A Syntax-Semantics Interface Account of Kannada Bare Existential Singulars

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1. Introduction

Kannada is a South Asian, Dravidian, *determiner-less* language, which does not overtly instantiate (in)definite determiners corresponding to English *a* and *the*. Instead, the language permits "bare nominal" arguments in episodic statements, capable of delivering meanings roughly corresponding to one of the two English articles in a context-dependent manner, as seen in (1) and (2) respectively:[1]

(1) **A:** *What is Ravi doing?*
B: *Ravi* ***pustaka*** *ooduttiddaane.*
Ravi book reading.3.SG.MASC ("Ravi is reading **a book**.")

(2) **A:** *There was a book of poems somewhere around here. Have you seen it?*
B: ***pustaka*** *meej-ina meele ide.*
book table-of on COP(PRES.) ("**The book** is on the table.")

In this paper, we restrict our attention to examples like (1), where the bare singular receives an existential interpretation. As indicated, these uses are naturally translated into English by way of the indefinite article *a*, though the Kannada items and English indefinite DPs overlap partially at best. As we discuss in Section 2, Kannada bare singulars are associated with certain distinctive properties not shared by the English article. For instance, existentially interpreted Kannada bare singulars take **obligatory narrow scope** within a sentence, unlike English *a* (Srinivas & Rawlins 2021). Such narrow-scoping existential readings are moreover highly **productive**, arising regardless (mostly) of their grammatical role within the sentence or other accompanying morphology. Section 2 also introduces a third key property of Kannada bare existential singulars: namely, **number-neutrality**, whereby certain occurrences of these items receive plural-like interpretations despite lacking overt plural morphology. Specifically, we show that only bare singular direct objects overtly unmarked for ACC Case are ever interpreted number-neutrally, while existentially interpreted bare singular subjects and ACC-marked objects – despite their obligatory narrow-scoping property – must receive strictly singular readings. In the separation of the potential for number-neutrality in bare singulars from obligatory narrow scope, the situation in Kannada is distinct from what has been described for similar items cross-linguistically, including in Hindi (Dayal 2011), Persian (Krifka & Modarresi 2016), Turkish (Sağ 2022), and Hungarian (Farkas & Swart 2003).

Together, these three properties set up the desiderata for a comprehensive semantic account of Kannada existential bare singulars, which we take up the task of developing in Section 3. We approach this task with an eye towards providing – to the extent possible – a unified analysis for all occurrences of these items in the language, despite the variation among them with regards to the availability of number-neutral interpretations. To this end, we analyze their existential readings as always arising via the compositional mode of Predicate Restriction or *Restrict* (Chung & Ladusaw 2003). As we discuss in Section 3, this accounts for the first two of the key properties described above: obligatory narrow scope, and productivity.

On the other hand, the number-neutrality contrasts across their various occurrences (described in Section 2) are derived by appealing to differences in the bare singulars' syntactic height at LF, independently motivated by their morpho-syntactic characteristics, including their grammatical function (Subject

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[1] In non-episodic contexts, bare nouns can also denote kind or generic meanings, but we do not focus here on these.

 Proceedings of the 41st West Coast Conference on Formal Linguistics, ed. Nikolas Webster et al., 556-565. Somerville, MA: Cascadilla Proceedings Project.

vs. Object) and the presence or absence of overt Case-marking. Specifically, building on Dayal (2011), we take number-neutral interpretations to arise when the bare singular occupies a position that scopes under one or more independently motivated VP-internal pluractionality operators. To satisfactorily motivate such an account will require us to comment on matters of theoretical interest outside of nominal semantics narrowly construed, such as justifying the functional architecture in Kannada complete with the pluractionality operators. Finally, in Section 4, we briefly mention some future directions, and conclude.

2. Characteristic properties of Kannada bare singulars

2.1. Obligatory narrow scope

Kannada bare existential singulars are obligatorily narrow-scoping or 'non-specific', as indicated by the English translations provided in (3)-(4). In this regard, Kannada bare singulars are unlike English DPs headed by *a*, which can take either wide- or narrow-scope over other scopal operators in a sentence.

(3) *room-alli* ***ili*** *oDaaDtaa illa.*
room-in mouse roaming NEG
"There is no mouse roaming around in the room."
UNAVAILABLE: "A specific (hearer-new) mouse isn't roaming around in the room."

(4) *Ravi-ge* ***huli(-anna)*** *nooDu-a aase.*
Ravi-DAT tiger(-ACC) see-PART wish
"Ravi wishes to see a(ny) tiger."
UNAVAILABLE: "Ravi wishes to see a specific (hearer-new) tiger."

We will not here provide additional explicit argumentation for this claim, beyond the examples provided above, but point the reader to Srinivas & Rawlins (2021) instead where we have done precisely this. In light of this existing discussion in the literature, we take it for granted in what follows that existential readings of Kannada bare singulars are obligatorily narrow-scoping.

2.2. Productivity

(3)-(4) further demonstrate the productivity of existential readings with Kannada bare singulars. In particular, such existential readings persist even within contexts known to be cross-linguistically unconducive to such interpretations (e.g., Krifka & Modarresi 2016, Dayal 2011, Sağ 2022 *i.a*), like when they appear in subject position (3), or with overt accusative Case morphology (4).

Narrow-scope existential readings are further possible with pre-adverbial bare singular objects in out-of-the-blue contexts, contra what is claimed in Lidz (2006):

(5) *Harini* ***hoov(-anna)*** *aavaag-aavaaga kittu tanna ajji-ge koDuttiddaLu.*
Harini flower(-ACC) now.and.then plucked her(REFL.) grandmother-DAT gave
"Harini often plucked a flower/flowers for her grandma." (different flowers each time)

(6) *Nalini* ***seere*** *chennaagi maDichuttaaLe.*
Nalini saree well folds ("Nalini folds sarees well.")

Admittedly, sentences containing pre-adverbial objects instantiate a pragmatically marked word order and thus sometimes bias towards a definite (or 'given') interpretation over an existential one. Such an effect can also sometimes arise with ACC-marked objects, especially in cases where the non-ACC-marked version can lead to an identical existential meaning. However, these pragmatic biases can be overridden, as demonstrated by the examples provided in this section, indicating that grammatical accounts that categorically rule out narrow-scope readings based on these morpho-syntactic factors, such as Lidz (2006), cannot be the right story. Nonetheless, there is one type of context where an existential reading of the Kannada bare singular is indeed categorically ruled out – that is, when they appear as sentence-initial subjects in informationally neutral, non-contrastive contexts:

(7) ***ili*** *room-alli oDaaDtaa ide.*
mouse room-in roaming COP(PRES.) ("**The mouse** is roaming around in the room.")

In this case, the bare nominal must be interpreted as a definite description, as indicated in (7). We thus need an account of narrow-scoping existential bare singulars in Kannada that restricts such a reading in precisely one instance, while permitting them to occur productively otherwise.

2.3. Number-neutrality

Number-neutrality refers to the phenomenon wherein nominal constituents that bear singular (unmarked) morphology nevertheless receive plural-like ('one or more') interpretations. This property is manifested in certain occurrences of existentially interpreted bare singular direct objects appearing without overt ACC-marking in Kannada – in particular, when they appear within atelic contexts: see (8-a) & (9-a). Moreover, as seen in (8-b) and (9-b), such number-neutral interpretations are often unavailable in minimal telic variants. So far, these patterns exactly resemble what is described for Hindi in Dayal (2011):

(8) a. *Anu mooru ganTe tanaka* ***kathepustaka*** *oodidaLu.*
Anu three hours till story.book read-PFV
"Anu read **one or more story books** for three hours."
b. *Anu mooru ganTe-alli* ***kathepustaka*** *oodidaLu.*
Anu three hours-in story.book read-PFV
"Anu read **a (single) story book** in three hours."

(9) a. *Kavya iDii dina* ***chitra*** *biDisuttiddaLu.*
Kavya all day picture was.drawing
"Kavya was drawing **one or more pictures** all day."
b. *Kavya ondu ganTe-alli* ***chitra*** *biDisidaLu.*
Kavya one hour-in picture drew
"Kavya drew **a (single) picture** in an hour."

However, unlike in Hindi, number-neutrality is not always blocked across all occurrences of non-ACC-marked Kannada bare existential singulars within telic contexts – see (10)-(12). In fact, (10) consists of the same noun as in (8), but this noun now receives a number-neutral reading even within a telic context. This tells us that number-neutrality is not a property inherent to certain lexical nouns in Kannada.

(10) *Avanu angaDi-alli* ***kathepustaka*** *konDukonDa.*
he store-in story.book bought
"He bought **one or more story books** at the store."

(11) *Ondu ganTe-alli Vibha* ***newspaper*** *oodibiTTaLu.*
one hour-in Vibha newspaper read.PFV
"Vibha finished reading **one or more newspapers** in an hour."

(12) *Avaru nama-ge* ***meenu*** *hiDidu koTTaru.*
They us-DAT fish caught gave ("They caught **one or more fish** for us.")

In contrast, existential bare singular subjects and ACC-marked objects are never interpreted number-neutrally; these must receive strict singular interpretations. This is indicated in (13)-(14) below:

(13) *Ravi ondu ganTe tanaka zoo-alli* ***huli-anna*** *nooDutt-idda.*
Ravi one hour till zoo-in tiger-ACC was.seeing
"Ravi was looking at a tiger at the zoo for an hour." (single tiger)

(14) *Ondu ganTe tanaka room-alli* ***ili*** *ooDaaDuttittu.*
one hour till room-in mouse roam.IMPF-COP.3SG.NEUT
"A mouse was roaming around in the room for an hour." (single mouse)

Explaining these number-neutrality patterns requires us to answer at least the following questions: first, what distinguishes (10)-(12) from telic sentences like (8-b) and (9-b), such that only the former license number-neutral interpretations with non-ACC-marked bare singular objects? Relatedly, what is the source of the number-neutral readings whenever they do arise – be it within telic or atelic contexts?

Needless to say, a satisfactory analysis of the Kannada existential bare singulars must answer these questions, along with explaining the other key properties of Kannada bare existential singulars discussed in this section. It is worth noting that although some aspects of these properties in Kannada find company

with bare singular NPs in other languages – for instance, obligatory narrow-scoping existential readings have been noted with Hindi bare nominals (Dayal 1992, 1999, 2004, 2011 *i.a*), and in Hungarian (Farkas & Swart 2003), Turkish (Sağ 2022), Persian (Krifka & Modarresi 2016), Chamorro (Chung & Ladusaw 2003) *i.a* – Kannada differs from these languages in other ways that pose difficulties to motivating an extension of any existing account to its bare singulars. Particularly the considerable productivity of the existential readings in Kannada and the fact that not all obligatorily narrow-scoping existential bare singulars are compatible with number-neutral interpretations prove to be the main roadblocks for such an enterprise. As such, we develop a novel analysis for Kannada in the following section that separates the semantic source of the narrow-scope existential interpretations from that of number-neutrality within the bare singulars, while incorporating insights as necessary from previous investigations of similar items across languages.

3. Analysis

In this section, we develop our positive proposal in two parts. First, to account for the obligatory narrow-scope and productivity of their existential readings, Kannada bare singulars will be claimed to compose via *Predicate Restriction*, a non-saturating mode of semantic composition introduced in Chung & Ladusaw (2003). We then turn to the number-neutrality contrasts among the bare singulars, which we account for by appealing to differences in their syntactic placement along an articulated functional spine, and their resulting scopal interaction with two independently motivated, VP-internal pluractional operators.

3.1. Narrow-scope and productivity

We propose that the existential readings arising across all relevant occurrences of the Kannada bare singulars are a result of their participation in "Predicate Restriction" (henceforth: *Restrict*), a mode of semantic composition introduced by Chung & Ladusaw (2003). A formal definition capturing the main aspects of *Restrict* is provided in (15), following Rawlins (2013):

(15) Where $\beta = \langle \beta_1 \langle ... \langle \beta_n, t \rangle \rangle \rangle$ such that $n \geq 0$
$Restrict(\mathrm{A}_{\langle e,\beta \rangle}, \mathrm{B}_{\langle e,t \rangle}) = \lambda x \in D_e \,.\, \lambda y^1 \in D_{\beta_1} \,.\, .\lambda y^n \in D_{\beta_n} \,.\, A(x)(y^1)..(y^n) \wedge B(x)$

Informally, in (15), an $\langle e,t \rangle$-type property B "restricts" the domain of the $n + 1$ place predicate A to only those entities that share that property. Importantly, this is a non-saturating mode of composition wherein B does not saturate an argument position of A, so that the resulting denotation after *Restrict* has applied remains an $n+1$ place predicate. The restricted, unsaturated argument may be eventually saturated following *Restrict* by one of two methods. In one possibility, the resulting predicate further combines with a saturating e-type individual via Function Application, leading to an apparent "doubling" of the restricted argument – as attested in languages such as Chamorro (Chung & Ladusaw 2003) or Caddo (Mithun 1984). Alternatively, saturation may occur by way of Existential Closure of the restricted argument, prior to the end of the event domain vP at the latest (Chung & Ladusaw 2003).

However, given that not every language employing *Restrict* as part of its compositional inventory supports the strategy of argument doubling, we submit that languages are parameterized with respect to whether the restricted argument must be saturated via Existential Closure immediately following *Restrict*, or whether it may be delayed until the end of the event level. A language that instantiates the parameter, as stated in (16), is one that heavily disprefers semantic incompleteness of the restricted argument following *Restrict*, seeking to immediately saturate it via Existential Closure. It is precisely these languages, Kannada among them, that prohibit argument doubling. On the other hand, languages more tolerant to semantic incompleteness delay saturation via Existential Closure until the end of the event level, making room for saturation to occur via alternative means along the way.

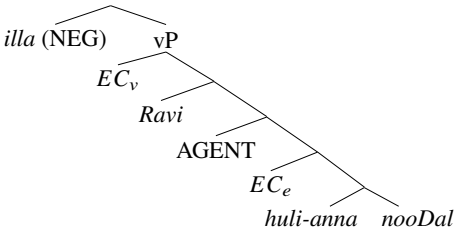
(16) **Immediate Existential Closure (EC) parameter**: EC applies immediately post *Restrict*.

With these assumptions, we are now in a position to illustrate how the Kannada bare singular in a sentence like (17) is interpreted to lead to a narrow-scope existential reading. Assume a basic LF structure for (17) as in (18):[2]

[2] We further flesh out the functional structure in §3.2, as relevant to our explanation of the number-neutrality contrasts.

(17) *Ravi* ***huli-anna*** *nooDal-illa.*
Ravi tiger-ACC see-NEG ("Ravi did not see any tiger.")

(18)



The denotations corresponding to the individual lexical items and operators are given in (19)-(24) (with world, time and other contextual variables omitted for simplicity). First, following a standard view in the literature, the bare singular *huli-anna* ('tiger') is taken to be a one-place property of type ⟨e,t⟩. We further take Kannada bare singulars to denote atomic properties, given their propensity to receive strictly singular interpretations in most of their occurrences.[3] These assumptions are instantiated in the lexical entry for *huli-anna* ('tiger') in (19):

(19) $[\![\textbf{huli-anna}]\!]^{c,g} = \lambda x_e.\text{tiger}'(x) \wedge \text{ATOM}(x)$

Following Kratzer (1996), verbs denote properties of eventualities, selecting their Theme argument:

(20) $[\![\textbf{nooDal}]\!]^{c,g} = \lambda y_e.\lambda e_v.\text{see}'(e) \wedge \text{Th}(e, y)$

By contrast, a secondary predicate mediates the link between the verb and its external Agent argument:

(21) $[\![\textbf{AGENT}]\!]^{c,g} = \lambda x_e.\lambda e_v.\text{Ag}(e, x)$

The proper name *Ravi* denotes a constant:

(22) $[\![\textbf{Ravi}]\!]^{c,g} = \mathbf{R}'$

The Existential Closure operator, represented as EC in (18), is defined following Rawlins (2013) as in (23). As indicated in (23), we take EC to apply to arbitrary sequences of lambda terms, resulting in the closure of the argument corresponding to the foremost one:

(23) Where $\beta = \langle\beta_1\langle\ldots\langle\beta_n, t\rangle\rangle\rangle$ such that $n \geq 0$
$\textbf{EC}(\text{A}_{\langle\alpha,\beta\rangle}) = \lambda y^1 \in D_{\beta_1} . \ldots . \lambda y^n \in D_{\beta_n} . \exists x_\alpha : A(x)(y^1)\ldots(y^n)$

Finally, as is standard, the negation operator *illa* (NEG) is a function mapping one formula to another:

(24) $[\![\textbf{illa}]\!]^{c,g} = \lambda P.\neg P$

These ingredients in place, the interpretation of (17) proceeds as follows. In what is the most crucial step for us, the bare singular *huli-anna* composes with the verb *nooDal* via *Restrict*. Per Kannada's parameter setting (16), Existential Closure occurs immediately after:

(25) $\textbf{EC}([\![\textbf{huli-anna nooDal}]\!]^{c,g}) = \lambda e_v.\exists y_e.\text{see}'(e) \wedge \text{Th}(e, y) \wedge \text{tiger}'(y) \wedge \text{ATOM}(y)$

The agent *Ravi* is then combined, via the mediating predicate AGENT, through the compositional process of Event Identification (Kratzer 1996):

(26) $[\![\textbf{Ravi [AGENT [huli-anna nooDal]]}_{\textbf{EC}}]\!]^{c,g} =$
$\lambda e_v.\exists y_e.\text{see}'(e) \wedge \text{Ag}(e, \mathbf{R}) \wedge \text{Th}(e, y) \wedge \text{tiger}'(y) \wedge \text{ATOM}(y)$

[3] Though we do not get into it here, the atomicity assumption is further corroborated by the arguments discussed in Sağ (2022), who arrives at a similar conclusion for bare singulars in Turkish.

This brings us to the end of the event (vP) level, where the event argument e undergoes Existential Closure. Finally, NEG applies, scoping over everything that came before:

(27) $[\![\textbf{illa [Ravi [AGENT [huli-anna nooDal]}_{\textbf{EC}}\textbf{]}_{\textbf{EC}}]\!]^{c,g} =$
$\neg(\exists e_v.\exists y_e.\text{see}'(e) \wedge \text{Ag}(e, \mathbf{R}) \wedge \text{Th}(e, y) \wedge \text{tiger}'(y) \wedge \text{ATOM}(y))$

In words, (27) conveys that there does not exist an event e or a tiger y such that Ravi saw y in e. More simply put, and in line with the free translation in (17), Ravi did not see any tiger. Scopal operators such as negation or (modal/adverbial/generalized) quantifiers are standardly interpreted beyond the vP domain, while the restricted bare singular argument is guaranteed to undergo existential closure within the event domain. This guarantees its narrow scope within the sentence.

Notice further that composition via *Restrict* is not limited by definition to items that instantiate specific grammatical functions (e.g., objects) or morphological markings (e.g., lack of ACC marking), allowing for the possibility of existentially interpreted bare singular subjects or ACC-marked objects just as long as they occupy vP-internal positions at LF. Indeed, in Section 3.2, we argue that this is so, with the exception of sentence-initial subjects in informationally neutral constructions.

3.2. Number-neutrality contrasts

Despite all existentially interpreted Kannada bare singulars being restricted to narrow scope (by virtue of composition via *Restrict*, per our proposal), not all of them are equally amenable to number-neutral interpretations. In particular, as described in Section 2.3, only non-ACC marked direct object bare singulars may be interpreted in this manner, and that too often restricted to atelic contexts alone. In this section, we explain the number-neutrality patterns in Kannada by adopting a crucial insight from Dayal (2011), whereby number-neutral interpretations are a result of the atomic bare singular scoping under some distributional operator. In what follows, we motivate a verbal-functional structure for Kannada that contains two VP-internal distributive pluractional operators. The bare singulars interact scopally with these operators, leading to number-neutral interpretations (or the lack thereof).

We assume a verbal-functional structure as represented in Figure 1 for Kannada – a head-final, specifier-initial language. Following standard assumptions (Kratzer 1996), Patients and Themes are base-generated VP-internally, while Agents and Experiencers are external arguments generated in the specifier of little vP. We further assume, following Chomsky (1991), Hornstein et al. (2005) and others, the presence of AgrOP located between VP and vP. The head AgrO bears a strong, uninterpretable accusative Case feature +ACC, also borne by direct objects exhibiting overt Case morphology. Case-checking occurs by way of movement of the object to the specifier of AgrOP, and subsequent deletion of the uninterpretable feature on the object as well as the functional head.

Lexical verbs base-generate in V, where they remain without further movement to little v. vP represents the end of the event level. As such, *Restrict*, and subsequent existential closure of the restricted argument, may not apply past this point. Beyond the event level, the clause is anchored by a Tense Projection TP, with the finite T head bearing the uninterpretable nominative Case feature +NOM. Unlike the +ACC feature, +NOM is *weak* (Hornstein et al. 2005), so that no overt movement to the specifier of TP is necessary for Case-checking. This idea receives independent evidence by virtue of the possibility of dative subject constructions in Kannada, such as in (28), where the object is the complement of the verbal head *gottu* ('know') but nevertheless carries nominative Case:[4]

(28) *Nana-ge Alka chennaagi gottu.*
I-DAT Alka.NOM well know ("I know Alka well.")

On the other hand, the dative Experiencer in (28) is base-generated in the specifier of little vP, and moved subsequently to the specifier of TP, a movement motivated by virtue of a strong, uninterpretable EPP feature on T. In fact, the EPP constraint dictates that subjects must occupy the specifier of TP elsewhere in the language as well (within pragmatically neutral sentences). Notably, this leads to a natural explanation for the lack of existential readings with sentence-initial bare singulars in the language: these are located

[4] See Ura 1999 for a similar analysis of dative subject constructions in Japanese and Korean.

in the TP specifier, well beyond the event domain, precluding the applicability of *Restrict*.[5] This covers the VP-external aspects of Figure 1; we turn next to VP-internal matters.

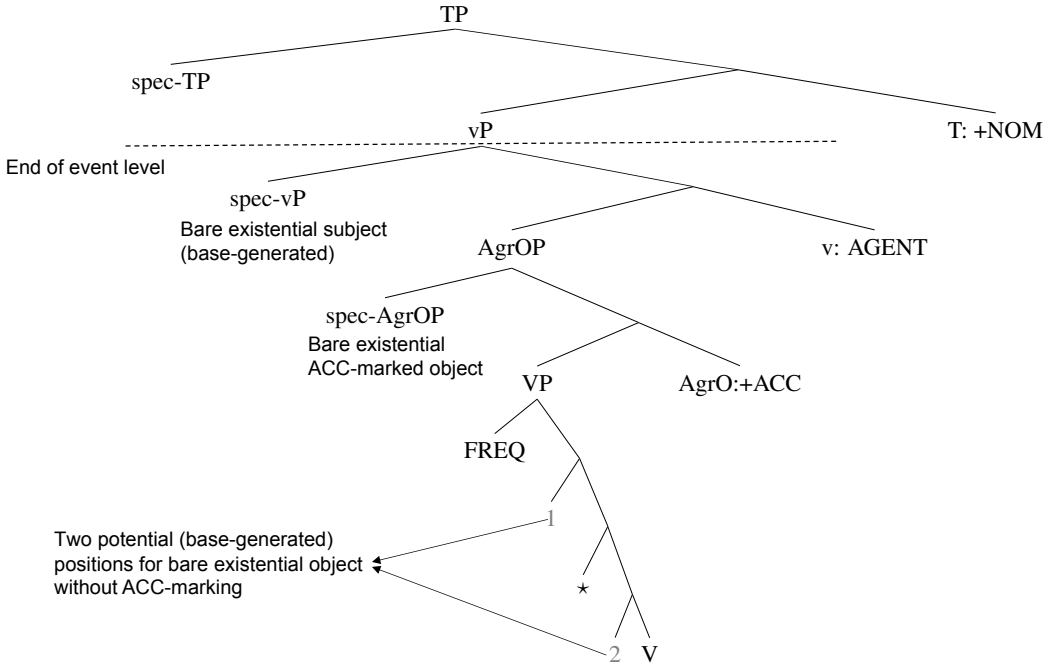


Figure 1: A representation of the verbal-functional structure in Kannada.

As indicated in Figure 1, we assume two types of VP-internal (covert) pluractional operators: the cumulative plural operator ⋆, and the frequentative (a.k.a iterative) plural operator FREQ. The cumulativity operator ⋆ is intended to be identical to the one assumed in Kratzer (2008) and Champollion (2015), following Krifka's (1998) suggestion that simple verbal predicates in natural language are typically cumulative. As discussed in Kratzer (2008), it is the covert presence of this operator that explains the default availability of plural, distributive readings of the English verbs, like in (29), despite the absence of any overt plural morphology on the verb. A similar observation may also be made of the analogous Kannada sentence in (30) – it is compatible with a reading where three separate lifting events occurred:

(29) *John, Mary and Paul lifted the chair.* (each individually)

(30) *Anu, Abhi matte Aru kurchi ettidaru.*
Anu Abhi and Aru chair lifted ("Anu, Abhi & Aru lifted the chair each separately.")

We take the denotation for verbal cumulativity to be as in (31), following Henderson (2012). Informally, (31) denotes that the event e represented by the verb is non-atomic, composed of a plurality of sub-events e' that all share the property of being a P-ing event:

(31) a. $[\![\star]\!]_{intransitive} = \lambda P_{\langle v,t\rangle}.\lambda e[e \in *\lambda e'[P(e')]]$
b. $[\![\star]\!]_{transitive} = \lambda P_{\langle e,\langle v,t\rangle\rangle}.\lambda x.\lambda e[e \in *\lambda e'[P(e') \ \& \ \mathrm{Th}(e',x)]]$

We further adopt Henderson's definition of the meta-language cumulative closure operator $*$, as in (32):

(32) The cumulative closure of P is the smallest predicate $*P$ such that:
a. $P \subset *P$
b. if $a \in *P$ and $b \in *P$, then $a \oplus b \in *P$

[5] Within pragmatically marked sentences, when the bare singular is fronted to vP-external positions to indicate special information status, existential readings aren't ruled out. In these cases, the bare singular reconstructs to its pre-A'-movement slot at LF, in line with Bobaljik & Wurmbrand (2012) who argue for LF reconstruction in cases where the surface word order is conflicted between expressing the information structure of the utterance and its intended scope.

An important consequence of assuming ⋆ is a compositional operator is that it allows the possibility of intervening elements separating the verbal head from ⋆. To quote Henderson (2012: pg. 43): "By treating cumulative closure as an operator in the compositional semantics, instead of a lexical default, we can investigate how other operators take scope with respect to it." As we will see shortly, this is crucial to our explanation of number-neutrality arising among Kannada bare singular objects within telic contexts.

The second plurality operator in Figure 1, FREQ, is a covert frequentativity or iterativity operator identical to the one posited in Dayal (2011) and defined as in (33)-(34), following Lasersohn (2013) and closely related to Van Geenhoven (2004), invoked to explain iterative interpretations of pseudo-incorporated bare nominals within atelic utterances in Hindi. Informally, FREQ applies to an event property P to return an iterative plurality of P-ing sub-events. One characteristic property of FREQ is that it posits a hiatus between the occurrence of the different sub-events within the iteration, entailing that any two sub-events are necessarily non-overlapping. Crucially, this operator is unavailable in telic contexts that are generally known to be incompatible with iterative readings. This means that in telic sentences, the only available verbal pluractionality operator is the cumulativity operator ⋆.

(33) $[\![\text{FREQ}]\!]_{intransitive} = \lambda P_{\langle v,t\rangle}.\lambda E.\forall e, e' \in E \ [P(e) \ \& \ P(e')$
$\& \ \neg[\tau(e) \circ \tau(e')]$ (no overlap b/w sub-events)
$\& \ \exists t[between(t, \tau(e), \tau(e')) \text{ s.t. } \neg\exists e'' \in E.[P(e'') \ \& \ t \subset \tau(e'')]]$ (required hiatus)
$\& \ \text{CARD}(E) > 1$ (cardinality > 1)

(34) $[\![\text{FREQ}]\!]_{transitive} = \lambda P_{\langle e,\langle v,t\rangle\rangle}.\lambda x.\lambda E.\forall e, e' \in E \ [P(e,x) \ \& \ P(e',x)$
$\& \ \neg[\tau(e) \circ \tau(e')]$
$\& \ \exists t[between(t, \tau(e), \tau(e')) \text{ s.t. } \neg[\exists e'' \in E.\exists y.[P(e'', y) \ \& \ t \subset \tau(e'')]]] \ \& \ \text{CARD}(E) > 1$

Furthermore, Figure 1 indicates that FREQ in atelic sentences applies after the cumulativity operator ⋆ has already acted. This means that each sub-event within the iterated plurality returned by FREQ is possibly non-atomic. For instance, in the readily available frequentative reading of the atelic Kannada utterance shown in (35), it is understood that the larger event lasting five hours is composed of an iteration of eating events distributed temporally, with some hiatus between each sub-event. This portion of the meaning is due to the presence of FREQ. However, each sub-event may itself be non-atomic: for instance, a sub-event at time τ may consist of more than one child eating a peanut—thereby forming a plurality of temporally overlapping eating events. This is due to the cumulativity operator ⋆.

(35) *MakkaLu aidu ganTe tanaka kaDLeKaaL tindaru.*
Children five hour till peanut ate ("The children ate peanuts for five hours.")

At this point, a question arises: is there really a necessity for positing both of these pluractionality operators within atelic sentences? Does this not introduce any redundancy, or worse yet, logical inconsistency? There have in fact been cases in the literature where only one or the other has been assumed. For example, Champollion (2015) does not assume a silent frequentativity operator like FREQ in English, thereby refraining from drawing any fundamental distinctions between continuative or cumulative *vs.* iterative readings (both are taken to arise via ⋆). On the other hand, Van Geenhoven (2004) does not assume cumulativity in addition to frequentativity.

The question of whether assuming more than one pluractionality operator within the VP is ever warranted is explicitly discussed in Iordăchioaia & Soare (2015). The authors conclude this is possible if and only if each operator contributes a distinct lexical meaning. In Kaqchikel, accordingly, two distinct pluractionality operators can co-exist alongside one another within the VP level, as one contributes a standard cumulativity-based meaning and the other a necessarily plural, distributive one. Note that this is also the case in Kannada: while the cumulativity operator ⋆ is only assumed to contribute potential plurality of the verb without imposing any additional conditions on the nature of this plurality, the iterativity operator FREQ necessarily introduces the additional lexical meaning of temporal distributivity.

Further Kannada-specific arguments additionally provide support for treating iterativity as arising through a distinct mechanism from cumulativity within the language. We can observe, for instance, that Kannada allows overt realization of iterativity via verbal reduplication, showing the independent existence of such a meaning in the semantic grammar of the language, despite optional overt realization. That is, while (36) is compatible with contexts where Anu threw the ball once or several times, the reduplication in

(37) eliminates the singular event reading, forcing an interpretation where the ball is thrown over and over by Anu. If it were indeed the case that iterative readings are not fundamentally different from continuative or cumulative ones (cf. Champollion 2016), it is unlikely that we would see an overt distinction between how the language chooses to realize each of these meanings. The fact that iterativity is overtly realized on the verb furthermore provides further evidence that FREQ is a verb-level operator.

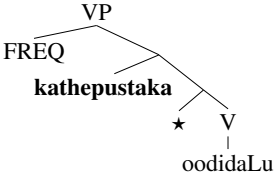
(36) *Anu aa chenD-anna esedaLu.*
Anu that ball-ACC threw ("Anu threw that ball.")

(37) *Anu aa chenD-anna esedu-esedu iTTaLu.*
Anu that ball-ACC throw-REDUP kept ("Anu kept throwing that ball.")

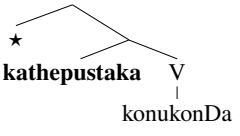
Assuming the above described verbal-functional structure for Kannada and the operators present therein, we are in a position to provide simple explanations for the various types of number-neutrality behaviors exhibited by existential bare singulars in this language. Subjects and ACC-marked objects always occupy VP-external positions (specifier of vP and AgrOP respectively – as seen in Figure 1), and hence always scope above either pluractional operator, thereby retaining strictly singular interpretations.

Turning to the bare singulars that are amenable to number-neutral interpretations, we see, for example, that when the non-ACC bare singular object *kathepustaka* ('story book') appears alongside the verbal predicate *read* in (8) – reproduced from Section 2.3, number-neutrality arises within atelic but not telic contexts. However, the same nominal appearing with a different predicate, such as *buy* in (10), permits number-neutrality to arise within telic contexts as well. Assuming that FREQ occupies the left edge of the VP, so that positions #1 and #2 indicated in Figure 1 are the two logically possible VP-internal merge positions, we propose that the number-neutrality contrast arises due to variation in where the object is merged in (8) – position #1, as shown in (38) *vs.* in (10) – position #2, as in (39). In both cases, the object remains VP-internal at LF, since there is no movement necessary to a higher projection for Case-checking.

(38)



(39)



We omit the full derivation here, but the final denotations for (8) and (10) are as below:

(40) $[\![\textbf{FREQ [kathepustaka [}\star\textbf{ oodidaLu]]}_{\textbf{EC}}]\!]^{c,g} =$
$\lambda E.\ \forall e_1, e_2 \in E\ [\exists x_e.[e_1 \in *\lambda e'[\text{read}'(e')\ \&\ \text{Th}(e', x)] \wedge \text{book}'(x) \&\ \text{ATOM}(x)]$
$\&\ \exists x'_e.[e_2 \in *\lambda e'[\text{read}'(e')\ \&\ \text{Th}(e', x')] \wedge \text{book}'(x') \&\ \text{ATOM}(x')]$
$\&\ \neg[\tau(e_1)\ o\ \tau(e_2)]\ \&\ \exists t[between(t, \tau(e_1), \tau(e_2))\ \text{s.t}\ \neg\exists e_3 \in E.$
$[\exists y_e.[e_3 \in *\lambda e''[\text{read}'(e'') \,\&\, \text{Th}(e'', y)] \&\ \text{book}'(y) \&\ \text{ATOM}(y)]\ \&\ t \subset \tau(e_3)]] \&\ \text{CARD}(E) > 1$

(41) $[\![\star\ \textbf{[kathepustaka [konDukonDa]]}_{\textbf{EC}}]\!]^{c,g} = \lambda e_v[e \in *\lambda e'[\exists x_e.\text{buy}'(e)\ \&\ \text{story-book}'(x)\ \&\ \text{ATOM}(x)]]$

(40) conveys the existence of a strictly plural, iterative event E with non-overlapping cumulative sub-events, where within each sub-event there is a book that serves as its theme. The book involved in each sub-event may vary, as a result of the existential closure of the bare singular argument occurring prior to FREQ. This is the source of number-neutrality in (8)-a. In the telic variant (8)-b, number-neutral interpretations are correctly predicted to be absent, due to the absence of FREQ. On the other hand, in (41), e_v denotes a cumulative closure of events, such that in each sub-event of buying e', there exists a story book that is bought. The covariation in the identity of the story book involved in each atomic event is the result of existential closure of the bare argument prior to ★. Verb roots are cumulatively closed, so number-neutral interpretations are delivered across telic and atelic contexts.[6]

[6] A grammatical account of the number-neutrality contrasts is ultimately necessary for Kannada, and may not be bypassed in favor of explanations that are purely lexical/pragmatic. Specifically, a pragmatic explanation along the lines of Krifka & Modarressi (2016) is intractable, in which the number-neutrality of the bare singular object in (10) and the lack thereof in (8-b) is due to the plausibility of buying more than one book at once and the implausibility of

4. Conclusion

In this paper, we have worked out a novel analysis of existentially interpreted bare singulars in Kannada that is able to capture some empirical patterns among these items in this language that are not shared by their crosslinguistic counterparts. Future work must address a deeper explanation of the proposed variation in objects' base-generated positions and explore an extension to bare plurals.

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reading more than one book at once respectively. This would incorrectly predict number-neutral readings even within a variant of (10) that contains an ACC-marked existential bare singular object, such as (i):

(i) *Avanu angaDi-alli kathepustaka-na konDukonDa.*
he store-in story.book-ACC bought ("He bought a (single) story book at the store.")

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