Pseudo-incorporation, event kinds, and atelicity[1]

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Abstract. This paper investigates how kind-referring arguments shape (a)telicity by examining aspectual contrasts involving pseudo-incorporation (PI) in Turkish. Building on Sağ's (2019; 2022) analysis of Turkish PI and Chierchia's (2023) approach to plural kinds and their effect on lexical aspect, I argue that PI involves singular kind reference at the event-kind level, establishing taxonomic event kinds. This approach provides an explanation for the puzzling atelicity of PI constructions, distinguishing them from caseless indefinites and canonical singular kind arguments. Additionally, it elucidates how PI relates to plural kind argumentation, highlighting their similar yet distinct characteristics. Ultimately, my analysis demonstrates that event-kind-level arguments play a fundamental role in determining the aspectual interpretation of verbal predicates, expanding our understanding of kind reference beyond the nominal domain.

Keywords: kind argumentation, (a)telicity, pseudo-incorporation, taxonomic event kinds

1. Introduction

How event semantics interacts with lexical aspect is a fundamental question in linguistic theory. A key factor in this interaction is the relationship between a verb and its thematic argument, which determines whether the VP is telic or atelic (Garey, 1957; Verkuyl, 1972; Dowty, 1979: a.o.). More specifically, the telicity of a VP is influenced not only by the lexical aspect of the verb but also by whether its argument is quantized or non-quantized (Krifka, 1989, 1998).

Let me illustrate this point with a VP that involves a non-iterable achievement, such as *kill*. In (3), the verb combines with a quantized object argument —no proper part of a sum of two mosquitoes is a sum of two mosquitoes —and the VP gives rise to a telic interpretation. In contrast, replacing the object with a non-quantized NP —a proper part of a sum of mosquitoes may be a sum of mosquitoes—results in an atelic interpretation instead, as shown in (4).

(1) a. John killed mosquitoes for an hour.
     b. *John killed two mosquitoes for an hour.

While quantization plays a crucial role in aspectual specification, the contrast in (2) demonstrates that it is not a sufficient predictor of telicity (e.g., Mittwoch, 1982; Eberle, 1998; Filip, 2000; Zucchi and White, 2001). Both (2a) and (2b) involve non-quantized objects, yet they yield different aspectual interpretations. This makes it difficult to define telicity based on quantization, as the two sentences appear truth-conditionally equivalent at first glance. That is, both are true iff John killed some mosquitoes, yet only one passes the classical atelicity test by allowing modification with the durative adverbial *for an hour*.

(2) a. John killed mosquitoes for an hour.
     b. *John killed some mosquitoes for an hour.

Existing approaches attempt to account for this contrast in two main ways: (i) by appealing to

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scopal differences between bare plurals and indefinite DPs and (ii) by analyzing for-adverbials as event-oriented modifiers (e.g., Mittwoch, 1982; Krifka, 1998; cf. Dowty, 1979; Zucchi and White, 2001; Champollion et al., 2017; Chierchia, 2022, 2023, a.o.). Setting aside certain complications, in these accounts, bare plurals drive an ultra-narrow scope reading, which has been reduced to their kind-denoting nature in Carlson (1977), Chierchia (1998), and Krifka (1998), and thus they are interpreted below for-adverbials. In contrast, indefinite DPs must take wide scope over both the VP and its for-adverbial modifier.

This study examines Turkish, where a similar complication arises —this time between two arguments that both exhibit obligatory narrow scope yet yield contrasting aspectual properties: *pseudo-incorporated bare nouns* and *caseless indefinites*. Extending the investigation to aspectual differences between singular and plural kind argumentation, I account for the telicity contrasts in Turkish by proposing an event-kind-based analysis of pseudo-incorporation (PI, henceforth). Drawing on insights from Sağ's (2019; 2022) analysis of PI and Chierchia's (2023) recent approach to plural kind argumentation and atelicity, I argue that PI serves as a mechanism for establishing taxonomic event kinds through singular kind argumentation in the event-kind domain, thereby rendering otherwise telic constructions atelic.

The paper is structured as follows: Section 2 introduces the aspectual puzzles in Turkish. Section 3 examines plural and singular kind argumentation and their effects on telicity in English. Section 4 revisits the Turkish data against this background. Section 5 presents the proposed analysis, and Section 6 concludes.

2. The (a)telicity puzzle in Turkish

Turkish bare nouns and a/an indefinites with *bir* 'one' obligatorily take narrow scope when they serve as caseless direct objects. This is illustrated in (3) and (4), where both the bare noun *kitap* 'book' and the indefinite *bir kitap* 'a book' are interpreted under the scope of negation, yielding a "Ali read no books" interpretation. In neither sentence can the object take scope over the negation, making the reading "there is a book/books such that Ali didn't read it/them" unavailable, for which the indefinite in (4) requires overt accusative case marking (Enç, 1991).

(3) Ali **kitap** oku-ma-dı.
     Ali book read-NEG-PST
     'Ali didn't do book reading.'   [¬ > ∃ (no books), #∃ > ¬]

(4) Ali **bir kitap** oku-ma-dı.
     Ali one book read-NEG-PST
     'It is not the case that Ali read a book.'   [¬ > ∃ (no books), #∃ > ¬]

Caseless bare singulars are well-known instances of PI in Turkish (e.g., Öztürk, 2005), whereas, as shown in (5b), caseless indefinites are considered to undergo a Diesing (1992) style VP-level ∃-closure (Kelepir, 2001). Sağ (2019, 2022) analyzes pseudo-incorporated (PI'ed) bare singulars as singular kind terms. Singular kind terms denote group-like primitive kind entities; despite singularity in form, they are conceptually plural, holding a relation with atomic and plural object-level entities associated with kinds (Dayal, 2004). Sağ argues that this relation, calling it *belong-to*, is established in PI, via a local ∃-closure, yielding number neutrality and narrow scope. This is illustrated in (5a), where (3) means that there is no reading event whose theme argument belongs to the book kind and whose agent is Ali.

(5)   a. $[\![(3)]\!] = \neg\exists e.\exists y\,[\textit{belong-to}(y, \iota x_k.\textit{book}_k(x_k)) \wedge \textit{read}(e) \wedge \textit{Th}(e) = y \wedge \textit{Ag}(e) = \textit{Ali}]$
      b. $[\![(4)]\!] = \neg\exists e.\exists y\,[\textit{book}(y) \wedge \textit{read}(e) \wedge \textit{Th}(e) = y \wedge \textit{Ag}(e) = \textit{Ali}]$

Sağ's analysis treats sentences with PI'ed bare singulars truth conditionally equivalent to ones with caseless indefinites; a book-reading event entails reading at least one book. However, these sentences differ in their compatibility with for-adverbials when used with non-iterable achievements. While PI is felicitous, rendering (6) atelic, a caseless indefinite is anomalous with for-adverbials, as shown in (7), therefore yielding a telic interpretation instead.

(6)   Ali bir saat boyunca **tavşan** öldür-dü.
      Ali one hour for   rabbit kill-PST
      'Ali did rabbit killing for an hour.'

(7)   *Ali bir saat boyunca **bir tavşan** öldür-dü.
      Ali one hour for   one rabbit kill-PST
      '*Ali killed a rabbit for an hour.'

The puzzle deepens when case-receiving, non-PI'ed singular kind arguments are considered as well. Triggering a reading known as *representative object reading* when used with object-level predicates in episodic contexts, case-marked singular kind terms disallow for-adverbial modification with non-iterable achievements, similar to caseless indefinites. To illustrate this point, let us consider the following contrast between PI'ed and case-marked singular kind terms. In (8), the singular kind term undergoes PI, conveying an interpretation where the institute was involved in events where they carried out discoveries of some white lions in the region, i.e., did white lion discovering, for a month. In (9), the singular kind term occurs as a canonical theme argument to the verb, conveying that the institute discovered the white lion kind in the region, and is thus incompatible with the for-adverbial.

(8)   Kurum bu bölge-de (bir ay   boyunca) **beyaz aslan** keşfet-ti.
      institute this region-in one month for   white lion discover-PST
      'The institute did white lion discovering in this region (for a month).'

(9)   Kurum bu bölge-de (*bir ay   boyunca) **beyaz aslan-ı** keşfet-ti.
      institute this region-in one month for   white lion-ACC discover-PST
      'The institute discovered the white lion in this region (*for a month).'

The goal of this study is to reconcile these disparities and distinguish PI from caseless indefinites and canonical (case-marked) singular kind arguments. My analysis will partly build on Chierchia's (2023) approach to aspectual contrasts in English; therefore, I first provide an overview of his account in the next section.

3. Kind argumentation and (a)telicity

3.1. Plural kinds and atelicity

English bare plurals are compatible with for-adverbial modification, in contrast to their indefinite counterparts, as first illustrated in (2), repeated below.

(10)   a.   John killed mosquitoes for an hour.
       b.   *John killed some mosquitoes for an hour.

The explanation for this may lie in two key points: (i) the kind-referring nature of bare plurals, and (ii) the event-modifying nature of for-adverbials, where the durative adverb takes as input a property of events in which John killed one or more mosquitoes and returns a property of events e if e is the sum of shorter mosquito-killing events by John that, together, span an hour.

For (ii), Chierchia (2023) proposes a blend of quantificational and measuring approaches to for-adverbials.[2] In (10), the for-adverbial serves as an event modifier of type $\langle\langle v,t\rangle,\langle v,t\rangle\rangle$:[3]

(11) $[\![\textit{for an hour}]\!] = \lambda V.\lambda e.\ [\tau(e) = 1\text{-hour} \wedge \forall t'[\Gamma(t',\tau(e)) \rightarrow \exists e'[\tau(e') \subseteq t' \wedge V_w(e') \wedge \cup_w(V,e)]]]$, where $\Gamma(t',t) =_{df} t'$ is a cell in a contextually salient cover Γ of t.

(12) $[\![(10b)]\!] = \exists f \exists e\ [\![\textit{for an hour}]\!](\lambda e'[kill(e') \wedge Th(e') = f(mosquitoes) \wedge Ag(e') = j])(e)]$

In contrast, a widely accepted view considers English bare plurals, as in (10a), to be kind terms (due to Carlson, 1977), which yield a narrow scope existential interpretation in episodic contexts due to Derived Kind Predication (DKP), as proposed in Chierchia (1998). DKP ensures that bare plurals are necessarily interpreted below the for-adverbial, resulting in different instantiations of the mosquito kind being killed in each sub-event, thus rendering the VP atelic.

To illustrate the ultra-narrow scope nature of bare plurals, let me briefly sketch Chierchia's (1998) view. Kind reference with plurals is derived via the nominalization (*nom*) operator $^\cap$, which is a function from properties to functions from worlds w to the maximal entity satisfying that property in w, as illustrated in (13). For example, the bare plural *dinosaurs*, when combined with a kind-level predicate, denotes the intension of the maximal entity satisfying the dinosaur property in a given w, i.e., the dinosaur kind. This is shown in (14).

(13)   For any P and w, where P_w is the extension of P in w
$$^\cap P = \begin{cases} \lambda w.\ \iota x.\ P_w(x), & \text{if } \lambda w.\ \iota x.\ P_w(x) \text{ is in } K, \text{the set of kinds} \\ \text{undefined}, & \text{otherwise} \end{cases}$$

(14)   a.   Dinosaurs are extinct.
        b. $[\![(14a)]\!] = extinct(\lambda w.\ \iota x.\ ^*dinosaur_w(x))$

When a plural kind term is an argument to an object-level predicate in an episodic context, the kind term is first type-shifted into a property via the predicativization (*pred*) operator $^\cup$, which takes the extension of the kind in w and returns the set of singular and plural entities that instantiate the kind in w, as shown in (15).

(15)   Let k be a kind. Then for any world w, where k_w is the plural individual that comprises all of the atomic members of the kind
$$^\cup k = \begin{cases} \lambda x.\ x \leq k_w, & \text{if } k_w \text{ is defined} \\ \lambda x.\ FALSE, & \text{otherwise} \end{cases}$$

The type-mismatch between the predicate and the property-denoting bare plural then is re-

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[2]See Dowty (1979); Moltmann (1991); Deo and Piñango (2011); Champollion (2013), a.o., for the quantificational approach to for-adverbials. See Krifka (1989, 1998); Kratzer (2008); Landman and Rothstein (2012a, b); Champollion (2016), a.o. for the measuring approach.

[3]Chierchia (2023) proposes that for-adverbials can also have an interval-oriented use, where they modify properties of intervals above the $\exists$-closure of the event variable. In the examples discussed here, for-adverbials are analyzed as having an event-oriented interpretation; therefore, their interval-oriented use is not discussed here.

solved by DKP, as given in (16), which introduces a local (event-level) $\exists$-quantification over the instantiations of the kind provided by $^{\cup}$ in a given w. DKP derives the interpretation of (10a), as illustrated in (17).

(16) **Derived Kind Predication**
     If P applies to objects and k denotes a kind, then $P_w(k) = \exists x \, [^{\cup}k_w(x) \wedge P_w(x)]$

(17) $[\![(10a)]\!] = \exists e \, [[\![\textit{for an hour}]\!](\lambda e'. \, \exists y [^{\cup\cap}\textit{mosquitoes}_w(y) \wedge \textit{kill}_w(e') \wedge Th_w(e') = y \wedge$
     $Ag_w(e') = j])(e)])$ (via DKP)

While this analysis captures the contrast between bare plurals and indefinites, it remains inefficient when bare plurals are contrasted with plural definites. As exemplified in (18), a definite plural is incompatible with the for-adverbial.

(18) *Ali killed the mosquitoes in that room for an hour.

This difference of definite plurals from bare plurals is considered puzzling in Chierchia (2022, 2023) under the DKP-based approach to bare plurals based on Bar-Lev's (2021) view that definites similarly involve a low $\exists$-quantification over parts of the plural individual (due to reasons pertaining to homogeneity). That is, (18) means that there is some event e which spans one hour and is the sum of events of killing the mosquitos in that room. Assuming that this view is on the right track, the compatibility of bare plurals with for-adverbials cannot be explained through their narrow scope behavior presumably obtained via DKP.

As part of a solution to this puzzle, Chierchia proposes a "same participant" constraint on the event-oriented use of for-adverbials (see also Champollion et al., 2017). That is, for-adverbial modification requires a distribution across covers ensuring that the relevant sub-events maintain the same participants across the cells of the cover, as illustrated below (Chierchia, 2023: 74):

(19) **The Same Participant Constraint**
     a. for an hour $(V_w) = \lambda e. \, V_w(e)$ and e lasts one hour and for each temporal cell of a salient cover of $\tau(e)$, there is an event e' in V_w with **the same participants** as those in every other cell of $\tau(e)$ and e is the sum of all such events e'.
     b. Two V-events e and e' have the same participants relative to V in w iff:
        (i) For any core thematic role θ which is necessarily defined relative to V, $\theta_w(e) = \theta_w(e')$, where:
        (ii) A theta role θ is necessarily defined relative to V iff for any world w and any event e such that $V_w(e) = 1$, $\theta_w(e)$ is defined.

Due to this constraint, the for-adverbial in (18) requires the same mosquitoes to be involved across the cells of the cover, which in turn results in deviance with non-iterable achievements like *kill*. As for bare plurals, Chierchia abandons the DKP approach, and instead, following Landman and Rothstein (2012a, b), argues that kinds can directly bear thematic roles regardless whether the predicate is a kind level or an object level one. Under this approach, the VP *kill mosquitoes* is translated as follows:[4]

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[4]Chierchia (2023) acknowledges that kind argumentation cannot be purely kind-oriented, as evidenced by examples such as (i), where bare plurals introduce object-level discourse referents. Consequently, his rejection of DKP incorporates elements of both the "kinds as direct arguments" approach and DKP itself. Specifically, whenever a kind serves as a direct thematic argument of an event, instances of that kind are simultaneously introduced as thematic arguments of sub-events, as shown in (iib).

(20) $[\![kill\ mosquitoes]\!] = \lambda e\ [kill_w(e) \wedge Th_w(e) = {}^{\cap}mosquitoes]$

Chierchia further outlines three axioms for plural kind argumentation:

(21)   a. **Exemplification:**
            Having a kind argument entails that the event has parts in which instances of the
            kind are the thematic arguments (Landman and Rothstein, 2012a, b).
            $\theta_w(e) = {}^{\cap}P \rightarrow \exists e'\exists x\ [e' \le e \wedge {}^{\cup\cap}P_w(x) \wedge \theta_w(e') = x]$
        b. **Antitotality**:
            While the kind is involved as such, not all of its instances are.
        c. **Progressivity**:
            In all w's inertial for w there is a continuation of e in w'; in absence of external
            factors, e would tend to go on (Dowty, 1979; Landman, 1992).
            $\theta_w(e) = {}^{\cap}P \rightarrow \forall w'[I_w(w') \rightarrow \exists e'\exists x\ [{}^{\cup\cap}P_w(x) \wedge C_{w'}(e',e) \wedge \theta_{w'}(e') = x]]$
            where $I_w(w') = w'$ is inertial for w; $C_{w'}(e',e) = e'$ is a continuation of e in w.

Based on these axioms, a *killing mosquitoes* event has parts involving instances of the mosquito
kind, as shown in (22) (i.e., exemplification), there is no suggestion that the whole kind is
involved (i.e., antitotality), and the event is prolongable (i.e., progressivity).

(22) $\exists e\ [kill_w(e) \wedge Th_w(e) = {}^{\cap}mosquitoes \wedge Ag_w(e) = j]$
        $\Rightarrow \exists e\exists e'\exists x\ [e' \le e \wedge {}^{\cup\cap}mosquitoes_w(x) \wedge kill_w(e') \wedge Th_w(e') = x \wedge Ag_w(e') = j]$

This "kinds as direct arguments" view allows bare plurals to meet the "same participant" con-
straint when a killing mosquitoes event is modified by a for-adverbial, as each cell of $\tau(e)$ has
the same kind as the theme argument.

3.2. Plural vs. singular kind reference and (a)telicity

The atelicity pattern observed with bare plurals aligns with PI constructions in Turkish. How-
ever, Turkish PI involves singular kind argumentation, following Sağ (2019, 2022). To better
understand this parallelism, let us first discuss plural and singular kind reference and their role
in aspectual specification in English, before returning to Turkish in the next section.

Dayal (2004) draws a distinction between definite singular and bare plural kind terms. Plural
kind terms have an inner structure built on the set of object-level instances via the *nom* oper-
ator, as we have seen above. However, singular kind terms denote primitive entities, directly
referring to a kind in a taxonomic hierarchy. In Dayal's view, a singular noun can denote either
an atomic property of object-level entities, as illustrated in (23), or an atomic property of kind-
level (taxonomic) entities, as shown in (24). In their taxonomic interpretation, singular nouns
may refer to a singleton set containing a unique kind individual (e.g., the dog kind), as in (24a),
or to an atomic set comprising the sub-kinds of a kind individual (e.g., bulldog, poodle, etc.),
as in (24b). The choice between these denotations is context-dependent.

(23) $[\![dog]\!] = \lambda x.\ dog(x) = \{Fido, Max, Tommy...\}$ $\langle e,t \rangle$

(i)   This morning, dugongs$_i$ were letting themselves$_i$ die, because they were trapped.
(ii)   a. Birds are chirping.
        b. $\exists e\ [Ag_w(e) = {}^{\cap}birds \wedge \exists y[{}^{\cup\cap}birds_w(y) \wedge \exists e'[e' \le e \wedge Ag_w(e') = y \wedge chirp_w(e') \wedge chirp_w(e)]]$

(24) $[\![dog_{k,c}]\!] = \lambda x_k.\, dog_k(x_k)$ $\langle e_k, t \rangle$
     a.   a singleton set containing the dog kind = $\{DOG\}$
     b.   a set of subkinds of dog salient in a context c
           = $\{BULLDOG,\, POODLE,\, GOLDEN.R, ...\}$

For example, in (25a), the singular noun *dog* denotes at the ordinary object level, and in (25b) and (25c), it denotes at the taxonomic kind level. The definite descriptions in (25a) and (25b) refer, respectively, to a contextually salient unique dog individual ($\iota x.\, dog(x)$) and to the unique dog kind ($\iota x_k.\, dog_k(x_k)$).

(25)   a.   The dog licked me.
     b.   The dog evolved from the wolf thousands of years ago.
     c.   Every dog is easy to train.

Dayal makes an analogy between singular kind terms and group terms. While kinds are conceptually plural, singular kinds are *grammatically impure atomic*. They maintain a conceptual-level relation with their specimens but differ from plural kinds in that they do not allow type-shifting to sets of object-level entities associated with them. Consequently, ∃-quantification over these sets is also unavailable, preventing a (DKP-based) existential reading. This is evidenced by the contrast given in (26), where the definite singular 'the cat' can only refer to a unique cat individual unlike the bare plural, which conveys an existential interpretation.

(26)   a.   Nowadays, cats are ruining my garden.   narrow scope ∃
     b.   Nowadays, the cat is ruining my garden.   definite singular

Against this background, let us now consider singular and plural kind reference from the perspective of Chierchia's (2023) recent approach to kind argumentation and its interaction with (a)telicity, in which the DKP analysis is abondened. The two forms of kind terms contrast with respect to their ability to render the VP atelic with non-iterable achievements, as given below:

(27)   a.   Horses arrived in Australia with the first immigrants (for a few years).
     b.   The horse arrived in Australia with the first immigrants (*for a few years).

In Chierchia's view, both sentences involve the kind terms as direct arguments to the verb. The aspectual contrast arises because singular kind reference lacks the three axioms associated with plural kind terms. Instead, (27b) conveys the so-called *representative object reading*: The protagonist of the event is the horse kind, where a representative sample of the horse kind's arrival in Australia concerns the kind as a whole rather than being a property of some horse individuals. Therefore, singular kind reference does not involve exemplification but in contrast yields totality. This event is not prolongable either as the kind has already arrived in Australia and cannot keep arriving, and thus the singular kind argumentation in (27b) is not subject to progressivity. Differing from plural kind argumentation in lacking these inherent features, the singular form then yields deviance with for-adverbials due to the "same participant" constraint. That is, in (27b), each sub-event of the arrival event involves the same horse kind, yielding the unnatural reading where the horse kind repeatedly arrives in Australia for a few years.

To conclude, singular kind argumentation is inherently unsuitable for atelic modification with non-iterable achievements, both due to its lack of the three axioms associated with plural kind argumentation and because of the "same participant" constraint of for-adverbials.

4. Revisiting the (a)telicity puzzle in Turkish

Having discussed the (a)telicity contrasts in English, we now return to the puzzle in Turkish. To reiterate, caseless indefinites (28), PI'ed singular kind arguments (29), and canonical, case-marked singular kind arguments (30) differ with respect to their compatibility with for-adverbials when combined with non-iterable achievements, as repeated below.

(28) Ali (*bir saat boyunca) **bir tavşan** öldür-dü.
      Ali one hour for   one rabbit kill-PST
      'Ali killed a rabbit (*for an hour).'

(29) Kurum bu bölge-de (bir ay   boyunca) **beyaz aslan** keşfet-ti.
      institute this region-in one month for   white lion   discover-PST
      'The institute did white lion discovering in this region (for a month).'

(30) Kurum bu bölge-de (*bir ay   boyunca) **beyaz aslan-ı** keşfet-ti.
      institute this region-in one month for   white lion-ACC discover-PST
      'The institute discovered the white lion in this region (*for a month).'

The caseless indefinite in (28) is deviant with the for-adverbial due to the "same participant" constraint of durative modifiers. As illustrated in (19), this constraint forces the same rabbit to be killed across each sub-event, thereby rendering the VP telic and causing the observed incompatibility. Similarly, the deviance of (30) parallels that of (27b): the singular kind argument yields a representative object reading, resulting in an anomalous interpretation with the for-adverbial. Specifically, the "same participant" requirement would necessitate repeatedly discovering the white lion kind within the same region.

However, the compatibility of the PI construction in (29) needs explanation. While the statement in (30) is about the entire kind, thus requiring that the white lion kind was previously undiscovered in the relevant region, PI constructions follow the three core axioms, paralleling plural kind argumentation. Specifically, in (29), (i) the protagonist involved in the event of white lion discovering must be some individual members of the white lion kind (exemplification), (ii) the event does not involve the entire kind itself, which could have been discovered in the area earlier (antitotality), and (iii) the event has the potential to continue indefinitely, as the institute may repeatedly discover different white lions within the region (progressivity).

The key question is what aspect of PI leads to this notable change in singular kind argumentation. Sağ's (2022) PI analysis, thus, needs an adjustment similar to the "kinds as direct arguments" approach to account for compatibility with for-adverbials, yet it must remain distinct from both canonical (case-marked) singular kind argumentation and plural kind argumentation. Sağ argues against the PI status of Turkish bare plurals, partly on the grounds of the lack of *name-worthiness* imposed on plural kind argumentation. Crucially, unlike plural kinds, the combination of the noun and the verb in a PI construction is well-formed only if the verbal complex denotes a canonical event type (Dayal 2011, cf. Mithun 1984).

I propose that name-worthy events can be identified based on two distinct criteria: one concerns how typical or frequent the event is, while the other relates to its significance —specifically, whether the event is impactful enough to merit attention. *Rabbit killing*, as in (10a), is an example of the former, as hunting rabbits can easily be a routine or common activity. Likewise, *book reading*, as in (3), can be considered a canonical event type given its regular and habitual

nature. An example of the latter is *white lion discovering*, as in (29). Even if the search for white lions in the region is conducted only for a limited period rather than regularly, it remains a noteworthy event due to its potential significance for the region.

Both criteria are sensitive to cultural context, as judgments about typicality or significance can vary considerably. Dayal exemplifies this distinction using Danish, contrasting the acceptable PI combination 'pig butcher' with the unavailable 'ostrich butcher.' Since ostriches are uncommon in Denmark, it is unlikely to constitute a culturally relevant practice of butchering them in this community, unlike pig butchering. Consequently, the phrase 'ostrich butcher' does not form a valid PI construction, as it does not correspond to an activity recognized as culturally typical or significant within that society.

The impact of the name-worthiness requirement imposed on PI is particularly clear in the adjectival modification allowed within these constructions. According to Sağ, modification with PI is restricted to adjectives that denote sub-kinds and contribute to name-worthy event types. For instance, in (31), modifying the noun *kitap* 'book' with *dini* 'religious' is acceptable, whereas modification with *eski* 'worn-out' is not permitted within a book-reading context. This contrast arises because religious books form a recognizable sub-kind of books, and reading religious books constitutes a canonical event type. In contrast, worn-out books do not readily form a sub-kind, nor does reading worn-out books constitute a typical or culturally recognized event type. On the other hand, modification of bare plurals is not subject to these constraints, as illustrated by the acceptability of both *dini* and *eski* in (31). This indicates that bare plural arguments are not constrained by name-worthiness and therefore do not undergo PI in Turkish.[5]

(31)   a.   Ali *dini*   kitap(-lar) oku-du.
            Ali religious book-PL   read-PST
            PI: 'Ali did religious book reading.' with PL: 'Ali read religious books.'
       b.   Ali *eski*   kitap??(-lar) oku-du.
            Ali worn.out book-PL   religious book-PL read-PST
            PI (intended): 'Ali did worn-out book reading.' with PL: 'Ali read worn-out books.'

To conclude, while caseless indefinites and case-marked singular kind arguments are expected to be deviant with for-adverbials in clauses with non-iterable achievements, the atelicity of PI constructions warrants further examination.

5. The analysis

In this section, I present my analysis of Turkish PI. I first propose that PI is an event-kind-level argumentation process and then demonstrate how this approach accounts for the atelicity of PI'ed singular kind arguments.

5.1. Pseudo-incorporation and event kinds

Building on the theories positing event kinds (represented as e_k of type v_k) as a distinct category from event tokens (represented as e of type v) (Barwise and Perry 1983, Landman and Morzycki

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[5]The use of the plural in (31a) is indeed degraded unless it denotes multiple sub-kinds of the religious book kind. See Sağ (2022) for further discussion on the difference between bare singular and plural arguments in Turkish.
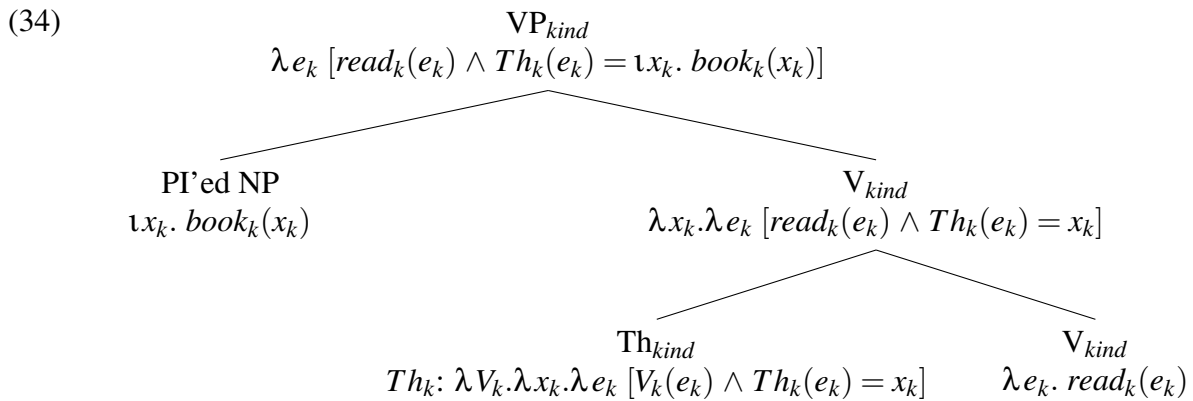
2003, Ginzburg 2005, Schäfer 2007; Gehrke and McNnally 2011, Schwarz 2014, Anderson and Morzycki 2015, Gehrke 2015, Sağ 2018; Luo 2022, and references therein), verbs can denote properties of event kinds in addition to the general assumption that they can denote properties of event tokens, as exemplified below:

(32)   a. $[\![read_{kind}]\!] = \lambda e_k.\ read_k(e_k)$
       b. $[\![read_{token}]\!] = \lambda e.\ read(e)$

Expanding upon this two-tiered approach to the event domain, I propose that argument saturation is not limited to event tokens but can also occur within the domain of event kinds. In languages like Turkish, this process surfaces as PI (cf. van Geenhoven, 1998; Chung and Ladusaw, 2004; Dayal, 2011). An incorporating verb denotes a property of event kinds rather than event tokens and its argument position must be saturated by a kind-denoting expression —specifically, a singular kind term —resulting in a sub-event-kind interpretation.

This argument saturation occurs within the VP. Adopting a neo-Davidsonian approach to event semantics, I assume that there are both event token-level and event-kind-level thematic functions, represented as θ_t and θ_k, respectively. Argument saturation in the event kind domain is mediated by a dedicated θ_{kind} head (e.g., the theme-introducing Th$_{kind}$), which encodes a thematic function that applies to singular kinds and event kinds.[6] Under this approach, the PI construction *book read* in (33) is derived as follows:[7]

(33)   Ali **kitap** oku-du.
       Ali book read-PST
       'Ali did book reading.'

(34)

$$\text{VP}_{kind}$$
$$\lambda e_k\ [read_k(e_k) \wedge Th_k(e_k) = \iota x_k.\ book_k(x_k)]$$

PI'ed NP
$\iota x_k.\ book_k(x_k)$

V_{kind}
$\lambda x_k.\lambda e_k\ [read_k(e_k) \wedge Th_k(e_k) = x_k]$

Th$_{kind}$
$Th_k:\ \lambda V_k.\lambda x_k.\lambda e_k\ [V_k(e_k) \wedge Th_k(e_k) = x_k]$

V_{kind}
$\lambda e_k.\ read_k(e_k)$

The Th$_{kind}$ head introduces a thematic function (Th_k) that applies at the level of event kinds. This function takes as input an event kind property, V_k, of type $\langle v_k, t \rangle$, and a singular kind term, yielding an event kind property whose theme argument is a singular kind entity. In (34), the derived PI structure represents a reading event kind in which the book kind is the theme argument. As a result, the output is the property of a book-reading event kind, which is classified as a sub-kind of the more general reading event kind. More broadly, PI provides a structural mechanism for organizing event kinds into a taxonomic hierarchy by associating them with kind-level thematic arguments (see also Espinal and McNally, 2011; Gehrke, 2015;

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[6]Agents and, potentially, goal arguments can also undergo PI in Turkish (Öztürk, 2009; Jo and Palaz, 2022).
[7]To streamline notation, world variables are omitted in the formalizations that follow.

Sağ, 2018; Luo, 2022). In this way, event kinds are treated as primitive, taxonomic entities, analogous to Dayal's (2004) analysis of taxonomic kinds in the nominal domain, and therefore only allow taxonomic kinds as their thematic arguments.[8]

Introducing an event-token-level argument as an agent, requires a mechanism that shifts from the event kind domain to that of event tokens. For this, I introduce an Event Tokenizer (ET) operation, as specified in (35) (cf. Sağ, 2018).

(35)   ET: $\lambda V_k.\lambda e. \exists e_k \; [belong\text{-}to(e,e_k) \wedge V_k(e_k)]$

ET is a type-shifter that takes an event kind property (V_k of type $\langle v_k,t \rangle$), existentially closes it, and returns a property of event tokens (V of type $\langle v,t \rangle$) that belong to the event kind. Since event kinds are treated as taxonomic kinds, I adopt Sağ's *belong-to* relation to similarly capture the relation between event kinds and event tokens. For example, when ET applies to the *book-reading* event kind, the result denotes a property of reading event tokens that *belong to* the reading event kind, with the book kind serving as the theme argument, as illustrated below:

(36) $ET(\llbracket book \; read \rrbracket) = \lambda e. \exists e_k \; [belong\text{-}to(e,e_k) \wedge [read_k(e_k) \wedge Th_k(e_k) = \iota x_k. \; book_k(x_k)]]$

When an event token is derived through ET type-shifting, any thematic kind argument of the event kind (if present) must correspond to at least one object-level member of that kind, holding the same thematic role at the event token level. This principle, captured in (37), ensures that event kinds systematically map onto event tokens while maintaining thematic consistency between levels of representation. For instance, involvement in a book-reading event kind entails that the corresponding reading event token must have at least one book as its theme.

(37)   **Event Tokenization**
$\forall e_k,x_k,\theta_k \; [\theta_k(e_k) = x_k \rightarrow [\forall e,\theta_t \; [belong\text{-}to(e,e_k) \wedge correspond\text{-}to(\theta_t,\theta_k)] \rightarrow \exists y \; [belong\text{-}to(y,x_k) \wedge \theta_t(e) = y]]]$

As mentioned above, canonical argument saturation takes place only after the event kind property is type-shifted into an event token property, a process that occurs at the VP level. Since event-kind-level argumentation, i.e., PI, happens VP-internally, event-token-level arguments are introduced higher in the structure in the VP-external domain (Öztürk, 2005). Following Sağ (2019, 2022), theme arguments at the event token level are introduced by a theme-introducing little v head (v_{Th}), while agent arguments are introduced by an agent-introducing little v head (v_{Ag}), which projects above v_{Th}. This structure is schematized below.[9]

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[8]Event kinds can also be derived through a *nom* operator that applies to properties of event tokens, as proposed by Chierchia (1998) and Schwarz (2014). However, given the taxonomic nature of PI constructions, I adopt the view that treats event kinds as primitive entities, following Schäfer (2007) and Gehrke and McNnally (2011), a.o.

[9]The structure in (38) represents the PI'ed argument alongside both an agent and a theme argument in the VP-external domain. This should be understood as a full-fledged illustration of how thematic arguments are positioned depending on whether they appear in the event-kind or event-token domains. It does not imply that an argument can be introduced simultaneously in both domains. For an alternative view, see Sağ et al. (to appear), which primarily focuses on agent PI within the event-kind-based approach proposed here.

(38)
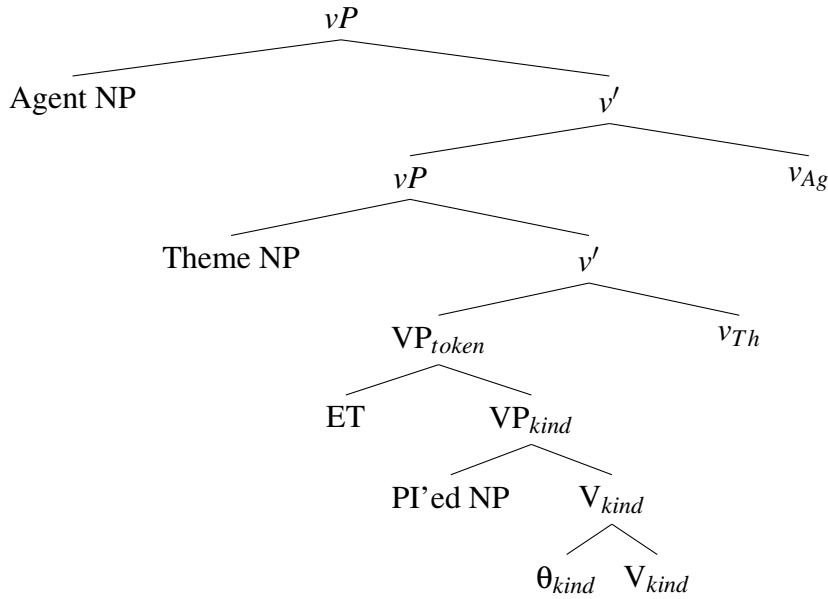
Given that v_{Ag} denotes an agent-introducing function (Ag_t), as shown in (39), the interpretation of (33) is derived as shown in (40). Ignoring tense, with the existential closure of the event variable 'Ali did book reading' means that Ali is involved in an event token that belongs to the book-reading event kind as an agent. Being involved in an event token of the book-reading event kind entails that there is a reading event whose theme argument belongs to the book kind.

(39) $Ag_t : \lambda V.\lambda x.\lambda e \ [V(e) \wedge Ag_t(e) = x]$

(40) $\exists e. \ \exists e_k \ [belong\text{-}to(e, e_k) \wedge [read_k(e_k) \wedge Th_k(e_k) = \iota x_k. \ book_k(x_k)] \wedge Ag_t(e) = Ali]$
$\Rightarrow \exists e.\exists y \ [read(e) \wedge belong\text{-}to(y, \iota x_k. \ book_k(x_k)) \wedge Th_t(e) = y \wedge Ag_t(e) = Ali]$

For comparison, canonical argumentation is illustrated in (41), where both the agent and the theme arguments are introduced VP-externally in the event token domain after the verb —denoting the property of the reading event kind —undergoes ET type-shifting. Here, *kitap* 'book' is introduced in the specifier position of v_{Th}. Building on the view that singular nouns are ambiguous in having ordinary object-level and taxonomic interpretations, the theme argument in (41) denotes an atomic property of object level individuals, which subsequently undergoes *iota* type-shifting to refer to a contextually familiar unique book. With the agent argument merged higher in the specifier of v_{Ag}, the sentence ultimately conveys that Ali participated in a reading event token whose theme is a definite book individual, as illustrated in (42).

(41)   a. Ali **kitab-ı**   oku-du.
            Ali book-ACC read-PAST
            'Ali read the book.'

(42) $\exists e. \ \exists e_k \ [belong\text{-}to(e, e_k) \wedge read_k(e_k)] \wedge Th_t(e) = \iota x. \ book(x) \wedge Ag_t(e) = Ali]$
$\Rightarrow \exists e \ [read(e) \wedge Th_t(e) = \iota x. \ book(x) \wedge Ag_t(e) = Ali]$

Before proceeding, it is worth clarifying the distinction between the event-kind-level and event-token-level theta functions. θ_k is defined on event kinds and this rules out the possibility of a verb entering the derivation as an event token while combining with a singular kind argument in the VP-internal domain. Such a combination is only possible above the VP, as in (30), where

singular kind arguments receive case and do not contribute to a sub-event-kind interpretation. That is, theta functions in the VP-external event token domain, i.e., θ_t, can take both object-level and kind-level arguments, depending on whether the predicate has an object-level or a kind-level interpretation. This will be discussed in the following section. Moreover, unlike the case with θ_k, θ_t does not need to be defined exclusively on event tokens, as it is always introduced above ET, and therefore will always apply to event tokens.[10] The subscript t on θ_t indicates the structural position at which it is introduced relative to ET.

The number neutrality of PI'ed arguments follows from their status as kind terms, as claimed in Sağ (2022), since the object-level members of a kind entity can be both singular and plural individuals. Their obligatorily narrow scope arises from the fact that the singular kind denoted by the PI'ed NP is integrated into the event kind represented by the VP complex. When ET type-shifting applies, it introduces $\exists$-quantification over event kinds, which in turn falls under the scope of $\exists$-quantification over event tokens. Given that $\exists$-closure of an event token variable consistently occurs beneath other quantificational elements, the event kind quantifier —and by extension, the PI'ed NP —is necessarily interpreted under the scope of all quantifications. For example, (43) is interpreted as shown in (44), which in turn entails that Ali did not read any books (that belong to the book kind), deriving from Event Tokenization (37).

(43) Ali **kitap** oku-ma-dı.
      Ali book read-NEG-PST
      'Ali didn't do book reading.'   [$\neg > \exists$ (no books), #$\exists > \neg$]

(44) $\neg\exists e. \exists e_k [belong\text{-}to(e,e_k) \wedge [read_k(e_k) \wedge Th_k(e_k) = \iota x_k. book_k(x_k)] \wedge Ag_t(e) = Ali]$
      $\Rightarrow \neg\exists e.\exists y [read(e) \wedge belong\text{-}to(y, \iota x_k. book_k(x_k)) \wedge Th_t(e) = y \wedge Ag_t(e) = Ali]$

The name-worthiness requirement no longer needs to be stipulated; rather, it follows naturally from the fact that PI operates at the taxonomic event-kind level (cf. Gehrke, 2015). That is, while kind entities classify objects with sufficiently regular functions or behaviors in nature, singular kinds differ in that they are restricted to well-established categories (Carlson, 1977). This is evident in the contrast given in (45). The DP 'the coke bottle' allows for a taxonomic kind reading, as it is recognized as a prototypical type of bottle. In contrast, 'the green bottle' does not readily receive the same interpretation, likely because green bottles vary significantly in shape and size. However, this distinction disappears in the plural, demonstrating that singular kind terms must denote a *name-worthy* kind to be grammatically acceptable.

(45) a. The coke bottle has a narrow neck.
      b. #The green bottle has a narrow neck.
      c. Coke bottles/Green bottles have narrow necks.   (Krifka et al., 1995: 11)

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[10]Whether verbs denote properties of event kinds in the absence of PI remains an open question. One possible view is that when no argumentation occurs within the event kind domain, a verb is introduced directly as a property of event tokens. This eliminates the need for ET type-shifting but raises a look-ahead problem. A parallel issue arises in languages that lack PI: do their verbs ever function as predicates of event kinds? It is unclear whether such languages require a dedicated v_{Th} head or whether the theme argument can be directly introduced as a complement to the verb. Sağ (2022) proposes that weak definites (e.g., Lola read the newspaper) should be analyzed as singular kind terms (building on Aguilar-Guevara and Zwarts, 2010) and as instances of PI (following Carlson and Sussman, 2005; Carlson, 2006). This suggests that the English verbal domain may also involve a two-layered representation, albeit in a much more limited form than in Turkish.

A parallel restriction applies to event kinds, which, as taxonomic kinds, must align with well-established categories of events that is, events that are typically encountered or deemed impactful. As a result, what qualifies as an event kind is highly dependent on cultural and contextual factors. This explains the distinction between 'pig butcher' and 'ostrich butcher 'in Danish: while pig butchering is a familiar and widely recognized practice, ostrich butchering is rare or nonexistent in Danish culture, making it unlikely to be conceptualized as an event kind.

The constraints on modification in PI also stem from the taxonomic nature of this phenomenon. Because PI'ed nouns are taxonomic kind terms, they can only be modified by adjectives specifying sub-kinds, as discussed above. Moreover, since PI must construct taxonomic event kinds, the acceptability of the modifier is determined not only by the noun itself but also by its combination with the verb. That is, while religious book-reading could be recognized as a sub-kind of the book-reading event kind, this does not readily extend to reading events involving worn-out books, allowing the former to form a well-formed PI construction, unlike the latter, as in (31).

5.2. Pseudo-incorporation and atelicity

Having established the event-kind-level analysis of PI, we now turn to the aspectual contrast between PI'ed and case-marked singular kind arguments.

Recall that the case-marked variant, which triggers a representative object reading, renders the VP telic with non-iterable achievements, as shown in (47). In Section 4, I attributed this effect to the "same participant" constraint imposed on the use of for-adverbials. In essence, each sub-event must involve the white lion kind as the theme argument, resulting in an infelicitous interpretation of repetitive discovery of the kind by the institute within the same region. In contrast, in the PI version, also repeated in (46), the VP remains atelic, as each sub-event can involve different members of the white lion kind as the theme argument.

(46) Kurum bu bölge-de (bir ay   boyunca) **beyaz aslan** keşfet-ti.
      institute this region-in one month for   white lion   discover-PST
      'The institute did white lion discovering in this region (for a month).'

(47) Kurum bu bölge-de (*bir ay   boyunca) **beyaz aslan-ı** keşfet-ti.
      institute this region-in one   month for   white lion-ACC discover-PST
      'The institute discovered the white lion in this region (*for a month).'

Below, I illustrate the structural and semantic differences between the two constructions as analyzed in the proposed account. The key difference between them lies in the positioning of the singular kind argument. In the PI construction, it serves as an argument to the discovering event kind, as shown in (48), whereas in (47), the singular kind is introduced in the event-token domain only after the event kind undergoes ET type-shifting, as shown in (49).

beyaz aslan keşfet 'white lion discover'   PI'ed singular kind

(48) $\llbracket$ [$_{VP_{token}}$ ET [$_{VP_{kind}}$ **discover the white-lion**]] $\rrbracket$ =
      $\lambda e.\exists e_k [belong\text{-}to(e,e_k) \wedge [discover_k(e_k) \wedge Th_k(e_k) = \iota x_k.\ white\text{-}lion_k(x_k)]]$

beyaz aslan-ı keşfet 'discover the white lion'   canonical singular kind

(49) $[\![\ [_{vThP} \ [_{VP_{token}} \ \text{ET} \ [_{VP_{kind}} \ \textbf{discover}]] \ \text{the white-lion-ACC}] \ ]\!] =$
$\lambda e. \exists e_k \ [belong\text{-}to(e, e_k) \wedge discover(e_k)] \wedge Th_t(e) = \iota x_k \ [white\text{-}lion_k(x_k)]]$

All that is needed to account for this contrast is a slight adjustment to the "same participant" constraint of for-adverbials, which are event token-level modifiers. I propose that it can be satisfied at both the event-token and event-kind levels, as reflected in (50):

(50)   **The Same Participant Constraint** (revised)
   a.   for an hour $(V_w) = \lambda e. \ V_w(e)$ and e lasts one hour and for each temporal cell of a salient cover of $\tau(e)$, there is an event e' in V_w *with **the same participants** as those in every other cell of* $\tau(e)$ *and e is the sum of all such events e'.*
   b.   Two V-events e and e' have the same participants relative to V in w iff:
   (i)   For any core thematic role θ which is necessarily defined relative to V, $\theta_w(e) = \theta_w(e')$, or:
   (ii)   For any core thematic role θ which is necessarily defined relative to V_k of V, $\theta_w(e_k) = \theta_w(e'_k)$, where:
   (iii) A theta role θ is necessarily defined relative to V iff for any world w and any event e such that $V_w(e) = 1$, $\theta_w(e)$ is defined, and:
   (iv)   A theta role θ is necessarily defined relative to V_k iff for any world w and any event e_k such that $V_{k,w}(e_k) = 1$, $\theta_w(e_k)$ is defined.

With this revised version of what it means for two events to share the same participants, the PI sentence in (46) becomes compatible with the for-adverbial. Each cell of the event token's run-time, $\tau(e)$, contains the same white lion kind argument at the corresponding event-kind level, satisfying (50) in the event kind domain (fulfilling (ii)). That is, all sub-events of e in *for an hour (V)* are event tokens of the white-lion-discovering event kind. In (47), however, each cell contains the same singular kind argument at the event-token level (fulfilling (i)), where the property of having been discovered in the region is attributed to the white lion kind as a whole, leading to its incompatibility with the for-adverbial.

The new PI analysis enables singular kind arguments to meet the same participant constraint much like plural kind argumentation. However, the two satisfy this condition in fundamentally different ways: while plural kind arguments (such as in "John killed mosquitoes for an hour") do so in the event token domain (fulfilling (i) in (50)), PI achieves it at the level of event kinds.

PI exhibits behavior similar to plural kind argumentation in following the three axioms —exemplification, antitotality, and progressivity —due to Event Tokenization (ET) in (37). By mediating the transition from event kinds to event tokens, ET enables PI to share key properties with plural kind arguments while maintaining its distinct status.

Exemplification is ensured since, for every event kind and its kind-level thematic argument, and for every event token of that event kind, there exists at least one individual that belongs to the singular kind argument of the event kind and holds the corresponding thematic role in the event token domain. ***Antitotality*** is also captured, as while the singular kind argument participates in the taxonomy of the event kind, only some members of that kind are involved in the corresponding event tokens. Finally, ***progressivity*** arises from the nature of event kinds, which allow for the continuation of episodic event tokens. For instance, in the case of *white lion*

discovering in a given region, one could indefinitely engage in new tokens of this event kind, with different white lions involved in each event token, perpetuating the discovery process.

6. Conclusion

Adopting an event-oriented approach to for-adverbials, together with a "same participant" constraint governing their use, this paper investigated key aspectual contrasts among sentences with caseless indefinites, PI'ed and canonical singular kind arguments, and plural kind arguments. Central to the analysis is a two-layered argument structure that distinguishes event-kind-level (PI) from event-token-level argumentation. Crucially, Event Tokenization enables PI'ed singular kind arguments to exhibit behavior similar to plural kind arguments by adhering to the same core axioms while still deriving these properties through a distinct semantic route.

My analysis shows that taxonomic kind reference is relevant beyond the domain of object-level individuals and extends to events, significantly affecting aspectual interpretation of verbal predicates. Future research should further explore the cross-linguistic dimensions of event kind reference, particularly in languages that lack productive PI constructions, with the aim of deepening our understanding of the interface between event semantics and kind reference.

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