PLURACTIONALITY VS. DISCONTINUITY

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Verbal plurality that includes meanings such as iteration and frequency is commonly thought of as the pluralization of the event argument of a verb. This paper aims at identifying another source of iterativity whereby a sentence refers to a single but temporally discontinuous event. In Chuvash (Altaic, Turkic), this is what happens when the morpheme *-kala-* attaches to VP. I analyze this morpheme as a degree modifier on event predicates indicating that the degree to which a certain event type is realized with respect to a contextually determined gradable property falls below the standard of comparison. If continuity is fixed as a relevant property, the discontinuous interpretation results.

1. Introduction

Verbal plurality comprising iterative, frequentative, and other related meanings is commonly viewed as the pluralization of the time or event argument of a verbal predicate (Lasersohn 1995, Matthewson 2000, Yu 2003, van Geenhoven 2005, a.o.). (1) represents the classic definition in Lasersohn 1995:232:

(1) $V\text{-}PA(X) \Leftrightarrow \forall e,e' \in X[V(e) \land \neg f(e) \otimes f(e')] \land card(X) \geq n$,
      where *f* is a temporal or spatial trace function or a thematic role assigned by V.

This paper aims at showing how the meaning apparently involving multiple times/events can be derived without pluralization. Specifically, I propose that what looks like a plurality of events can in fact be a single, but *discontinuous* event. I will argue that this is exactly what happens in Chuvash (Altaic, Turkic) and provide arguments supporting this claim. Secondly, I will suggest that the discontinuative interpretation can obtain through *degree modification.* In Chuvash, the degree modifier indicates that the degree to which events in the denotation of VP possess a gradable property of continuity falls below the standard of comparison. I will develop a semantic analysis that captures this characteristic as well as a few additional readings induced by the degree modifier.

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2. Repeatedness without distributivity and iteration

To begin with, compare (2a-b) from Chuvash (Altaic, Turkic). (2a) contains a non-derived predicate 'plow a field', while (2b) demonstrates its "iterative" counterpart derived by the -*kala*- morpheme:

(2) a. vaš^ja   uj-a   suxala-r-ě.
        V.   field-DA   plow-PFV-3:SG
        'Vasja plowed a field.'

   b. vaš^ja   uj-a   suxala-*kala*-r-ě.
        V.   field-DA   plow-KALA-PFV-3:SG
        'Vasja plowed a field repeatedly.'

Apparently, (2b) is a genuine instance of pluractionality whereby the verbal predicate in (2b) is derived from that in (2a) by pluralization of its event argument Nevertheless, pluractional analysis of –*kala*- faces a few complications.

First, -*kala*- does not produce the whole range of expected interpretations mentioned in the literature (e.g., Cusic 1981, Lasersohn 1995, Ojeda 1998, Yu 2003, Collins 2005). As Lasersohn (1995:253) notes, pluractionals tend to exhibit distributive readings whereby participants are distributed over events (this reading obtains if f in (1) is a theta role assigned by the verb). However, (2b) is incompatible with the distributive scenario 'Vasja plowed one field after another'.

Secondly, assume that f in (1) is a temporal trace function mapping events onto their running times. Then if -*kala*- in (2b) renders the pluractional operator, the truth conditions of (2b) can be stated as follows:

(3) ‖uj- suxala-*kala*-‖ is true of the set of events X iff for every $e, e' \in$ X
        ‖uj- suxala-‖ holds of e and e', and $\tau(e)$ does not overlap with $\tau(e')$.

But the predicate ‖uj- suxala‖ is quantized and telic (if e is an event in which the field has been plowed, then no proper part of e is an event in which the field has been plowed) and only contains atomic events in its extension (cf. Rothstein's (2004) definition of telicity in terms of atomicity). Constructing a set out of these events will result in the interpretation involving repetitions of Vasja's plowing of the whole field. But the scenario involving repetitions of the whole event with same participant ('Vasja plowed the whole field repeatedly') is inappropriate for (2b) either. The only possible scenario involves plowing the same field one part after another, making pauses in between, and this fact receives no explanation on the pluractional analysis.

Thirdly, -*kala*- exhibits a number of additional interpretations which true pluractional markers are not expected to possess. Different possibilities are illustrated in (4a-c):

(4) a. vɨl   jurla-*kala*-r-č.
       he   sing-KALA-PFV-3:SG
       'He sang for a while.'

   b. mašʲa koftă-na   šʲix-*kele*-r-č.
       M.   jacket-DA   knit-KALA-PFV-3:SG
       'Masha knitted a jacket slowly.'

   c. jɨvašʲ šan-*kala*-r-č.
       tree   whither-KALA-PFV-3:SG
       'The tree has partly withered.'

Evidently, none of (4a-c) involves pluractionality at all. There is no obvious way of deriving these interpretations under the pluractional analysis, and some other account for the distribution of *-kala-* is called for.

3.   Degree modification and discontinuity

Intuitively, what all the readings in (3)-(4) have in common is the fact that the event referred to deviates from the standard for this event type. In other words, *-kala-* indicates that the degree to which an event possesses a certain *gradable property* (e.g. DURATION in (4a), VELOCITY in (4b), etc.) falls below the standard of comparison. (2b), I suggest, refers to a single, but *discontinuous* event, i.e., to an event with the degree of CONTINUITY below the standard for plowing events.

Formally, I propose that *-kala-* can be uniformly analyzed in terms of *degree restriction:*

(5) $\|$-*kala-* $\| = \lambda P \lambda e \exists d[F_c(P)(e)=d \land d < $ STANDARD$(F_c)(C)]$

$\|$-*kala-* $\|$, a function of the adverbial type $<<s,t><s,t>>$, where s is the type of events, introduces a free variable F_c over degree functions (of type $<<s,t>, <s,d>>$, where d is the type of degrees). F_c specifies the degree d to which an event e of the type P possesses a relevant gradable property (cf. Piñon's (2005) analysis of adverbs of completion). The value of F_c is fixed contextually. Also, $\|$-*kala-* $\|$ ensures that d is less than the standard of comparison determined by the STANDARD relation for a given degree function with respect to the comparison class. In (3), C is a free variable over comparison classes whose value is fixed contextually as well.

If $\|$-kala=$\|$ is analyzed as a VP modifier, the following derivation obtains (for simplicity, I represent the internal argument as an individual constant):

(6)   a. $\| [_V \text{ plow}] \| = \lambda y \lambda e[\text{plow}'(e) \wedge \text{Theme}(y)(e)]$

    b. $\| [_{VP} \text{ plow the field }] \| = \lambda e[\text{plow}'(e) \wedge \text{Theme}(\text{the.field}')(e)]$

    c. $\| \text{-kala-} [_{VP} \text{ plow the field}] \| = \lambda e \exists d[F_c(\lambda e'[\text{plow}'(e) \wedge$
              $\text{Theme}(\text{the.field}')(e')])(e)=d \wedge d < \text{STANDARD}(F_c)(C)]$

The event predicate in (6c) denotes a set of plowing events in which the field is the Theme; events of plowing the field possess a contextually fixed gradable property F_C to the degree d, and d falls below the standard of comparison. The event predicate in (6c), then, combines with the Agent relation via the Event Identification (Kratzer 1996).

    I suggest that in the appropriate context, the free variable F_c can be assigned $F_{\text{CONTINUITY}}$ function as a value. $F_{\text{CONTINUITY}}$ takes an event of a specific event type and returns a degree on the $S_{\text{CONTINUITY}}$ scale associated with that function. (Other possible values of F_c responsible for the readings in (4) are functions that measure the duration of an event, its «speed», the degree of affectedness of the participant, etc.)

    Since $S_{\text{CONTINUITY}}$ is an upper closed scale (that is, it consists of a set of degrees isomorphic to the interval]0,1], see Kennedy and McNally (2005)), the standard of comparison is its maximal degree (Kennedy 2007):

(7) $\text{STANDARD}(F_{\text{CONTINUITY}})(C) = \max(S_{\text{CONTINUITY}})$

    The *kala*-predicate in (2b) can now be represented as in (6) (leaving out the external argument). It holds of a plowing event as long as it has less than maximal degree of continuity.

(8) $\lambda e \exists d[F_{\text{CONTINUITY}}(\lambda e'[\text{plow}'(e) \wedge \text{Theme}(\text{the.field}')(e)'])(e)=d \wedge d < \max(S_{\text{CONTINUITY}})]$

Given (8), we have to provide a definition of maximally continuous events. Let $\tau^C(e)$ be a *covering time* for e, that is, the total minimal interval which includes the initial and final moments of e. The event e, then, is maximally continuous iff for any subinterval of $\tau^C(e)$ there is some part of e that occurs at this subinterval (= there are no temporal gaps in $\tau^C(e)$, i.e., times, at which no part of e occurs):

(9) $F_{\text{CONTINUITY}}(P)(e)=1 = \max(S_{\text{CONTINUITY}})$ iff $\forall e [P(e) \rightarrow \forall t [t < \tau^C(e) \rightarrow$
    $\exists e' [e' < e \wedge t = \tau(e')]]]$,
    where $\tau(e)$ is a running time, as before, and $\tau^C(e)$ is a covering time

By (9), if the degree of continuity of an event is less than maximal, there is at least one temporal gap, a time within its covering time at which no subevent occurs:

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

  Discontinuous interpretation of (2b) is therefore explained. Crucially, unlike pluractional markers, *-kala-* does not create pluralities of events and/or times out of the extension of a predicate it applies to. Since the denotation of the VP || plow the field || only contains events in which ||the field||, a particular individual, has been plowed, so does the *-kala*-predicate || *-kala-* [plow the field] ||. Not taking into account (dis)continuity, the predicate denoted by VP || plow the field ||, (2a), and that the derived *kala*-predicate || *-kala-* [plow the field] ||, (2b), have the same events in their denotation. That is the reason why (2b) does not allow interpretations 'Vasja plowed one field after another' and 'Vasja plowed the whole field repeatedly' — simply because these interpretations do not show up with (2a). Therefore, difficulties for the pluractional analysis mentioned in Section 2 do not emerge under the degree modifier analysis.

  The 'part-by-part' interpretation of (2b) is accounted for as well. Since verbs like 'plow' take the Incremental Theme argument (Krifka 1992, 1998), the relation between individuals and events in their denotation satisfies Mapping to subobjects (MSO) property:

(11) $\text{MSO}(R) \leftrightarrow \forall x,e,e'\ [R(x)(e) \wedge e' < e \rightarrow \exists x'\ [x' < x \wedge R(x')(e')]]$.

  According to (11), every subevent of an event in which the field has been plowed is mapped onto some part of the field. Moreover, MSO as it stands in (11) holds regardless of whether an event has temporal gaps. As a result, Due to MSO, if we take any temporally continuous subevent of the overall discontinuous plowing event, there will be some part of the field that has been plowed in that subevent. What we finally get is exactly the interpretation in (2b): Vasja plowed one part of the field after another taking pauses in the course of the event.

4. Conclusion

Data from Chuvash provide evidence that what is commonly subsumed under the notion of 'event plurality' may originate from different sources. The most widely recognized option is pluractionality, attested in a variety of genetically unrelated

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[1] I am grateful to the anonymous AC2007 reviewer who encouraged me to re-think an earlier version of the definition. One more way to deal with continuity would be by comparing the *length* of the covering time $\tau^{C}(e)$ and running time $\tau(e)$. If the two are identical, *e* is maximally continuous, otherwise it is not.

languages. Another option, discussed in this paper, is the degree restriction yielding the discontinuative interpretation if an event is measured against the continuity scale. Discontinuity is fundamentally different from the pluractionality in that it does not pluralize events, only creating temporal gaps in them.

Acknowledgements

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