

Two types of pluractionality within Kannada verbal reduplication

SADHWI SRINIVAS¹, *Johns Hopkins University*

KYLE RAWLINS², *Johns Hopkins University*

ABSTRACT

Motivated by certain distributional and interpretive contrasts between Kannada reduplicated verbs carrying perfective *vs.* imperfective aspect-marking, here we pursue a view of these two constructions as instantiating two types of cross-linguistically attested pluractionalities — namely, event-external and event-internal pluractionality respectively. Such a characterization of Kannada reduplicated verbs allows us to borrow into their analysis several aspects of existing proposals for event-external and event-internal pluractionality, which in turn enables natural explanations for (many of) their distributional idiosyncracies.

1 Introduction

The term *pluractionality* (Newman 1980) refers to plurality within the verbal domain, indicating the presence of more than one *event* — much like its analogue in the nominal domain indicating the presence of more than one *object*. Pluractionality is often expressed by means of special morphological marking on the verb. Crosslinguistically, a particularly common way to do so is by reduplication of the verbal predicate (e.g., Wood 2007). This paper too focuses on the phenomenon of verbal reduplication, specifically in the South Asian, Dravidian language, Kannada. Some initial examples of Kannada verbal reduplication are provided in (1)–(2), with the reduplicated constituents highlighted in bold. In (1), it is the event of dribbling-the-ball that is pluralized, with the many instances of dribbling occurring simultaneously with the arriving event. By contrast, (2) has an interpretation where it is the compound event of dribbling-the-ball followed by returning that is repeated again and again.

- (1) HuDuga chenD(u)-anna **chuTuk.taa-chuTuk.taa** banda.
boy ball-ACC dribble.IMPF-dribble.IMPF come.PAST.3.SG.M
“The boy arrived while (constantly) dribbling the ball.”
- (2) HuDuga chenD(u)-anna **chuTuk.i-chuTuk.i** banda.
boy ball-ACC dribble.PFV-dribble.PFV come.PAST.3.SG.M
“Again and again, the boy dribbled the ball (and returned).”

The most salient superficial difference between the two examples above is with respect to the marking of aspect on the reduplicated verbal constituent: while in (2), each half of the reduplicated verb carries perfective aspect marking (henceforth: PFV-reduplication), the corresponding constituent in (1) carries imperfective marking (henceforth: IMPF-reduplication). The goal of this paper is to demonstrate that the two types of Kannada reduplicated verbs distinguished by aspect marking in fact correspond to two different types of cross-linguistically attested event pluractionalities. In particular, the perfective marked reduplicated verb will be shown to instantiate *event-external pluractionality*, while the imperfective-marked reduplication instantiates *event-internal pluractionality* (e.g., Cusic 1981, Wood 2007). Such a characterization allows us to adopt important aspects of existing analyses for event-external and event-internal pluralities from the semantics literature, which then help to make sense of several distributional patterns associated with these items.

In service of this goal, the current paper is structured as follows. In Section 2, we start by introducing the Kannada verbal reduplication data in detail. Specifically, we will identify some

¹sadhwi@gmail.com

²kgr@jhu.edu

puzzling distributive and interpretive contrasts between the IMPF- *vs.* PFV-reduplicated verbs, the reasons for which will not be immediately obvious. In an effort to resolve these puzzles, Section 3 suggests mapping the two types of Kannada reduplicated verbs (distinguished by aspect) to two cross-linguistically attested types of event pluralities. Such mapping is supported by independent diagnostics proposed in the pluractionality literature, unrelated to the Kannada puzzles themselves. After establishing this mapping, Section 3 further shows how adopting existing analyses of event-internal and event-external pluractionalities helps resolve the puzzles from Section 2. Next, Section 4 lays out some open issues needing further investigation. Section 5 summarizes and concludes.

2 Kannada verbal reduplication

2.1 Core data

Kannada productively allows reduplication of the verbal predicate. Instances of verbal reduplication can be intuitively understood to convey repetition of the event denoted by the reduplicated verb: see (3), an elevated intensity of the event: see (4), continuity/ durativity of actions: see (5), or some combination of these aspects of meaning.

- (3) Magu manga-nna **nooD.i-nooD.i** bartittu.
 child monkey-ACC see.PFV-see.PFV returned
 “**Again and again**, the child saw the monkey and returned.”
- (4) Beesige poorti homework **maaD.i-maaD.i** magu-(vi)ge sust(u).aaytu.
 summer full homework do.PFV-do.PFV child-DAT got.tired
 “The child got tired **relentlessly (and repeatedly)** doing his homework over the summer.”
- (5) Magu kathe-anna **keeL.taa-keeL.taa** uuTa maaDtu.
 child story-ACC hear.IMPF-hear.IMPF food eat.PAST.3SG.NEU
 “The child ate his food while listening to a story (**all the while**).”

Common to all instances of verbal reduplication in the language is the fact that the reduplicated verb can only carry aspectual marking (perfective or imperfective), but not tense marking. Consequently, tense must be indicated on a separate element in the utterance containing the reduplicated verb. In (3)-(5) above, as well as in (1)-(2) from Section 1, the tense carrying element is a separate lexical verb following the reduplicated verbal constituent (e.g., *come*, *get tired*, *eat food*). In other words, the reduplicated verbal constituent in these examples appears as part of a *serial verb construction* (cf. Jayaseelan 2004).³

The tense-carrying element in constructions involving reduplicated verbs may also sometimes take the form of a semantically bleached ‘non-lexical’, aspectual light verb, as in (6). The light verb

³Serial verb constructions like the ones emphasized in bold in (i)-(ii) below are a common occurrence in Kannada, with or without the presence of a reduplicated verb (all the examples in the main text have grammatical, non-reduplicated counterparts). These constructions denote composite events, expressed by successively occurring lexical verb phrases — which Jayaseelan (2004) argues to be instances of syntactic adjunction, instead of regular conjunction. As seen in (i)-(ii), only the final verb in the sequence is inflected both for tense and aspect, while the non-final verbs may only be inflected for aspect. At least one event argument (usually, the Agent) is shared between the events comprising the serial verb construction.

- (i) Naanu avara mane-ge **hoogi bande**.
 I.NOM their house-to go.PRF came
 “I went to their house and came back.”
- (ii) Naanu **TV nooD-ta uuTa maaDide**.
 I.NOM TV see-IMPF food did
 “I ate my food while watching TV.”

iDu ('keep') in (6) does not contribute any lexical meaning akin to ditransitive verb *keep*; it only reinforces perfective aspect.

- (6) Naanu manga-nna **nooD.i-nooD.i** iTTe.
 I monkey-ACC see.PFV-see.PFV kept(Light verb).1.SG
 "I saw the monkey again and again."

What we have noted so far then is that the reduplicated verbal element can indicate aspect but not tense, and must therefore appear with another independent tense-denoting element. However, the actual distribution of Kannada reduplicated verbs is somewhat more constrained than what is suggested by this generalization as stated. These constraints are discussed in the following subsection.

2.2 Some puzzles

Both IMPF- and PFV-reduplicated verbs can most productively appear only within serial verb constructions, where the tense carrying element is a second lexical verb. Outside serial verb constructions, the distribution of these items is significantly more limited. First, note that neither type of reduplicated verb can grammatically appear with a tense carrying copula, as seen in (7):

- (7) a. *huDuga manga-nna **nooD.taa-nooD.taa** idda.
 boy monkey-ACC see.IMPF-see.IMPF COP.PAST.3.SG.M
 "The boy looked at the monkey constantly."
 b. *huDuga manga-nna **nooD.i-nooD.i** idda.
 boy monkey-ACC see.PFV-see.PFV COP.PAST.3.SG.M
 "Again and again, the boy saw the monkey."

If all that is required to license reduplicated verbs is a co-occurring element that can carry tense, the distributional gap in (7) is quite puzzling. Moreover, there is no general restriction on the non-reduplicated versions of the verbal predicates in (7) appearing with the copula; see (8) below, which makes such a gap all the more bewildering. This forms our first puzzle: **Why can't reduplicated verbs appear with a tense-denoting copular element?**

- (8) a. huDuga manga-nna nooD.taa idda.
 boy monkey-ACC see.IMPF COP.PAST.3.SG.M
 "The boy was looking at the monkey."
 b. huDuga manga-nna nooD(.i).idda.
 boy monkey-ACC see.PFV.COP.PAST.3.SG.M
 "The boy had seen the monkey."

The distribution of IMPF-reduplication is further restricted when compared to PFV-reduplication. As already seen in (6), the PFV-reduplicated verb can appear outside of serial verb constructions, where the tensed element is not a lexical verb but an aspectual light verb — but the IMPF-reduplicated verb cannot do so; see (9). The latter *must* appear with a tensed lexical verb as part of a serial verb construction. This raises a second puzzle: **Why is PFV-reduplication able to appear as the only lexical event predicate within a sentence (where tense is carried by an aspectual light verb), but not IMPF-reduplication?**⁴

⁴Moreover, the tense-carrying lexical verb that co-occurs with the IMPF-reduplicated verb must preferably denote a different lexical predicate than the reduplicated one. An utterance like in (i) sounds quite unnatural. That being said, given the analysis to be developed in Section 3.1 for IMPF-reduplication, we would have to say that the oddness in (i) is due to considerations of manner and redundancy, and not because it is formally disallowed *per se*.

- (i) *Magu **malag.taa-malag.taa** malagitu.
 child sleep.IMPF-sleep.IMPF sleep.PAST.3.SG.NEU
 "The child fell asleep while constantly sleeping."

- (9) *huDuga manga-nna **nooD.taa-nooD.taa** iTTa.
 boy monkey-ACC see.IMPF-see.IMPF kept.3.SG.M
 “The boy kept constantly looking at the monkey.”

One main goal of the analysis of IMPF- and PFV-reduplication to be developed in Section 3 is to find a satisfactory resolution to these two puzzles. As we will see, the view that we suggest wherein PFV-reduplication and IMPF-reduplication are claimed to instantiate event-internal and event-external pluractionality respectively will get us purchase on several aspects of these puzzles — though, not all. (The issues that remain open will be explicitly described in Section 4.)

3 Two types of pluractionalities distinguished by aspect

In this section, we demonstrate that the two types of aspect-marking on Kannada reduplicated verbs correspond to two different, cross-linguistically well-attested types of event pluralities. Using a number of standard diagnostics from Henderson (2012), IMPF-reduplication will be shown to instantiate semantic properties characteristic of event-internal pluractionals across languages, while PFV-reduplication patterns with event-external pluractionals. For each type of pluractional, we adapt a standard analysis from the literature, and show how this can help us explain their distributional idiosyncrasies as noted in Section 2. In particular, the analyses we will build on are close variants of what is proposed in Henderson (2012), and closely related to the proposals in Balusu (2011), Balusu and Jayaseelan (2013) (for event-internal pluractionality), and Lasersohn (1995) (for event-external pluractionality).

3.1 IMPF-reduplication as event-internal pluractionality

Section 3.1.1 presents three diagnostics from Henderson (2012) that establish the feasibility of viewing Kannada IMPF-reduplication as an instance of event-internal pluractionality. Following this, Section 3.1.2 presents a formal analysis building on Henderson (2012).

3.1.1 Diagnostics

1. (**Sensitivity to lexical aspect.**) Kannada IMPF-reduplication patterns with event-internal pluractionals in its sensitivity to the lexical aspect (*aktionsart*) of the verbal predicate to which it applies. IMPF-reduplication is most readily compatible with with semelfactives and activity predicates: see (10) and (11) respectively for examples. These types of predicates do not lead to any ‘linguistically relevant change’ (cf. Henderson 2012), or change that results in a different end state than what we began with.

- (10) Ramya baagilu **baDii.taa-baDii.taa** nanna hesaru karedaLu.
 Ramya door knock.IMPF-knock.IMPF my name called.3.SG.F
 “Ramya called my name while constantly knocking on the door.”

- (11) Vibha **naDii.taa-naDii.taa** haaDu haaDidaLu.
 Vibha walk.IMPF-walk.IMPF song sang.3.SG.F
 “Vibha sang a song while she was walking.”

With achievements and accomplishment predicates, IMPF-reduplication forces an interpretation wherein the predicates are coerced to denote non-culminating events. For example, in (12), Shweta may not have finished running a mile at the time that she got tired from it.

- (12) Shweta ondu maili **ooD.taa-ooD.taa** sustaadaLu.
 Shweta one mile run.IMPF-run.IMPF got.tired.3.SG.F
 “Shweta got tired while running a mile.”
 ⇒ Shweta may not have finished running a mile.

2. (**Single occasion readings with contiguous repetitions.**) Repetitions of the event denoted by the Kannada IMPF-reduplicated predicate are necessarily restricted to a single occasion. Moreover, these repetitions are understood as being closely-spaced or nearly contiguous. In both these aspects, Kannada IMPF-reduplication patterns with event-internal pluractionals cross-linguistically. An example of this is shown in (13), where Fatima is understood to have participated in several closely-occurring instances of ‘seed throwing’ while involved in a single occasion of ‘walking around the garden’.

- (13) Fatima beeja **esii.taa-esii.taa** tooTa-da sutta naDedaLu.
 Fatima seed throw.IMPF-throw.IMPF garden-GEN around walked.3.SG.F
 “Fatima walked around the garden while throwing seeds (into the soil, repeatedly).”

3. (**Opaqueness to distributivity.**) When the IMPF-reduplicated predicate co-occurs with a plural subject, each individual in the plural subject denotation is understood to have participated in a plural sub-event. In other words, it is not possible to distribute parts of the plural event denoted by IMPF-reduplication over individuals in the subject denotation. Once again, this is similar to how event-internal pluractionals behave across languages. An instance of this is shown in (14). In the most natural interpretation of (14), each child is likely to have banged on the door multiple times.

- (14) MakkaLu baagilu **baDii.taa-baDii.taa** kirchidaru.
 children door knock.IMPF-knock.IMPF shouted.3.PL
 “The kids shouted while constantly banging on the door.”

On the basis of these diagnostics, we conclude that IMPF-reduplication does indeed behave like event-internal pluractionals attested across languages. This insight allows us to adopt several parts of previously proposed analyses for event-internal pluractionals to explain the behavior of Kannada IMPF-reduplicated predicates.

3.1.2 Analysis

Let us consider the following working example in (15) in order to understand the analysis we propose in this section for Kannada IMPF-reduplication. Relevant aspects of the structure for the serial verb construction — which is a necessary ingredient of utterances involving IMPF-reduplication, as per the descriptive generalization from Section 2 — are adapted from Jayaseelan’s (2004) proposal for analogous constructions in Malayalam; these aspects are explicitly noted as and where necessary.

- (15) huDuga manga-nna **nooD.taa-nooD.taa** atta.
 boy monkey-ACC see.IMPF-see.IMPF cried.3.SG.M
 “The boy cried while (constantly) looking at the monkey.”

The current analysis for IMPF-reduplication draws upon two ideas in the literature on event plurality. First, we more or less adopt the formal notation in Henderson (2012) in providing the formal semantic entry for the (covert) event-internal pluractional operator whose presence is indicated by the overt reduplication morphology. However, we differ from Henderson’s proposal in assuming that the

individual sub-events comprising the plural event denoted by the Kannada IMPF-reduplicated verb must be distributed over the temporal trace of an independent event that is **(i)** of a qualitatively different type from the plural, reduplicated event (following Lasersohn 1995), and **(ii)** associated with different finiteness properties compared to the reduplicated event (following Balusu 2011, Balusu and Jayaseelan 2013).

In particular, we propose that IMPF-reduplication indicates the presence of a covert plural distributivity operator D_{EI} , defined as below:

$$(16) \quad \llbracket D_{EI} \rrbracket = \lambda P_{\langle v,t \rangle} . \lambda Q_{\langle v,t \rangle} . \lambda e_v . \exists \pi . [Q(e) \wedge \text{Part}(\pi, \tau(e)) \\ \wedge \forall t \in \pi . [\exists e' . [P(e') \wedge \tau(e') = t \wedge \epsilon(\tau(e))(t)]]]$$

Paraphrasing, D_{EI} selects two event property arguments P and Q . P corresponds to the reduplicated plural event predicate, while Q represents the type of a finite ‘container’ event e over which the individual P -events are distributed. The container event e has temporal trace $\tau(e)$, and is associated with a non-trivial temporal partition π such that each time slice in π completely overlaps with an individual P -event e' . The set of P -events forms the event plurality, *internal* to the singular container event Q . Following Henderson’s (2012) notation, the condition $\epsilon(\tau(e))(t)$ states that each time interval t over which the individual sub-events span are short compared to the temporal trace of the container event e . This situation is depicted in Figure 1:

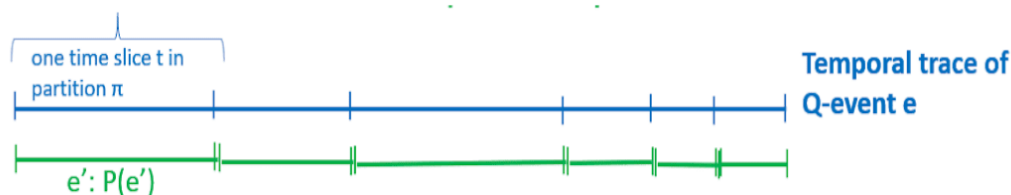


Figure 1: Schematic depicting the event-internal pluractionality instantiated by Kannada IMPF-reduplication. The Q -event forms the sorting key, over whose time slices the individual P -events making up the event plurality are distributed.

The main difference between (16) and the entry for event-internal pluractionality (in Kaqchikel, a Mayan language) proposed by Henderson (2012) is that the latter selects only one event property argument (P) corresponding to the individual sub-events of the ‘container’ plural event. In Henderson’s proposal, the ‘container’ event is not of a separate type Q . Instead, it is construed as a mass-like P event that differs from its sub-events (of the same type) merely with respect to their temporal traces — while sharing all other trace functions (e.g., spatial) and thematic roles. In sharp contrast to this, (16) takes the container event to be of a different type altogether (Q), where it only shares with the contained P events its spatial trace and a part of its temporal trace, and its Agent argument; but other event arguments may vary independently. In other words, while Henderson’s event-internal pluractionality operator expresses plurality internal to a single ‘atomic’ event (P), D_{EI} expresses plurality internal to a compound event ($P + Q$). The qualitative difference between the type of the larger event Q and the smaller sub-events P enforced by (16) may be understood, in a sense, as the realization of Lasersohn’s (1995) condition on event-internal pluractionality that the larger event that contains smaller sub-events (sorting key) is not the same as the sub-events that get distributed (distributive share).⁵

⁵But why is there such a difference between the two analyses — the one we have proposed here for Kannada, and the one for Kaqchikel defended by Henderson (2012) — if both are intended to represent the same type of meaning,

A different way to express what is going on in (16) is by adopting the terminology from Choe (1987), according to which the reduplicated event predicate P is the *distributive share* that gets distributed over the time slices contained within the non-trivial temporal partition spanning the temporal trace of the Q -event, referred to as the *sorting key*. Such terminology involving distributive shares and sorting keys is usually adopted in the literature on event distributivity, where some argument of the event is understood to be in a distributive relationship with another aspect of the event: such as, its temporal or spatial trace, or another one of its argument (Balusu and Jayaseelan 2013, Balusu 2006). For instance, Balusu (2006) analyzes numeral reduplication in Telugu as an instance of distributivity, whereby the reduplicated element instantiates a distributive operator whose sorting key may be the temporal or spatial trace of the event, or even the participants involved in the event, while what is shared over the sorting key are the individual entities denoted by the reduplicated numeral constituent.

The difference between this case of numeral reduplication and the examples of interest here which consist of verbal reduplication is merely that the distributive share is no longer an entity, but an event instead. In fact, such an analysis has also been extended to reduplicated verbs in Telugu by Balusu (2011). In doing so, Balusu claims that the share and the key must be associated with different finiteness properties. Specifically, the distributive share must be an atelic, non-finite event without a fixed end-point, while the key must be a telic event with a fixed endpoint. The definition in (16) is consistent with this stipulation, given that the key and share are represented by two independent event predicates Q and P respectively.⁶

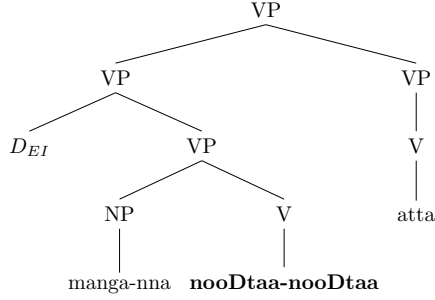
With this discussion in place, let us now see how the presence of the event-internal pluractional operator defined as in (16) leads to the expected interpretation of (15). The LF-structure of this utterance is depicted in (17), where D_{EI} is assumed to scope immediately above the reduplicated verbal constituent, but below the finite verb within the serial verb construction — i.e., *internal* to the compound event denoted by the serial verb construction. The serial verb construction is represented as a VP-adjunction structure, following Jayaseelan (2004).⁷

namely, event-internal pluractionality? Put differently, are we to understand that Lasersohn’s characterization of the distributive share being qualitatively different from the sorting key need not hold across all languages instantiating event-internal pluractionality? We tentatively suggest here that is indeed so, that whether or not such qualitative difference holds is a language-specific parameter. Instead, what primarily characterizes event-internal pluractionality is the property that the sub-events making up the plural event must be clustered together in time, either because of being distributed over (and therefore internal to) a singular event of a different kind (as assumed in this paper), or an event of the same kind (as in Henderson 2012).

⁶ Our definition of the event-internal pluractional operator D_{EI} as one that directly encodes distributivity leads to the question of whether D_{EI} is truly to be classified as a pluractional, or whether a construal in terms of distributivity alone suffices. This dilemma is not specific to Kannada alone, but discussed in Hendersen (2019) as a question that can be tricky to answer in all expressions across languages where distributivity is marked on the verbal element—since an event that distributed over some sorting key necessarily involves a plurality of distributed sub-events. As such, Henderson (2019) claims that “distributivity marking on verbs provides a true edge case between pluractionality and distributivity”. That being said, Henderson does suggest some ways of separating true cases of pluractionality from distributivity. For instance, it is not possible to reduplicate stative predicates (like *know Kannada*) using IMPF-reduplication (or PFV-reduplication) in Kannada. Such resistance towards applying to stative predicates is noted by Henderson as being a property pluractionals (but not purely distributive events) often have.

⁷There is one difference between (17) and the proposal in Jayaseelan (2004). In Jayaseelan’s proposal, the constituent adjoined to the outer (finite) VP is not a VP as indicated in (17), but a TP instead. The reason for this, as he notes, is because some languages allow variable subjects/agents for each event making up the serial verb construction. For simplicity, and additionally because such agent-variability seems generally disallowed in Kannada, I assume in the current discussion that the adjoined element is a VP instead.

(17)



We assume the following standard lexical entries for the nominal and verbal elements in (17). All verbal predicates are event properties, while nominal predicates are assumed to denote definite individuals for simplicity. Note that the reduplicated predicate receives the same denotation as a non-reduplicated predicate under this analysis; the logical consequence of reduplication is only the presence of the covert operator D_{EI} .

$$(18) \quad \llbracket \mathbf{manga-nna} \rrbracket = \iota x.monkey(x)$$

$$(19) \quad \llbracket \mathbf{nooDtaa-nooDtaa} \rrbracket = \lambda x.\lambda e_v.see(x)(e)$$

$$(20) \quad \llbracket \mathbf{atta} \rrbracket = \lambda e_v.cry(e)$$

(18) and (19) first combine via function application to lead to the event property in (21):

$$(21) \quad \llbracket \mathbf{nooDtaa-nooDtaa} \rrbracket(\llbracket \mathbf{manga-nna} \rrbracket) = \lambda e.see(\iota x.monkey(x))(e)$$

The resulting event property in (21) forms the first argument (distributive share) to D_{EI} . Their composition leads to the denotation in (22), which then combines with the second event property (i.e., the Q -event or the sorting key from the discussion above), leading to the final denotation in (23). Informally, (23) is an event property verified by an event e that is a crying event, which is associated with a non-trivial temporal partition such that each element of the partition also contains an event e' of looking at a monkey.

$$(22) \quad \llbracket D_{EI} \rrbracket(\llbracket \mathbf{manga-nna nooDtaa-nooDtaa} \rrbracket) = \lambda Q_{(v,t)}.\lambda e_v.\exists \pi.[Q(e) \wedge \text{Part}(\pi, \tau(e)) \wedge \forall t \in \pi. [\exists e'. [see(\iota x.monkey(x))(e') \wedge \tau(e') = t \wedge \epsilon(\tau(e))(t)]]]]$$

$$(23) \quad \llbracket D_{EI}(\mathbf{manga-nna nooDtaa-nooDtaa}) \rrbracket(\llbracket \mathbf{atta} \rrbracket) = \lambda e_v.\exists \pi.[cry(e) \wedge \text{Part}(\pi, \tau(e)) \wedge \forall t \in \pi. [\exists e'. [see(\iota x.monkey(x))(e') \wedge \tau(e') = t \wedge \epsilon(\tau(e))(t)]]]]$$

The denotation in (23) aligns with our intuitive assessment of the utterance in (15), and also predicts its interpretive properties. Since the crying event is a singular event that spans a finite duration of contiguous time, it is understood that its partitions are contiguous as well, and further that the sub-events of looking at the monkey contained in these partitions are also contiguous. Additionally, given that the plurality of (looking-at-the-monkey) events is contained within the crying event, any individual agent participating in the crying event is also understood to have participated in the plurality of sub-events. Recall that these were properties of IMPF-reduplication that we identified in Section 3.1.1 (which served as diagnostics for classifying Kannada IMPF-reduplication as an instance of event-internal pluractionality).

Moreover, given the analysis sketched above, we are now in a position to explain why Kannada IMPF-reduplication is limited to occurring within serial verb constructions (as we noted in Section 2): where the tense carrying element must necessarily be a second lexical event predicate, instead of a semantically bleached light verb or a copular element. The reason is simple: the event-internal pluractional operator D_{EI} within these utterances selects two different lexical event properties (P

and Q). If a second event property is not available (as is the case outside of serial verbs), then this simply leads to compositional failure!

In summary: in this section, we have proposed that the IMPF-reduplicated verbal predicate in Kannada corresponds to an underlying, low-scoping, event-internal pluractional operator. The semantics of the operator necessarily constrains its occurrences to serial verb constructions in the language.

3.2 PFV-reduplication as event-external pluractionality

This section is structured parallelly to Section 3.1, in that we first establish the feasibility of the view that PFV-reduplication in Kannada instantiates event-external pluractionality (in Section 3.2.1), and then develop an analysis based on this insight that explains its distributional and interpretive properties (Section 3.2.2).

3.2.1 Diagnostics

Below, I discuss four diagnostics from Henderson (2012) to establish PFV-reduplication as instances of event-external pluractionality. We will find that these diagnostics are essentially inverses of those used in Section 3.1.1 for event-internal pluractionality.

1. **(No sensitivity to lexical aspect.)** Kannada PFV-reduplication, unlike its imperfective counterpart, is not picky about the lexical aspect of the reduplicated verb. (24)-(27) below depict examples of PFV-reduplication with verbs associated with different lexical aspects. Only stative predicates are not allowed to reduplicated (cf. footnote 6). Such insensitivity to lexical aspect is a characteristic property of event-external pluractionals across languages.

- (24) Shyaama **kemm.i-kemm.i** iTTa.
 Shyaama cough.PFV-cough.PFV kept.3.SG.M(light-verb)
 “Shyaama coughed again and again.”
- (25) Shyaama **ooD.i-ooD.i** iTTa.
 Shyaama run.PFV-run.PFV kept.3.SG.M(light-verb)
 Shyaama ran again and again/constantly.
- (26) Rekha makkaL-anna shaale-ge **biTT.u-biTT.u** bandaLu.
 Rekha children-ACC school-DAT leave.PRF-leave.PRF came.3.SG.F
 “Again and again, Rekha dropped the children off at school.”
- (27) Hari mane **kaTT.i-kaTT.i** iTTa.
 Hari house build.PFV-build.PFV kept.3.SG.M(light-verb)
 “Hari kept building houses over and over.”

2. **(No restriction to single occasion or contiguous sub-events.)** A second property that PFV-reduplication shares with event-external pluractionals cross-linguistically is that the events that compose the plurality are not restricted to a single occasion. The component events may further be separated by variable stretches of downtime between them.

- (28) Vibha beesige poorti bhelpuri **tind.u-tind.u** iTTaLu.
 Vibha summer all bhelpuri eat.PFV-eat.PFV kept.3.SG.F(light-verb)
 “Vibha ate bhelpuri many times over the summer.”
 ⇒ The bhelpuri eating is understood to have occurred at several different occasions over the summer. The interval between each bhelpuri-eating event is also not specified.

3. (**Not opaque to distribution.**) In the case of plural subjects, each individual in the subject denotation of a PFV-reduplicated predicate may have participated in a single instance of the event. For instance, in (29), each child may have only seen the monkey (and returned) once. This is once again characteristic of event-external pluractionality.

(29) MakkaLu manga-nna **nooD.i-nooD.i** bandaru.
 Children monkey-ACC see.PFV-see.PFV came
 “The children saw the monkey and returned again and again/ one by one.”

4. (**Habitual readings are permitted.**) Given that there is no restriction on how much temporal separation there can be between the individual sub-events with PFV-reduplication, it is possible to use PFV-reduplication to describe habitually conducted activities (such as hobbies or routines). An example is shown in (30). Such habitual readings are known to be allowed in event-external pluractionals, but not event-internal ones, across languages.

(30) Naanu New York-alli museum-gaL-ige **hoog.i-hoog.i** iTTe.
 I New York-in museum-PLU-DAT go.PFV-go.PFV kept.1.SG(light-verb)
 “I visited the museums in New York repeatedly/habitually.”

On the basis of these diagnostics, we conclude that it is feasible to analyze Kannada PFV-reduplication as an instance of event-external pluractionality. This insight once again allows us to adopt previously proposed analyses for event-external pluractionals in explaining the behavior of PFV-reduplicated predicates in Kannada, enabling us to explain some (though not all) of the puzzles associated with PFV-reduplication that were noted in Section 2.

3.2.2 Analysis

We will use the working example consisting of a serial verb construction in (31) in describing how PFV-reduplication is to be formally analyzed.

(31) huDuga manga-nna **nooD.i-nooD.i** banda.
 boy monkey-ACC see.PFV-see.PFV came.3.SG.M
 “Again and again, the boy looked at the monkey and returned.”

Once again, we adapt the analysis for event-external pluractionality proposed in Henderson (2012). Analogous to IMPF-reduplication, we propose that PFV-reduplication too indicates the presence of a covert event-external plurality operator: D_{EE} , defined as in (32).

(32) $\llbracket D_{EE} \rrbracket = \lambda P_{\langle v,t \rangle} . \lambda e_v . \exists \pi . [\text{Part}(\pi, \tau(e))$
 $\wedge \forall t \in \pi . [\exists e' . [P(e') \wedge \tau(e') = t \wedge \epsilon(\tau(e))(t)]]]$

Paraphrasing in prose, (32) posits a plural event e , whose temporal trace $\tau(e)$ allows a non-trivial partition π , such that each element within this partition overlaps with a P -event. This situation is depicted in Figure 2. The difference between the entries for D_{EI} in Section 3.1 and D_{EE} proposed in the current section is straightforward: only the former comprises of a larger ‘container’ event within which each sub-event making up the plurality must be housed. On the other hand, with D_{EE} , there is no such ‘container’ event. The plurality is simply defined as the sum of the individual sub-events, with no other restrictions on how the smaller sub-events are temporally distributed. As noted in Henderson (2012), this difference between event-internal and event-external pluractionals may be thought of as analogous to the difference between count plurals *vs.* mass nouns in the nominal

domain — in the sense that count plurals are made up of discrete individuals while mass plurals are more akin to a group of closely clustered, not easily separable sub-parts.

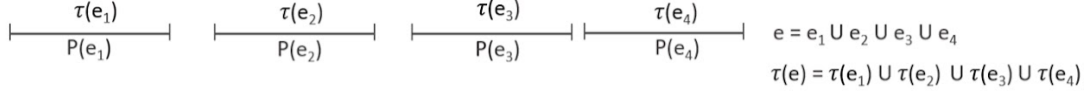
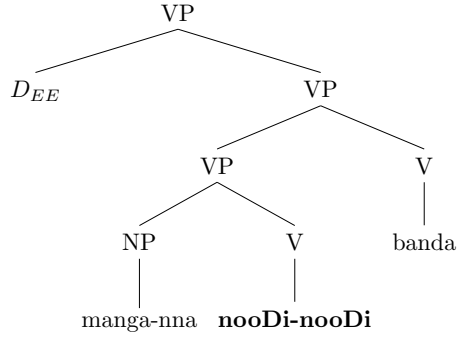


Figure 2: Schematic depicting the event-external pluractionality instantiated by Kannada PFV-reduplication. The larger event is simply the sum of the smaller P -events. There are no restrictions on how the smaller sub-events are temporally distributed.

The entry in (32) is also closely related to the analysis for event-external pluractionals in Lasnik (1995), as well as van Geenhoven’s (2004) suggestion for analyzing frequentativity operators in West Greenlandic. To see how this analysis applies to our working example (31), let us begin by assuming the following LF structure in (33) for the utterance. Importantly, the plurality operator is taken to scope over the serial verb construction — i.e., *external* to the compound event denoted by the serial verb.

(33)



As before, we will assume standard lexical entries for the lexical items in (31):

(34) $\llbracket \text{manga-nna} \rrbracket = \iota x. \text{monkey}(x)$

(35) $\llbracket \text{nooDi-nooDi} \rrbracket = \lambda x. \lambda e_v. \text{see}(x)(e)$

(36) $\llbracket \text{banda} \rrbracket = \lambda e_v. \text{come}(e)$

(34) and (35) first combine to lead to (37):

(37) $\llbracket \text{nooDi-nooDi} \rrbracket (\llbracket \text{manga-nna} \rrbracket) = \lambda x. \lambda e_v. \text{see}(\iota x. \text{monkey}(x))(e)$

Taking the serial verb construction to simply express the union of events denoted by each part of the construction, where one event follows the other, we can define the event properties denoted by each part of the serial verb construction to combine to lead to the entry in (38). In words, (38) is an event property true of a composite event e_{serial} , that consists of a monkey-seeing event followed by a returning event.

(38) $\llbracket \text{nooDi-nooDi} \rrbracket (\llbracket \text{manga-nna} \rrbracket) \cdot \llbracket \text{banda} \rrbracket = \lambda e_{\text{serial}}. \exists e, e' : e_{\text{serial}} = e \cup e'$
 $\wedge \text{see}(\iota x. \text{monkey}(x))(e) \wedge \text{come}(e')$
 $\wedge \tau(e) < \tau(e')$

This compound event denoted by the serial verb construction is then fed into D_{EE} , which results in the final interpretation in (39). What we end up with in (39) is an event property satisfied by

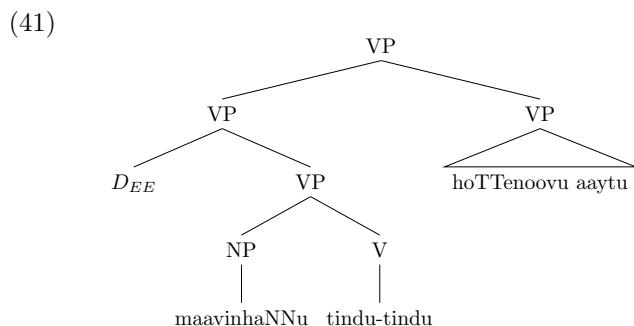
a plural event e , whose total (possibly non-contiguous) runtime may be partitioned into a number of smaller time slices. Each of these time slices overlaps with a compound event, consisting of a monkey-seeing event followed by a returning event. Note that the reason the sub-events making up the plural event are themselves compound is because the event plurality operator scopes over the serial verb construction in (33), applying to the entire compound event denoted by the serial verb.

$$(39) \quad \begin{aligned} & \llbracket D_{EE} \rrbracket (\llbracket \text{nooDi-nooDi} \rrbracket (\llbracket \text{manga-nna} \rrbracket) \cdot \llbracket \text{banda} \rrbracket) = \lambda e. \exists \pi. [Part(\pi, \tau(e)) \\ & \wedge \forall t \in \pi. [\exists e_{serial}. [\exists e', e'' : e_{serial} = e' \cup e'' \\ & \wedge see(\iota x. monkey(x))(e') \wedge come(e'') \\ & \wedge \tau(e') < \tau(e'') \\ & \wedge \tau(e_{serial}) = t \wedge \epsilon(\tau(e))(t)]]] \end{aligned}$$

However, there is nothing about the semantics of D_{EE} itself that constrains the event it pluralizes to be simple or compound. This means that a second (though less preferred) interpretation of (31) is available — wherein D_{EE} scopes only over the monkey-seeing event but not the returning event, leading to an interpretation where the agent (the boy) participates in several (possibly non-contiguous) monkey-seeing events, followed by a single event of returning. (40) is an example where such a reading is more readily available: i.e., there are multiple mango-eating events, following which there is a single instance of the agent (boy) coming down with a stomach ache.

$$(40) \quad \begin{array}{l} \text{huDuga-nige maavinhaNnu tindu-tindu hoTTe noovu aaytu.} \\ \text{boy-DAT mango eat.PFV-eat.PFV stomach pain happened} \\ \text{‘(Because of) eating mangoes over and over, the boy came down a stomach ache.’} \end{array}$$

The LF for (40) is shown in (41), the lexical entries for individual words are defined as in (42)-(44), and the compositional steps are as in (45)-(47). Note that in this case, given the general nature of eating events (as opposed to seeing events), we cannot take there to be a definite mango that is eaten again and again; instead a different object that satisfies the property of being a mango is eaten in each iteration of the event. Logically, this means that the nominal now receives a property denotation, as in (42).



$$(42) \quad \llbracket \text{maavinhaNnu} \rrbracket = \lambda x. mango(x)$$

$$(43) \quad \llbracket \text{tindu-tindu} \rrbracket = \lambda x. \lambda e. eat(x)(e)$$

$$(44) \quad \llbracket \text{hoTTenoovu aaytu} \rrbracket = \lambda e. get.stomach.ache(e)$$

Without going into detailed justification here (see Srinivas 2021 for this), I assume that *maavinhaNnu* (‘mango’) and *tindu-tindu* (reduplicated perfective ‘eat’) combine via predicate restriction (Chung and Ladusaw 2003), followed by existential closure to lead to (45):⁸

⁸Nothing crucial hinges on the use of predicate restriction for the purposes of the current paper. The conclusions pertaining to verbal reduplication hold even if we had resorted to a different method of composing *mango* with *eat*: for example, as in Dayal (2011).

$$(45) \quad \text{EX}(\llbracket \mathbf{tindu-tindu} \rrbracket \cdot \llbracket \mathbf{maavinhaNNu} \rrbracket) = \lambda e. \exists x. \text{eat}(x)(e) \wedge \text{mango}(x)$$

The mango-eating event is now fed into D_{EE} :

$$(46) \quad \llbracket D_{EE} \rrbracket (\llbracket \mathbf{tindu-tindu} \rrbracket (\llbracket \mathbf{maavinhaNNu} \rrbracket)) = \lambda e_v. \exists \pi. [\text{Part}(\pi, \tau(e)) \\ \wedge \forall t \in \pi. [\exists e'. [\exists x. \text{eat}(x)(e') \wedge \text{mango}(x) \wedge \tau(e') = t \wedge \epsilon(\tau(e))(t)]]]]$$

This plural event now combines with the finite verb that forms the second half of the serial verb construction, leading to the final interpretation in (47). In words, (47) represents an event property true of a compound event consisting of a plurality of mango-eating events, followed by the event of coming down with a stomach ache. This matches our intuitive understanding of this utterance.

$$(47) \quad \text{EX}(\llbracket \mathbf{tindu-tindu} \rrbracket \cdot \llbracket \mathbf{maavinhaNNu} \rrbracket) \cdot \llbracket \mathbf{hoTTenoovu aaytu} \rrbracket = \lambda e_{\text{serial}}. \exists e, e' : e_{\text{serial}} = \\ e \cup e' \\ \wedge \exists \pi. [\text{Part}(\pi, \tau(e)) \\ \wedge \forall t \in \pi. [\exists e''. [\exists x. \text{eat}(x)(e'') \wedge \text{mango}(x) \wedge \tau(e'') = t \wedge \epsilon(\tau(e))(t)]]] \\ \wedge \text{get.stomach.ache}(e') \wedge \tau(e) < \tau(e')$$

Note that despite the flexibility of the D_{EE} operator, and the fact that it appears ‘internally’ to the serial verb construction, it is nonetheless an instance of event-external pluractionality. This is because the plural event still retains properties of event-external pluractionality. For example, there may have been variable amounts of downtime between each of the mango-eating events.

Importantly, it is this type of flexibility associated with D_{EE} — by virtue of its semantics in (32) — that allows it to appear outside of serial verb constructions as well, where tense is carried by an aspectual light verb instead. An example of such a case is shown in (48), reproduced from (6).

$$(48) \quad \text{Naanu manga-nna} \quad \mathbf{nooD.i-nooD.i} \quad \text{iTTe.} \\ \text{I} \quad \text{monkey-ACC} \quad \text{see.PFV-see.PFV} \quad \text{kept(Light verb).1.SG} \\ \text{‘‘I saw the monkey again and again.’’}$$

Following Jayaseelan (2004), we assume the tense-carrying constituent in (48) to be a pure light verb without any argument structure, reanalyzed as a purely functional auxiliary in T instead of as an event property. The PFV-reduplication in this example is therefore not part of a serial verb construction — though this does not lead to compositional failure, as D_{EE} (unlike D_{EI}) only selects one lexical event predicate.

In sum: in this section, we analyzed Kannada PFV-reduplication as an instance of event-external plurality, essentially denoting iterative repetitions of a (simple or compound) eventuality. A formal analysis based on this insight was found to successfully predict the flexibility in its distribution and interpretation as observed in Section 2, where the PFV-reduplicated verb may appear internally to a serial verb construction (scoping within or over the serial verb complex), or where it may appear with a tensed light verb that is devoid of any lexical content. However, one puzzle still remains: if D_{EE} is really all that flexible and does not require a second lexical event property argument, why is it nonetheless not permitted to appear with a tensed copula (as noted in Section 2)? A speculative answer to this question is sketched in Section 4, and other open issues are raised.

4 Remaining puzzles

This section raises (and where possible, discusses speculative ideas to resolve) some remaining puzzles that have not been addressed by the analysis above.

The tensed verb *koTTa* (‘gave’) in (51) does not convey the lexical meaning of giving (there is no object actually being transferred to a recipient); instead, it is understood to be an aspectual light verb, conveying simply the completion of the lid-opening event. However, *koTTa* does seem to retain some of its argument structure — it is required to license the dative argument *nana-ge*. Indeed, without this light verb, the verb *open* by itself does not license a dative (recipient/beneficiary) argument.

Jayaseelan (2004) too notes the presence of such verbs in Malayalam serial verb constructions, and suggests that these cases should “make us appreciate the difficulty about postulating a clean division between two classes of serial verbs — one consisting of ‘full’ verbs, the other consisting of ‘light’ verbs.” He goes on to give a structure for such serial verb constructions in Malayalam that differs from the structures for serial verbs containing fully lexical verbs or fully light verbs.

What is relevant for our discussion of reduplicated verbs here is to note that the tensed verb in (51) too, like its counterparts that are more unambiguously ‘light’, cannot co-occur with IMPF-reduplicated verbs in Kannada. In this case, semantically, they seem to behave more like light verbs than lexical verbs. Future work should investigate how to reconcile this semantic behavior with the syntactic analysis proposed by Jayaseelan, with modifications as needed to either the structural or the semantic analyses so far proposed for these types of sentences.

4.3 A more explanatory morphological analysis

Another important avenue for future work is to provide a more explanatory morphological analysis for Kannada verbal reduplication, where the individual semantic contributions of the aspect morphology *vs.* reduplication are clarified. Ideally, we would be able to arrive at an analysis where the reduplication morphology contributes a common plurality operator in the case of both PFV-reduplication and IMPF-reduplication, and the other semantic contrasts are derived from independently justifiable properties of perfective *vs.* imperfective aspect alone.

This is clearly not the case in the analysis we have developed in this paper, where (im)perfective morphology together with reduplication contributes a single semantic operator (D_{EI} or D_{EE}). While this is a shortcoming that needs to be resolved, it is not immediately evident to us what the resolution is to be. As such, we defer this as a project for immediate future work.

5 Conclusion

This paper should be viewed as the first step towards investigating the phenomenon of verbal reduplication in Kannada. We began by isolating two types of reduplication in the language: one where the verb is marked with perfective aspect, and another where the verb realizes imperfective aspect. These two types of reduplicated verbs were found to differ from each other both in their semantic as well as surface distributional properties. To analyze these items in Kannada, we built on the well-known idea that verbal reduplication is often used to express event pluractionality, and contributed the novel insight that the properties of PFV- and IMPF-reduplication resembled those of cross-linguistically attested event-external and event-internal pluractionals respectively. This enabled us to adopt aspects of standard analyses for these operators from the literature, which proved further useful to explain many of their distributional constraints. However, several pressing open issues remain, making this area ripe for much future investigations in Kannada and in other (Dravidian) languages.

Acknowledgments

We are grateful to the reviewers and audience at (F)ASAL 11 for their valuable feedback on this work. This paper is dedicated to the memory of Dr. Rahul Balusu.

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