

Pluractionality and the unity of the event

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Abstract. This paper exposes shortcomings of an analysis to single event plural verbs (Cusic's event-internal plural verbs) based on temporal discontinuity. It proposes an approach based on the violation of Krifka's property of Mapping-to-SubObject on a theta role. The proposal extends to other cases when we assume that the semantic contribution of pluractional morphology in these verbs is more generally to break correspondences between mereological relations between participants in predication.

1 Introduction

Verbal plurality is often understood as plurality of events that may arise from various sources, e.g. subsequent times, distinct places or participants (Dressler, 1968; Newman, 1980; Cusic, 1981). These sources could be seen as the key in a form of distribution where the event predicate would be the share. The classic formal definition of pluractional verbs (Lasersohn, 1995) is recalled in (1). Whatever key is selected in the sentence, i.e. independently of the *f* considered, the formula enforces plurality of events and *X* is a variable that denotes sets of events. The non-overlap condition specifies the distributive key. Lasersohn also adds that *P*=*V* unless *X* is a plurality of phases—i.e. the elements that constitute the plurality within a single event according to Cusic's (1981) hierarchy, and an additional constraint on minimal cardinality, i.e. *n* must be ≥ 2 , that relies on pragmatic contextual information for fixing the value of *n*.

$$(1) \quad V\text{-PA}(X) \Leftrightarrow \forall e \ e' \in X [P(e) \& \neg f(e) \circ f(e')] \& \text{card}(X) \geq n$$

PA=pluractional affix, *f* is a temporal/spatio-temporal trace function or a thematic role assigned by *V*

Recently, attention has been paid to cases where there are forms of multiplicity that have a source that does not impact on the singularity of the event, and the events involve single participants. In this paper, I pursue an analysis where distribution takes place over the cells of a cover applied to a participant/value relevant for measuring a dimension of the event correlated with its unfolding. I will discuss shortcomings in grounding phases of a discontinuous event on time, and then make a more general point on differentiating between phases and minimal units of an event.

2 Event-internal plurality

Two proposals have been recently put forth to deal with possible forms of event-internal plurality, one seeks to identify phases via their temporal trace (Tatevosov, 2007), the other via their local participants (Tovena, 2007, to app.; Tovena and Kihm, 2008).

Tatevosov has argued that the morpheme *-kala-* in Chuvash (Altaic, Turkic) introduces a form of verb plurality arising from discontinuity of subevents in a single event.¹ This morpheme is analysed as a degree modifier that lowers below standard a contextually determined gradable property of an event predicate.

(2) $\|-kala-\| = \lambda P \lambda e \exists d [F_c(P)(e) = d \wedge d < \text{STANDARD}(F_c)(C)]$
 F_c =variable over degree functions specifying the degree of a gradable property of an event, P =type of event, C =comparison class

Continuity is the property discussed, and F_c in (2) is assigned the function $F_{\text{CONTINUITY}}$ as a value. The standard of comparison for the scale of continuity is the maximal degree, because this is an upper closed scale. In order to define continuity of an event (and lack of), Tatevosov defines the function $\tau^C(e)$, called the COVERING TIME for e , as a temporal trace function that returns the total minimal interval of duration of an event by identifying its initial and final moments. An event e is continuous if all intervals in its covering time are the temporal trace of some subevent of e . It has a degree of continuity which is less than maximal whenever its covering time has at least a gap in it, i.e. a subinterval which is the temporal trace of no subevent of e , cf. (3).

(3) $F_{\text{CONTINUITY}}(P)(e) < 1 \rightarrow \forall e [P(e) \rightarrow \exists t [t < \tau^C(e) \wedge \neg \exists e' [e' < e \wedge t = \tau(e')]]]$

Crucially, the definition of continuity relies on the possibility for $\tau^C(e)$ of identifying the initial and final moments of e . This is quite a standard assumption if one has a continuous event to start with, cf. (Krifka, 1998), and gaps are subsequently added in its trace. The reverse order of action

¹ Tatevosov rejects the label ‘pluractionality’ for characterising the phenomenon he describes. However, the objection he raises concerning the singularity of the participants in the event, applies to event-external pluractionality, and on the contrary, supports a characterisation as event-internal plurality. Another objection he raises is that *-kala-* does not produce the full spectrum of readings typically associated with pluractionality, and the readings mentioned in the paper appear to be all forms of decrease. Note that having a partial spectrum is rather the standard case for an affix, and that the readings *-kala-* produces are typical forms of diminutive event-internal plurality.

is problematic, i.e. identifying the event by taking away gaps in an interval, as discussed below. Assuming a VP modifier status—rather than V modifier—defuses the potential problem of talking of a subevent $e' < e$ in (3) when e is an event with gaps. This is presumably why Tatevosov treats *-kala-* as a VP modifier but he does not provide evidence or explicit motivation for this characterisation. The data show that *-kala-* is an affix that combines with the verb base before perfective affixes and verb inflection are added.

Another way of characterising single events with an internal form of multiplicity has been explored by Tovena in single and joint work, who consider a class of (semi)derived verbs in Italian and French, e.g. It. *tagliuzzare* (cut into many small pieces) Fr. *mordiller* (nibble). The plurality is claimed to arise from distributing over the cells of a cover applied to the object. Two devices are exploited to bring about plurality: i) at least one participant is fragmented via the mass role ${}^M R$ (Landman, 2000), and ii) this role is assigned by an event predicate that denotes in a plural domain.

$$(4) \quad ||tagliuzzare|| = \lambda x \lambda y \lambda e [(\text{TAGLIUZZARE}(e) \& \text{Ag}(e, y) \& \text{Pat}(e, x)) \Leftrightarrow \exists e' (*\text{TAGLIUZZAREPart}(e') \& e = \uparrow e' \& * \text{Ag}(e', y) \& {}^M \text{Pat}(e', x))]$$

Phases are viewed as the reflect of the application of the predicate to the parts of the participant demoted to a sum of parts. These parts work as the distributive key and the predicate is the distributive share. Proper plurality of phases is ensured by the use of a cover necessarily weaker than the cover that has the atom as its unique cell, and the equation $e = \uparrow e'$ links event level and phase level in the representation. The plurality of phases is given an explicit status at event level through groupification.

The verb does not make phases accessible at discourse referent level. Tovena shows that phases cannot be counted, the cardinality of the plurality cannot be compared even when left unspecified, and there are thematic restrictions that do not apply to pluralities of other levels. The unity of the event is not affected, because the plurality of the distributive-key becomes visible only within the event, via the action of the mass role ${}^M R$. This accounts for the connectedness of event-internal plurals noted by Cusic.

The proposal in (4) generalizes by considering property scales measuring an abstract dimension instead of the patient/theme, e.g. the volume of a physical entity, and also scales associated to the event because of implicit arguments. The unfolding of an event is measured by adjacent isomorphic transitions of (an extended version of) the theme along a scale. The scale is related to the event by Krifka's (1998) Movement Relation. The semantic contribution of event-internal pluractional morphology is to disrupt the

correlation between a dynamic predicate and a form of gradability. Fragmenting means to cancel the homomorphism between the mereological structures of scales and events.

Both proposals are about single events that exhibit a form of plurality and describe a situation as non canonical. They share the view that the source of multiplicity is to be sought somewhere in the unfolding of the event, and differ in the conception of plurality invoked.

3 Problems for grounding discontinuity on time

Tatevosov's notion of continuity is problematic. In general terms, total absence of discontinuity—i.e. strict continuity—is not enforced in canonical events described by unmodified predicates. Therefore, in principle, it cannot be taken as a discriminating criterion. Let's call *disc*-V this class of verbs describing discontinuous events. The type of subevents that characterise these verbs are not what gaps are usually thought to be, since they are not accidental breaches in the applicability of the predicate to the interval. They are part of the definition of the event type, and 'lulls' may be a better term for them. Since they are a required component, the trace function applied to the event must return a time interval that contains them too, otherwise the event is not of the *disc*-V type by definition. This trace is the total minimal interval called the covering time by Tatevosov and corresponds to the minimal convex interval which has the whole temporal trace of the V type event as a subinterval. Note that lulls are visible when the event is considered at the standard level of granularity, and are not an effect of zooming in too much.

Once we acknowledge that lulls are definitional for *disc*-V type of events, strictly speaking, there is no temporal discontinuity anymore, hence no source of multiplicity. In this respect, the characterisation of *-kala-* in Chuvash as VP modifier is instrumental, because it allows one to have what looks like a single discontinuous event, but which is not directly defined as one event. The indirect definition as modified event offers an easy way out, in the sense that the original property of event is used to vouch for the composition of all the relevant discontinuous subevents into one event and prevent their being taken as independent. But it also raises the question of why invoking a property that needed to be modified precisely because it was not able to adequately characterise the event under examination. A discontinuous event shows the limits of the enterprise of properly defining/identifying phases by using temporal intervals, which by themselves do not provide event properties.

Furthermore, what said for the event applies to subevents. Either, subevents are of the *disc*-V type and thus contain lulls, which means that *disc*-V events cannot be made of just two *disc*-V subevents, because these subevents themselves must contain lulls. We have a sorites paradox of the heap type here. Or, being continuous subevents, as Tatevosov assumes, they cannot be of *disc*-V type. They actually are of the V type. But this is a way to stipulate that all V-type subevents cannot cluster at one end of the temporal trace of a *disc*-V event. Moreover, lulls cannot last too long lest the connectedness of the event is jeopardised. Something should be said about what prevents discontinuity from disrupting the single event into a collection of (partially realised) events of ploughing (parts of) the same field, in the example discussed by Tatevosov.

4 Grounding discontinuity on a measure of increment

Taking out lulls from the temporal trace of a *kala*-V event gives us the trace of a canonical event of the V type. Lulls should not be defined in direct temporal terms as gaps in the trace of an event. Consider again ploughing the field. If events of the *disc*-V type must have discontinuous subevents, i.e. phases, this means that there must be some subevent(s) in which no part of the field is in a θ relation with the event and the event's temporal progression is not suspended. Lulls are the subintervals whereby the θ role assigned by the *disc*-V to the object is proven not to have the property MSO (mapping-to-subobjects (Krifka, 1998)) exhibited by the corresponding θ' that would be assigned by V to the same entity if the event were realised (or described as realised) in its canonical form.

As said above, events described by event-internal pluractional verbs are perceived as non-canonical instantiations of an event type. The notion of non-canonical/substandard event can be redefined as the case of an event exhibiting localised losses of MSO for a θ role that should have this property, instead of using the problematic notion of continuity. This localised effect is characterised by saying that a *disc*-V event must contain subevents that are V events—in all of which θ satisfies MSO—and subevents that are not, and therefore are lulls. Generalising, i) the θ assigned by the pluractional-V verb to the object is the closure of θ' under sum formation of the object, where θ' is the role assigned by simplex V to the object, and ii) θ' has MSO and MO (mapping-to-object), while θ has not. The mapping must be extended to include measures used in the definition of event incrementality.

Discontinuity comes out from a modification of a property of a θ role instead of using a temporal definition. The multiplicity of phases perceived in the event is anchored in the parts of an entity/value relevant to the conceptualisation of the event and not in its temporal interval, and this is akin to what Tovena and Kihm have proposed. The non-canonical event is characterised indirectly as a modification of the semantic characterisation of the canonical form. This derived semantic characterisation matches the understanding that we are dealing with a class of verbs that consist of morphologically derived forms. The approach defended in this paper provides explicit motivation for the disequation $P \neq V$ that Lasersohn (1995) had to stipulate in his treatment of event-internal pluralities. As we have seen, the nature of the event, i.e. its being non-canonical in a way that allows the expression of a local form of plurality, does not lend itself to a recursive definition, and phases cannot be described by the predicate that describes the event. Implicitly, this can also be seen behind Tatevosov's constraint on continuous subevents. Furthermore, note that the issue of the duration of lulls, but not of their presence, boils down to the general, albeit non-trivial, issue of defining continuity for an event.

The complexity of the issue of the locus of modification highlights the fact that, as we just said, the event property utilised for describing the pluractional event cannot be the same as that used to describe phases, but also that the modification has consequences at various levels. On the one hand, properties of the theta roles assigned by the verb naturally belong to the content of the verb, and altering them is tantamount to modifying the ingredients of the aspectual characterisation of the verb, the so-called lexical or inner aspect. On the other hand, the aspectual properties of the whole VP are affected in turn, and a change in the nature of the event description is the most salient output of the use of a pluractional form. We can add to this discussion two language specific pieces of data from Italian and French, languages that use evaluative affixes to form pluractional verbs of the event-internal type.² First, an analysis as VP modifier is not suitable for Italian and French because affixes can form denominal pluractional verbs, beside deverbal ones, see (5). Hence the impact of the affix must be assessed below VP level.

(5) a. Italian: *sorseggiare* (sip) \leftarrow *sorso_N* (sip)
b. French: *pointiller* (dot) \leftarrow *point_N* (dot)

² This word-formation option is available in other Romance languages, where it appears to be much less productive. Evaluative morphology typically belongs to the nominal domain, but has a variety of uses (Jurafsky, 1996).

Second, the affix can affect the conjugation of the verb in deverbal cases, as shown in (Tovena, 2009). Simplex verb forms may belong to any class of conjugation, whereas the derived pluractional forms all belong to the first class. Evaluative affixes bring about the same effect of normalisation in the nominal domain, where all modified nouns belong to the broadest inflection class, independently of the class of the base.

5 On phases and minimal units

According to Cusic, event-internal pluractionals denote pluralities of phases. Phases are subevents endowed with some form of atomicity that makes it possible to appreciate their multiplicity, but does not warrant their identification. These single events are durative, and Tatevosov and Lasersohn have claimed that they are minimally composed of sets of $n \geq 2$ subevents. But phases cannot be counted, e.g. a claim of victory like *Marie a mordillé plus de Marc* (Mary nibbled more than Marc) cannot be foiled by replying *Non, parce que lui il est plus rapide* (no, because he is faster) with the intention of saying that he gave more little bites in the same time span. It is far from clear that the minimal cardinality of the set of phases can be defined unambiguously for these verbs. Again, the situation hints at a sorites paradox, where the beginning of a sorites series does not coincide with the beginning of a series. There may be a cut-off separating *nibbling* from *biting* when going in this direction—as one may concede that an event of two little bites is still a *nibbling*, yet an event with one is certainly not. There isn't necessarily one when going the other way. A plurality of phases is homogeneous in cumulative terms once we have a point from which to start.

However, the issue is more complex than just having two series with non coinciding beginnings. Questions concerning the beginning of the event surface again when we qualify the units we add. Given what we said on subevents in section 4, only subevents understood as bigger than single phases can be added as units of a series and be properly called subevents of the same type of event. In this respect, event-internal pluractionals are reminiscent of semelfactives, but also are a different case. Let's first recall some claims about semelfactives.

According to Smith (1991), semelfactives, e.g. *jump*, *cough*, are dynamic—as they can occur in the imperative form—and atelic instantaneous—as they combine with punctual adverbs. Their peculiarity is the absence of change. In my opinion, this means that the realisation of the event does not modify the preconditions, and, as a consequence, iteration is possi-

ble without gaps. Rothstein (2004) assumes that semelfactives are event predicates that ‘denote single instances of events usually considered to be activities’. They denote extended events, cf. they combine with duration adverbs, take progressive form and are said to induce the imperfective paradox, as well as ‘single events’, cf. they combine with *at x time* expressions and *in x time*. Next, Rothstein recalls that Smith acknowledges that semelfactive are events conceptualised as instantaneous though they take time to reach a completion in reality. But Rothstein argues that semelfactives denote events that have internal structure—as opposed to achievements, analysed as near-instantaneous changes from $\neg\phi$ to ϕ , and uses the occurrence in the progressive and the imperfective paradox as linguistic evidence for such a structure. She concludes that semelfactives must be telic, interval predicates related to homonymous activity predicates.

The series of movements that must occur as part of an event denoted by a semelfactive, in Rothstein terms, are constitutive of its internal structure. It is a single instantiation of this structure that Rothstein takes as paralleling the minimal parts of an activity in Dowty’s (1979) terms, i.e. the smallest events in *P* that count as events of *P*. The difference with ordinary activities, I suggest, is in the non-arbitrary way of dividing minimal events that is peculiar to semelfactives. We can see activities as characterised by cycles of parts, but in general their cycle does not have a specific first/prominent element, whereas in semelfactives it does.

Rothstein assumes that activities denote in a domain where minimal events are not in an atomic set but in a singular set. On the contrary, in the semelfactive use of a predicate, a natural atomic function pick out the atomic set. The difference is that a singular set contains minimal singular but overlapping entities. Rothstein claims that this means that two minimal events of walking may overlaps but two minimal events of jumping will not. The point about overlapping may mean that the minimal event of a singular set may have structure inside, but that no part in it qualifies as the beginning or the apex of the cycle, contrary to the minimal event in an atomic set. This special role of prominent part in the cycle may be relevant to count units that are viewed as events. The recursion of the distinguished part signals the completion of a cycle, but what precede or follow it qualify as part of the cycle too. The prominent part may act as the identifier for the whole event, as usual with achievements. Since the whole cycle is short, the event may be conceptualised as instantaneous. As an aside, it is an open question whether Rothstein’s analysis can predict that the combination of a semelfactive with an *for x*

time expression results in a ‘reaction time’ reading and not in a loss of telicity, as in *painted the wall for two hours*, and that the combination with an *in x time* expression does not result in a telic planned activity, as *swam in two hours (her usual distance)* according to Dowty (1979).³

The identifying capacity of a minimal unit in an activity is an artefact and cannot be used to count events. The uninterrupted cycle is what we count, leaving aside the important but independent issue of continuity. The combination of having well defined minimal units, which are perceived and characterised as such by a language, and having output conditions that meet input conditions, which amounts to what has been dubbed as absence of change in the literature, are the ingredients for semelfactives. These minimal units are single phases mapped onto events in Cusic’s hierarchy. The activity reading of a semelfactive predicate corresponds to its denoting sums of events, and minimal events can be added one at the time and yield an incremental process. The semel use corresponds to denoting single minimal events. By contrast, event-internal pluractionals share the second ingredient, but crucially differ with respect to the first. Phases may still be viewed as cycles containing a prominent part that makes it possible to see a multitude, but are not mapped onto events, hence cannot be counted. They may be added, and be the witness when moving up a chain structure, but this does not make them minimal units of the plural event, because they do not partake in the same event type.

6 Conclusion

Phases of an event-internal plurality appear as a result of altering a θ relation of an event description in a way that reduces cohesion. More specifically, at least one theta role lacks a property that is found in the description taken as canonical. The loss of MSO has to do with multiplication, hence it is coupled by a loss of MO. The same pattern of modification can be used to create new verbs from nominal bases.

Phases are viewed as the reflect of the application of the predicate to the parts of the participant demoted to a sum that works as the distributive key. This gives them a form of atomicity sufficient for event-internal plurality. But the modification makes the recursive application of the event property impossible, and phases do not qualify as minimal units of the event they are part of.

³ *Knocking at the door* can be a planned act, indeed semelfactives are not just predicates for unintentional physical acts such as *sneezing*.

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