sum) onto the corresponding impure atom (see

Landman 1989 and this volume), n a contextually determined cardinal greater than 1, and τ the temporal trace function, we can partially capture the truth conditions of **FREQ** and **INCR** in such a framework by modifying the definitions given in (7) and (11) above in the following way:

$$(41) \quad \text{FREQ-V} (\uparrow X) \Rightarrow \\ \text{card}(X) \geq n \ \& \ \forall e, e' \in X [V(e) \ \& \ V(e') \ \& \ \neg \tau(e) \circ \tau(e') \ \& \ \exists t (\tau(e) < t < \tau(e') \vee \tau(e) > t > \tau(e')) \ \& \ \neg \exists e'' [(V(e'')) \ \& \ t = \tau(e'')]]^{22}$$

$$(42) \quad \text{INCR-V} (\uparrow X) \Rightarrow \\ \text{card}(X) \geq n \ \& \ \forall e, e' \in X [V(e) \ \& \ V(e') \ \& \ \neg \tau(e) \circ \tau(e') \\ \ \& \ \exists f \text{ from } X \text{ into a set } O \text{ with linear ordering } \leq_O \text{ such that } \forall e, e' \in X (\tau(e) < \tau(e')) \\ \ \rightarrow f(e) \leq_O f(e'))$$

Note that (41) and (42) are not definitions, but merely capture some of the entailments of predicates of group of events in terms of the temporal arrangement of the sums of events they consist of. Going farther than that would require us to decide which conditions should be fulfilled in order for a sum of events to qualify as a group. Some of these conditions would certainly involve the identity of participants, some of them would involve a version of temporal adjacency restricting possible temporal gaps between V-events to some maximal length. Determining such conditions will prove to be at least as complex as exploring the conditions under which a set of boys can be said to be a *group* or a *gang* of boys or a set of chairs can be said to be a *row* or a *stack* of chairs.

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²² A formula very much in the spirit of (41) was proposed by Lasersohn (1995: 254) in order to capture pluractionals requiring temporal gaps (his "separatedness in time" condition). It is important to note that Lasersohn does speak of "groups of events", but it is obvious from his discussion that he is not treating groups as different from sets or sums of events.

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