

Pluractional verbs that grammaticise number through the part-of relation

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Abstract

This paper pursues an analysis of verbs like Italian *mordicchiare* (nibble) as event-internal pluractional verbs that denote composite single events where the predicate is distributed on the fragments of one entity, and grammaticise a local form of number through the part-of relation. This opens the possibility of reading number marking in aspectual terms, whereby fragmenting is a form of modification that perturbs the mapping between event and object.

1. Verbal plurality

1.1 Generalities

Verbal plurality, or PLURACTIONALITY (Dressler 1968, Newman 1980, Cusic 1981), is the phenomenon whereby inherent verbal number is encoded on the verb by means of specific morphological devices such as affixation, full or partial reduplication, or gemination. The plural meaning under consideration indicates that the type of event in the denotation of the verb is multiply instantiated in some way, because either it holds at several points in time, or it takes place in several locations, or it holds of several participants or several parts of one participant.¹

Cusic has proposed that verbal plurality concerns several conceptual levels and has defined a hierarchical arrangement of bounded units in three levels of structure, namely OCCASIONS, EVENTS, and PHASES. Pluralisation is possible at each level, indicating “more than one isomorphic bounded unit of that level” (Cusic 1981: 69). He then reorganises the levels into two main types of pluralities. On the one hand, an EVENT EXTERNAL PLURALITY is constituted by events or occasions and results from distributing an action in time--e.g. frequentative and habitual readings--or over participants--e.g. distributive readings of NPs, or over locations. This plurality is also called a case of ‘repeated’ action. On the other hand, an EVENT INTERNAL PLURALITY is a form of repetition within the boundary of one event. Phases are the relevant units, repetition is primarily distribution over time according to Cusic, and the whole is also called a case of ‘repetitive’ action. At least in my understanding of his terminological choice, Cusic suggests that events

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are the main level, the one at which the hierarchy can be entered with a verb and from which the other levels are reached. I share this position.

1.2 *Internal pluractionality*

Cusic identifies two main types of event-internal plurality, one involving a form of increase, the other a form of decrease. Event-internal pluractional verbs of the decrease type are the main concern of this paper. These verb forms correspond to the class of verbs for which one also finds the term of FREQUENTATIVE in typological and morphological studies.

It is worth making clear that internal pluractionality is concerned with verbs combining with atomic arguments and yet exhibiting a multiplicity component in their meaning. Contra Cusic and Lasersohn (1995), I do not think that distribution over time is a crucial piece of information contributed by these verbs. Describing an event as a nibbling event is not meant to convey information on the temporal non-overlapping of bites as the main contribution, but on their multitude, smallness and indistinguishability, I contend. When internal pluractional verbs combine with plural arguments, they distribute the requirement of multiplicity over the members of the plural argument.

From the morphological point of view, verbs of the decrease type exploit a variety of word-formation strategies. The cases under study here exploit affixation (or combination with submorphs), as exemplified by Italian *mordicchiare* (nibble), *saltellare* (hop), *piovigginare* (drizzle), French *mordiller* (nibble), *sautiller* (hop), *neigeoter* (snow a little). But this morphological strategy is not consistently exploited even in related languages. For instance, French based creole of Mauritius exploits stem reduplication instead of affixation. Portuguese does not seem to use evaluative affixation productively, for instance *mordiscar* (nibble) is a rare form. In Italian, the original host of productive affixes is currently shrinking to *-i/u/acchi-* (Grandi 2008). Next, English forms like *nibble* and *sparkle* are no longer perceived as derivational. Cusic says that they derive from old iterative affixes *-er* and *-le*, quoting OED, hence they illustrate a form of affixation that differs from the Romance case.

From the semantic point of view, I pursue the idea that decrease event internal pluractional verbs denote composite single events resulting from distributing the predicate on the fragments of a participant (Tovena 2007, Tovena and Kihm 2008). This proposal makes use of tools developed by (Landman 2000) and is cast in the same framework. In particular, distributivity is understood as a form of plurality, and it is assumed that number information in argument positions is relevant for the event and must be represented explicitly. I have no strong commitment to a neo-Davidsonian rendering, but a semantic representation of this type provides the direct access to thematic relations that is needed in the case at hand.

The remainder of the paper is organised as follows. In section 2, first, I summarise the semantic analysis of internal pluractionality presented in previous work (Tovena 2007, Tovena and Kihm 2008) and adopted in this paper. Then, I strengthen it by showing that number marking follows the same pattern in event-internal and event-external pluractionality, and I extend it to cover the conative reading frequently available for internal pluractionality verbs. Aspectual considerations are discussed in section 3. Some issues like telicity and incrementality concern primarily deverbal forms, since aspectual modification is more easily appreciated when comparing derived with simplex verbs that describe events in their ‘canonical’ form. General points concern the possibility that the fragmented entity is not introduced by an argument, but is just a value on some scale associated with the event, and the non-existence of a constraint of minimal cardinality on the plurality. Section 4 gathers some concluding remarks.

2. *A semantic analysis*

2.1 *Parts and plurality*

In previous work (Tovena 2007, Tovena and Kihm 2008), the peculiarities of event internal pluractional verbs have been captured by requiring that their lexical entries specify that the entities denoted are unitary at event level and have complex internal structures. Two specific steps of decomposition enable us to express constraints on the internal structure of the event in an explicit way, but which is not visible above word level. First, the event described by a pluractional verb is viewed as a single event composed of a plurality of phases whose members do not enjoy the status of events. Second, in this single event, at least one participant is decomposed into parts, and phases reflect the application of the predicate to the parts of the participant demoted to a sum. The thematic relation between the event and the individual entity instantiating an argument is computed by adding the subrelations between phases and cells of a cover² on the entity. In the entry for the verb *tagliuzzare* (cut into small pieces) provided in (1), the first line matches the normal case of a transitive verb, and the second line specifies the internal structure of the event.

- (1) $\lambda x \lambda y \lambda e [(TAGLIUZZARE(e) \ \& \ Ag(e,y) \ \& \ Pat(e,x)) \ \Leftrightarrow$
 $\exists e' (*TAGLIUZZAREPart(e') \ \& \ e = \uparrow e' \ \& \ *Ag(e',y) \ \& \ ^M Pat(e',x))]$

The second line in (1) states that the event e is equivalent to the groupification of an element in the denotation of a plural property of events,

² A cover C of a set A is a set of subsets of A called the cells of C , that satisfies the following constraints. Every member of A belongs to some cell of C and the empty set is not in C .

to which an agent and a patient are related. A plurality, marked by the operator `*' (Link 1983), is a collection of units of level n . The operation of groupification, noted as ‘↑’, gives the collection the status of unit at level $n+1$. This step of groupification is lexicalised³, as the verbs of this class do not make phases accessible, see (Tovena and Kihm 2008) for evidence and discussion. Starred predicates in general, denote in a domain that contains singular and plural entities. In the case of internal plurality, something more has to be specified, since we want to make sure that only events with multiple phases are in the denotation of the verb. The need to enforce explicitly the constraint of plurality of phases is confirmed by the loss of semelfactive reading for pluractional verbs whose simplex form admits this reading, see the impossibility of making explicit the ‘single event’ use (2) and the marginality (or inchoative reading) with a time adverbial indicating a point in time (3).

- (2) a. # Daniele ha tossicchiato (un colpo di tosse)
Daniel coughed a single cough
b. # Daniele ha sputacchiato (un singolo sputo)
Daniel spluttered a single spit
- (3) a. Daniele ha tossito alle due in punto
Daniel coughed at two o'clock (sharp)
b. # Daniele ha tossicchiato alle due in punto
Daniel coughed (slightly and repeatedly) at two o'clock (sharp)

There is no plurality of events when a simplex predicate applies to singular participants once, but fragmenting a participant introduces a source of plurality. The argument that undergoes this treatment is the most directly affected one. It usually is the direct object in transitive verbs, as in *becchettare* (peck at), but more will be said in the next section.

Formally, the singular number of the atomic affected participant is modified by an application of the grinding operator (Landman 1991) invoked in the definition of mass role (see below). The thematic role of the affected argument is equated to a mass role (Landman 2000) and holds true of pairs of phases and cells of the cover, instead of pairs of events and individuals. Plurality requires that the parts over which the predicate is distributed are the cells of a cover weaker than the one having the atom as its unique cell. This use of the mass role makes it possible to get at countability, as the cells of the cover are parts (atoms but not individuals)

³ Wood (2007) has independently proposed to use the groupification of a plural predicate to represent event internal pluractionality. However, her account cannot explain where is the source of the plurality of phases in an event with single participants. Indeed, starring the predicate is just a way to say that it denotes in a singular and plural domain, not a way to eliminate single phase events from the domain. Single phase events do exist in language, and are needed for the formal coherence of the system, but are not in the denotation of pluractional verbs, I claim.

related to the phases via the (sub)plural-role, as we said, but does not allow counting, since the affected participant is fragmented locally and the parts are not accessible at discourse referent level. Phases weakly exist as a reflex of the cells of a cover, but it is not known which cover is used and no contextual parameter is involved/provided for it. The only accessible elements are the variables for the event and the participants. It is not a surprise, therefore, that internal pluractional verbs differ from collective nouns, although both of them are groups. The elements constituting a group like *committee* have a status ontologically defined, as individuals, and can be seen. For instance, a collective noun can satisfy the verb requirement for a plural subject in (4). On the contrary, phases do not have independent status, as I contend. Groupification per se does not mean making the components invisible.

(4) The committee met.

In short, according to this proposal, event-internal pluractionality is a form of event plurality where the Aktionsart of the verbal expression is modified in a way that is specific to the class that is being characterised and independent of the reference type of the NPs in certain argument positions. Plurality is obtained by distributing over parts of an entity that continues to be perceived as an atom at discourse level. This is the general analysis of the phenomenon.

However, I wish to leave open the possibility that languages follow different paths to get at the same situation. We have said that languages may exploit diminutive affixes, but also other morphological devices. The intuition behind the present paper is that relevant aspects of the behaviour of internal pluractionality verbs in Italian and other Romance languages can be captured by assuming a single derivational process of verb formation whereby diminutive suffixes contribute to creating new verbs that denote singular internally-complex events, by overtly marking a reduction in the flow of a (semantic) thematic role. This position is compatible with the semantic treatment of the phenomenon that I have just summarised, but it is in contrast with the non-derivational morphological analysis defended in (Tovena and Kihm 2008). At least as far as Italian is concerned, I think that a derivational analysis cannot be entirely ruled out.

It is also worth noting that the proposal is compatible with Krifka's (1992) claim that all patient roles have the property of summativity, which is cumulativity defined for two place relations such as thematic roles. This property means that thematic relations are not sensitive to the size of the entities they relate. In the verb entry provided in (1), summativity is verified in the first half of the equation, the one that counts as far as thematic arguments of the verb are concerned. It is intended not to be verified in the second half, precisely because the reduced flow is what is going to trigger the repetition.

2.2 *The number pattern*

As we recalled, pluractionality is the term used to refer to the phenomenon whereby number is grammaticised as a morphological category inherent to the verb. This is a distinct phenomenon from number agreement, as demonstrated by Frajzyngier (1985) and Durie (1986). In event-external pluractionality, by far the most frequently studied case, the two commonest patterns in linking verb number morphology to verbal argument structure (Cusic 1981, Durie 1986) are:

- 1- the absolutive one (the number encoded is that of the intransitive subject or transitive object), which leads to a plural effect
- 2- the nominative one, which leads to group activity reading

Cusic draws attention to the parallelism in the use of the schemata $S-V_{\text{intrans}}$ and $V_{\text{trans}}-O$ between several phenomena, namely case marking, i.e. the absolutive/ergative paradigm, pluractionality, i.e. the selection of the participant over which the action is distributed, and telicity, i.e. the participant whose boundedness and identification favour a conceptualisation of the event as bounded.

A natural question to ask is whether the patterns used in linking morphology and argument structure in event-internal pluractionality are the same as those recalled above for event-external pluractionality. The answer is positive, in general, with one important difference connected to the fact that the elements resulting from the fragmenting do not surface at discourse referent level. It appears to be possible to fragment what may not be an overt argument of the verb, e.g. the internal/cognate object of an intransitive verb, e.g. 'life' in *vivacchiare* (live/struggle along), as discussed later in the paper.

All the cases discussed so far concern the absolutive pattern, and one may wonder whether the answer is also positive with respect to the nominative pattern. I think it is, but this is less straightforward to show. Indeed, we have to reconcile in a single argument position two seemingly contradictory constraints that are the atomicity of the participant, as required by internal plurality, with the presence of a multitude viewed as a collection for the collective reading to arise, as required by the pattern. The sentence in (5) fulfils all these requirements.

- (5) Il colpo di fucile ha bucherellato l'otre
The gunshot riddled the water skin with holes.

The referent of the subject NP is a singular entity that can be reanalysed as a collection of pellets. Pellets may work as atoms but not as individuals in this case, like the grains of rice. The action of the gunshot is viewed as collectively responsible for the many little holes, and the distinction into phases is not built on pellets. Indeed, the sentence is used felicitously also to describe a situation where some pellets hit the water skin on the same

spot and/or at the same time, and it is not possible to say which pellet caused which hole. The object provides the distributive key, not the subject. In short, no constraint of disjunction necessarily applies either on time, space or participants, and this makes it yet another counterexample to Lasersohn's claim mentioned above, and therefore to his formalisation of event-internal pluractionality that bans overlap, recalled here.

$$(6) \quad \forall\text{-PA}(X) \Leftrightarrow \forall e e' \in X[\text{P}(e) \& \text{f}(e) \circ \text{f}(e')] \& \text{card}(X) \geq n$$

2.3 *The conative reading*

The cells are locally reduced instances of the original atomic value that gets fragmented. They are parts of a participant, but their existence is restricted to the purpose of predicate distribution. Diminution affects only the flow of the thematic role, not the fact that a particular role relates an event and a participant. The thematic relation is defined at event level, i.e. the first part of the entry of a pluractional verb in (1). Repetition is a consequence of meeting the constraint of satisfying the thematic relation with the whole participant while only having access to a portion of it at any given time.

The idea of having a fragmented object can be interpreted as a way of saying that one has access to information on the mode the whole participant related to the event gets recomposed from the collection of parts involved in the phases. The sum operation is what is generally used for (re)composition, cf. the property of mapping-to-subevents (MSE) defined by Krifka (1998). Sum is also the operation used in the definition of a mass role (Landman 2000), recalled in (7).

$$(7) \quad \text{MASS ROLE } {}^M\text{R}$$

Let e be an event and a a member of the domain of atomic individuals,
 ${}^M\text{R}(e) = a$ iff
 $\sqcup (\{g(d) \mid d \in \text{AT}(*\text{R}(e))\}) = g(a)$

Landman's (2000) mass role is a function from the domain of events into the domain of individuals. From the definition in (7) it appears that it corresponds to an application of a plural role to all the cells of a cover applied to the participant, whichever cover is taken. The atomic affected participant is modified by application of the grinding operator 'g' (Landman 1991), which is a function that maps an individual onto the sum of its material parts.

$$(8) \quad \text{The GRINDER function 'g' is that function from the count domain into the mass domain } (C \rightarrow M) \text{ such that for every } c \in C, g(c) = \bigvee \{x \in M \mid xKc\}, \text{ where } K \text{ is the relation MATERIAL PART OF.}$$

When information on the mode of recomposing the whole participant related to the event is made accessible, such mode can also be varied. From this, one can see why the conative reading, according to which multiple attempts of performing the action fall short of producing some desired result, becomes so easily available with internal pluractionality verbs. The proposal presented in section 2.1 can be extended to cover it simply by stating that the plural role of the affected argument applies to some but not all the cells of the cover. In order to formalise partial realization, the definition of mass role must be modified. We need a weaker version where a plural role applies to cells of a cover corresponding to some parts of a substance, but not necessarily to all the cells. Therefore, the participant that is reconstructed does not correspond to the maximal sum of its cells. I start by redefining the operation of grinding. The new operation is done by an unfaithful grinder that returns a subset of the parts of the entity to which it applies, as suggested by its name.

- (9) The UNFAITHFUL GRINDER function 'ug' is that function $C \rightarrow M$ such that for every $c \in C$,

$$ug(c) = \{ z \mid z \subset \bigvee \{ x \in M \mid xKc \} \ \& \ z \neq \{ x \} \}.$$

The affected argument is related to the event by a fragmented role FR , defined as an application of a plural role to some of the cells of a cover, but not all of them, whichever cover is taken.

- (10) FRAGMENTED ROLE FR
 Let e be an event,
 ${}^FR(e) = a$ iff a is an atomic individual and

$$\sqcup (\{ g(d) \mid d \in AT(*R(e)) \}) = ug(a)$$

Verbs may be underspecified with respect to the nature of the grinder they use, hence whether a mass or a fragmented role relates the relevant participant and the event. If they are derived from a verbal base with telic meaning and incremental theme, the use of the unfaithful grinder seems to be preferred and the conative reading generally is the most prominent one. Underspecification amounts to saying that z of (8) is a subset or is equal to the total of the parts of the grinded entity, putting (7) and (8) together.

3. *Aspectual considerations*

In the literature, the 'part-of' relation is often used in determining the telicity of a predicate. Atelic predicates are called homogeneous. A predicate is homogeneous if parts of its denotation can be referred to by the same predicate (Vendler 1967). According to (Bennett and Partee 1972,

Dowty 1979), they have the subinterval property, i.e. whenever a predicate is true at a time interval, it is true at any part of that interval. The fact that phases emerge from a form of distribution of the predicate should make us aware of possible aspectual consequences of event-internal pluralisation.

3.1 (A)Telicity

Deverbal pluractionals can have a telic base, e.g. *mangiare la mela*, or an atelic one, e.g. *vivere*. Pluractional forms in general, whether deverbal or non-deverbal, do not lend themselves easily to a definition of their a/telicity. The diminutive form may seem to leave unaffected the telicity of the predicate, as in the case of *tagliuzzare*, or affect it in a perceivable way, as in the case of *mangiucchiare* or *canticchiare* (hum). Contrary to what is the case with simplex forms, these verbs do not form clear telic predicates when combining with a singular definite object, see the contrast between (11) and (12), where the atelic interpretation is strongly preferred in (11) and the telic one is most natural in (12). The 'part of' relation is not preserved from the object domain to the event (Dowty 1991).

- (11) Luisa ha mangiucchiato la mela
Luisa nibbled the apple
- (12) Luisa ha mangiato la mela
Luisa ate the apple

Traditional in/for test (13) and implication test (14) return mix results for these predicates, i.e. as possibly telic for the first and atelic for the second.

- (13) a. Luisa ha mangiucchiato la mela per un'ora/ ?in un'ora
Luisa nibbled the apple for an hour/ in an hour
- b. Luisa ha mangiato la mela *per un'ora/ in un'ora
Luisa nibbled the apple for an hour/ in an hour
- (14) a. Luisa stava mangiucchiando la mela quando e' arrivato il treno
→ha mangiucchiato la mela
Luisa was nibbling the apple when the train arrived
- b. Luisa stava mangiando la mela quando e' arrivato il treno
-/->ha mangiato la mela
Luisa was eating the apple when the train arrived

Grinding may cross out the homomorphism between incremental theme and event, and the internal argument may no longer measure out the event. If grinding is a consequence of a semantic instruction coming from the diminutive affix, as I suggest, we expect that contrasting aspectual information--from the simplex verb, the arguments and the derivational morphology-- lead to unacceptability. This is precisely what happens with *tagliare* in the collocation *tagliare il traguardo*, which describes an

achievement. In this use, the verb cannot be modified with diminutive morphology, see the contrast in (15) where the verb is combined with a definite NP in object position in both sentences.

- (15) a. tagliare/tagliuzzare la mela
cut/chop the apple
b. tagliare/* tagliuzzare il traguardo
cross the finishing line

Achievements are not durative. Example (16) provides support for the durativity of pluractional *tagliuzzare*.

- (16) ?*Quando Luisa ha smesso di tagliuzzare la mela, l'ha distribuita
sull'impasto della torta
When Luisa stopped chopping the apple, she sprinkled it on the
mixture for the cake

The homomorphism from objects to events in telic events with an incremental theme follows from the properties of the thematic relation that mediates between event and object (Krifka 1992). Verbs of the internal pluractional type may be seen to have a patient role that satisfies the property mapping-to-object of (Krifka 1992), because there is a part of the object that is the patient of a proper part of the event for each of its parts, but they do not satisfy mapping-to-event, because it is not the case that every proper portion of the object corresponds to a part of the event. Note, however, that the first property holds only if one accepts that parts may not be affected through and through. The conative reading is a manifestation of the fact that the second property does not hold, as shown above. Similar is the situation found with respect to the other two properties uniqueness of object and uniqueness of event (Krifka 1992) relevant for the preservation of the lattice structure for object and predicate. For verbs of consumption, the patient role shows uniqueness of object, with the same proviso as above, but verifying uniqueness of event is more complicated, because of the conative reading. The fact that these four properties cannot all be shown to hold for the patient of a pluractional verb means that this is not an incremental theme.

Mapping-to-object and uniqueness of object are the relevant properties for defining quantized predicates, together with the condition that the event is not iterated. Telic events are quantized, according to Krifka (1992). Atelic events are not quantized and are homogeneous. In the literature, proposals differ with respect to whether telicity or atelicity is the property that is directly defined, the other being the complement.

Homogeneity can be appreciated separately when combining or dividing events, i.e. in the two directions upward and downward. The first corresponds to the property of cumulativeness the way it is defined by Krifka

(1989) and Kiparsky (1998). A predicate P is cumulative iff $\forall x \forall y [P(x) \& P(y) \rightarrow P(x \oplus y)]$ and it does not have singular reference, i.e. $\exists x, y [P(x) \& P(y) \& \neg x=y]$. The second half of homogeneity can be made to correspond to not satisfying the property of quantization defined by Krifka (1992) on objects, i.e. $\forall x \forall y [P(x) \& P(y) \rightarrow \neg x \sqsubset y]$, or correspond to satisfying the property of divisive reference for predicates, defined as $\forall x \forall y [P(x) \& y \sqsubseteq x \rightarrow P(y)]$ and which corresponds to closure under subpart relation. It also corresponds to satisfying divisivity, i.e. $\forall x [P(x) \& \neg \text{atom}(x) \rightarrow \exists y [y \sqsubset x \& P(y)]]$, defined by Kiparsky (1998) with the help of the predicate *atom*, which is problematic for pluractionals.

Diminutive plural predicates are upward homogeneous, as it is possible to 'expand' their denotation. On the contrary, this cannot be ensured when contracting it, although it cannot be ruled out in all cases. As I claim in section 3.4, we hit a sorites paradox rather than the threshold of a cardinality constraint.

3.2 Incrementality

What is homogeneous is atelic. Homogeneity cannot be proven for internal pluractionals by standard means. Hence, atelicity also cannot be proven in this way. The order of phases is irrelevant and this goes against the standard situation concerning event related information. In particular, it can cause problems in determining exhaustively the unfolding of the whole event on the basis of the structure of the object. Rather than focussing on telicity, it may be more profitable to consider how incrementality is disrupted in these verbs. Internal pluractional verbs can be modified by degree adverbials that require intrinsically unbounded predicates, cf. (17). This is expected thanks to upward homogeneity. Consider (18).

- (17) Ha vivacchiato/mangiucchiato la mela ancora un po'
S/he struggled along/nibbled the apple some more
- (18) a. *Poco a poco ha mordicchiato la matita
Little by little he nibbled the pencil
- b. Poco a poco ha mordicchiato tutta la matita
Little by little he nibbled the whole pencil

Graduality expressed by an adverb may count as introducing a partition on the object. The verb introduces its cover over each cell of such a partition and incrementality concerns only the 'big' partition. The presence of *tutta* (whole) is needed to warrant that all the cells of the 'big' partition are affected, as required by the adverbial *poco a poco*. It restores a form of incrementality on the object, but not within the cells, and the sentence talks about a progression on the object not correlating with the event. The little bitings are not evenly distributed through and through, since internal

pluractionality disrupts incrementality, hence incremental homogeneity. An analogous situation is illustrated in (19) by adverbs that impose a form of (in)completude, and therefore produce unacceptable output.

- (19) a. *Luisa ha mordicchiato a metà la matita
Luisa nibbled the pencil halfway
b. Luisa ha mordicchiato mezza matita
Luisa nibbled half of the pencil
c. *Luisa ha mordicchiato interamente la matita
Luisa entirely nibbled the pencil
d. La matita è mezza mordicchiata
the pencil has been nibbled half way through

In (19)b, the half pencil is the whole object of the nibbling. Still, one could infer that the event is half of a hypothetical nibbling event by considering that half of the real object has been affected. What is not possible is to get the adverb directly modify the event, see (19)a where the patient is the whole real object, and similarly for (19)c. Finally, (19)d contains a deverbal adjective and confirms that the reading according to which half of the event has taken place is not available.

3.3 *Beyond arguments, to scales*

Incremental themes measure out events. When discussing the number pattern, I pointed out that it appears to be possible to fragment what may not be an overt argument of the verb, e.g. the internal/cognate object of an intransitive verb, e.g. 'life' in *vivacchiare*. In this case, the base of the verb names the incremental theme. The possibility also applies to the 'theme' of impersonal verbs like meteorological verbs, e.g. 'snow' in *neigeoter*, or to the process through the manner, e.g. 'work' in incassative *lavoricchiare* (work irregularly and with insufficient commitment)⁴ where the amount of 'energy' involved in performing the action is affected. I surmise that it is not just overt arguments that can be fragmented, contrary to what an entry like (1) seems to suggest, and I generalize the proposal as follows. I consider property scales measuring an abstract dimension associated to an argument--and thereby to the event--instead of physical entities, and also scales associated to the event because of unexpressed PP arguments, absolutive uses, or cognate objects. Usually, the unfolding of an event is measured by adjacent isomorphic transitions of the theme along a scale. The scale is related to the event by Krifka's (1998) Θ Movement Relation, whereby each part of the event is Θ -related to a unique part of the scale, and viceversa, and the temporal adjacency of parts in the event corresponds to scalar

⁴ The incassative reading corresponds to a situation where there is aimless or undirected activity, and no attempt to do anything in particular.

adjacency on the scale. Fragmenting is equivalent to disrupting the homomorphism between the mereological structures of scales and events.

3.4 *Against a condition on cardinality*

There are well known cases of telic events that give mixed results when tested for cumulativity and divisivity. *Eat at least two apples* is telic, cumulative but not divisive, and *eat at most two apples* is telic, divisive but not cumulative. What they have in common is the identification of a threshold, where they differ is in the role of minimal or maximal point played by such threshold. The issue of a threshold is relevant for internal pluractionals too, although in the literature the connection seems to have been missed and the issue is cast in terms of a requirement on the cardinality of the plurality.

I have pointed out that the cover applied in event internal pluractionality is required to have more than one cell.⁵ The end result of this requirement is that no event composed of a single phase is to be found in the denotation of event-internal pluractional properties. In a way, this is the same result targeted by Lasersohn's constraint $\text{card}(X) \geq n$ for $n \geq 2$ on the plurality of events. He leaves fixing the value of n to pragmatics. An obvious difference between the two strategies is that Lasersohn's constraint requires counting phases, which is not possible. A second difference is that there is no precise threshold establishing the minimal cardinality of event-internal pluralities, in my opinion, and not that n is fixed pragmatically, whether we can count phases or not.

Diminutive pluractional verbs are vague with respect to the minimal amount of phases required. It is possible to make sense of this impossibility of quantifying on phases in two ways, considering a quantitative and an aspectual motivation. If the purpose of decomposition is to get at plurality, the cells that act as local instantiations of the thematic role must be two at the very least. The minimal requirement is related also to the fact that phases cannot be differentiated. However, since phases are not accessible at discourse level, it is not straightforward to prove a case in terms of indistinction. The plurality requirement on the parts of the affected argument may be a consequence of the need to ensure that it should be possible to take away one phase from the plural event and preserve the indistinction of phases, but it also touches the issue of the indeterminacy surrounding the limits of application of the predicates involved. This can be seen as an instance of the phenomenon of vagueness, at the hart of the

⁵ As an aside, note that the fact of taking a cover on the object with more than one cell spares my proposal the problem in which runs Krifka's (1989) analysis of iterative-frequentative. His definition, stated in terms of parts and not of proper parts, applies to 'push a cart' too. A subpart of an event of pushing a cart is an event of pushing the whole cart, whereas a phase, i.e. a subpart, of an event of nibbling a pencil is a biting of a part of a pencil.

sorites paradox. Diminutive pluractional verbs are vague with respect to the number of phases that make up a minimal instance. Suppose we have an event of nibbling. Taking away a phase does not turn what is nibbling into not nibbling, since no one phase can be identified as the subpart of the whole that makes the difference between an event that is nibbling and one that is not nibbling. This is true recursively at each step, hence an event of the internal pluractional type cannot be ‘undone’ by taking away phases. But in the end, when we are left with one phase, it is no longer an event of nibbling. The same reasoning applies if one works in the opposite direction by accumulating phases, with the extra complication of having to start from assuming one little biting event that could candidate to the status of isolated phase of nibbling while in itself it does not constitute an event of nibbling. This is the traditional formulation of the heap paradox. It suggests that if we look at event-internal pluralities as collections of phases, the collection is a heap whose cardinality cannot be defined.

Vagueness can be expressed in aspectual terms. The problem is not just an issue of granularity, i.e. another case of the minimal interval that we need to define in order to preserve homogeneity. Phases naturally lend themselves to the role of minimal units, but they do not correspond to minimal intervals, because divisivity is not met. The property of upward homogeneity holds because it is verified on expansions of events starting from events, and not from phases. Hence, we are already outside the problem of the internal nature of an event that qualifies as internally plural.

3.5 *Diminutive pluractionality and aspect*

In this section, I have discussed a number of features of the behaviour of pluractional verbs that naturally fall under the heading of aspect. I wish to conclude by mentioning also some reasons against considering diminutive pluractionality (just) aspect. A first point is that a marker qualifies as being aspectual if it has aspectual import in a consistent way, but the diminutive form fails to produce systematic modification of telicity. Second, it has been argued in the literature that aspect refers to internal temporal organisation of an event, cf. (Tenny 1989). However, at different points in the discussion, it has appeared that the internal organisation of the pluractional event is of no use for temporal information. This suggests that internal pluractionality marking is not an aspectual phenomenon per se, but that it can have aspectual consequences. These consequences may go beyond the level of *Aktionsart*. For instance, I noted that fragmenting the object perturbs the property of mapping-to-object, thus the visibility of the final boundary may no longer be warranted.

4. *Concluding remarks*

In this paper, I have pursued the idea that event-internal pluractional verbs denote composite single events that result from distributing the predicate on the fragments of one participant, first presented in (Tovena 2007, Tovena and Kihm 2008). I have proposed that event-internal pluractionality grammaticises a local form of number through the part-of relation, where locality has to do with (non-)visibility at discourse level. The linking patterns between verb number morphology and verbal argument structure used by pluractional morphology are the same as described in the literature for case/transitivity and Aktionsart. This opens the possibility of having number marking that can be read in aspectual terms and vice-versa.

Fragmenting perturbs the mapping between event and object, with the immediate consequence that incrementality is disrupted. Incremental themes impose a homomorphism between the mereological structures of objects and events, but a parallel progression along two paths is no longer necessarily found in the pluractional events.

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