Agentless Presuppositions and the Semantics of Verbal Roots

Ryan Walter Smith   Jianrong Yu

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Abstract

Bale (2007) proposes that agentive intransitives differ semantically from agentive transitives, in that while the agent of a transitive is introduced by a functional projection and composes with its verb via EVENT IDENTIFICATION (Kratzer, 1996), intransitives lexically encode their agent arguments and compose with them via FUNCTION APPLICATION. This is based on the availability of agentless repetitive presuppositions with *again*, with transitives permitting a repetitive presupposition excluding the agent while intransitives do not. In this paper, we challenge Bale's claim and show that typically intransitive verbs like *dance* and *bark*, which do not usually allow agentless presuppositions, permit agentless presuppositions when they appear with an optional internal argument. To account for this, we propose that verbal roots possess an underspecified *thematic role* argument, along with individual and event arguments. Combined with a conservative syntax for introducing agents via VoiceP (Kratzer, 1996), the analysis captures the dependence of agentless presuppositions on the presence of an internal argument without recourse to any distinction between transitive and intransitive eventive verb roots. The analysis contributes a new theory of roots lying between two theoretical poles, one that argues that roots take internal arguments (e.g., Harley, 2014) and one that severs internal arguments syntactically and semantically from the verb (e.g., Schein, 1993; Borer, 2003, 2005).

1   Introduction

In the literature on argument structure, it has been extensively argued that agents are distinguished from other arguments in being introduced outside the domain of the verb root (Marantz, 1984; Kratzer, 1996; Harley, 2013; Pylkkänen, 2008, *a.o.*). Kratzer (1996), for example, proposes that agents are introduced by a functional head VOICE, which composes with the VP through a rule of EVENT IDENTIFICATION. Nevertheless, Kratzer's (1996) proposal has been challenged over the years by various authors (e.g., Horvath and Siloni, 2003; Wechsler, 2005; Bale, 2007, *a.o.*; see Harley and Stone, 2013 for a response). In this vein, Bale (2007) shows that Kratzer's (1996) proposal, while being essentially correct for eventive transitive verbs, fails to extend to all verb classes. In particular, Bale uses sub-lexical modification with *again* to demonstrate that while the subject of an eventive transitive verb may be excluded from the presupposition of

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again, those of intransitive verbs and stative transitive verbs may not. Bale concludes that only the agents of eventive transitive verbs are severed from the verb, while those of intransitive verbs, like the experiencer argument of transitive stative verbs, are arguments of the verb proper.

In this paper, we argue against Bale's (2007) claim that agentive intransitives take their agent arguments directly. Using agentless presuppositions with *again* as a diagnostic, we show that typically intransitive verbs like *dance* and *bark*, which do not typically allow agentless presuppositions, permit agentless presuppositions when they appear with an optional internal argument. We use this to motivate the INTERNAL ARGUMENT GENERALIZATION, stated in (1), which refines Bale's original claim.

(1) INTERNAL ARGUMENT GENERALIZATION:
     Presuppositions with *again* that exclude the agent are only possible when an internal argument is present.

We show that this generalization is not fully accounted for by analyses like Bale's, which posit that intransitive verbs compose with their agent argument directly. However, Kratzer's approach, with uniform introduction of the agent via VOICE, fares no better without modification. As an alternative, we propose that the availability of agentless presuppositions is not determined by differences between transitives and intransitives as classes in and of themselves, but depends on the presence or absence of arguments introduced by the structure in which a verbal root is embedded. In so doing, we propose a novel analysis of the semantics of eventive verb roots: verb roots possess a *thematic role* argument, variables over which we denote with θ. These are conceived as functions of type $<e,<v,t>>$, with e the type of entities, v the type of events, and t the type of truth values. These thematic roles are introduced by functional heads within the verbal projection, such as little v and VOICE, and roots compose with these thematic role denotations directly via FUNCTION APPLICATION. A sample denotation for such a root is given in (2).

(2) Denotation of a root
     $[\![\sqrt{\text{ROOT}}]\!]\,\lambda\theta_{e,vt}.\lambda\text{x}.\lambda\text{e}.\text{ROOT(e)} \wedge \theta(\text{x})(\text{e})$

Combined with a standard approach to the semantics of *again* as an event modifier (e.g., von Stechow, 1996; Beck and Johnson, 2004; Bale, 2007, *a.o.*) and the introduction of agents via VoiceP in the syntax (Kratzer, 1996), our analysis allows us to capture the dependence of the availability of agentless presuppositions on the presence of an internal argument: when v introduces no thematic role, and acts as an identity function on root denotations, the root composes with VOICE, and the only projection of the appropriate semantic type for *again*-modification is VoiceP. If, however, v does introduce a thematic role, there will be two type-appropriate adjunction sites for *again*, one of which, vP, excludes the agent. In this way, our analysis captures both the phenomena originally noticed by Bale as well as the new data we report here, while maintaining a uniform syntax for the introduction of agents and other arguments (Kratzer, 1996). We then show how our perspective can also account for differences between arguments introduced by vP and those introduced by prepositional phrases in their ability to license agentless presuppositions, and show how our account makes correct predictions about

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the interaction of these arguments with the scope of *again*. On a broader theoretical level, our analysis motivates a novel treatment of verbal roots that constitutes a middle ground between two poles in the previous literature: while our approach endows intransitive roots with an individual argument as in Kratzer (1996) and Harley (2014), this argument is underspecified for thematic role, and is syntactically introduced by functional projections dominating the root (c.f. Schein, 1993; Borer, 2003, 2005; Lohndal, 2012, *a.o.*).

The paper is structured as follows. Section 2 provides the theoretical background on severing the agent argument from the verb, the semantics of *again*, and Bale's (2007) use of agentless presuppositions to argue for a semantic distinction between transitive and intransitive eventive verbs. Section 3 presents our counterargument in favor of the INTERNAL ARGUMENT GENERALIZATION, demonstrating flaws in Bale's original generalization and showing that verbs that disallow agentless presuppositions when intransitive permit them with an internal argument. Section 4 develops the formal analysis, deriving the INTERNAL ARGUMENT GENERALIZATION from the interaction of the semantics of the root with the presence or absence of additional thematic material in the extended verbal projection. This section also develops analyses of thematic roles introduced by prepositional phrase arguments, as well as of low applicatives, and presents a number of predictions of the analysis. Section 5 presents two alternative analyses, and demonstrates that both approaches, though appealing due to their use of independently motivated analyses of *prima facie* similar phenomena, nevertheless make incorrect predictions about the empirical domain of interest that our account avoids. Section 6 situates our analysis in the broader theoretical landscape of roots and their semantics. Finally, section 7 concludes with a discussion of avenues for future research.

2 Agentless Presuppositions and Severing the External Argument

Marantz (1984) observes that while internal arguments of verbs can condition special interpretations of a verb, external arguments never do. Thus, the truth-conditional meaning of the verb *kill*, for example, is dependent on the denotation of its internal argument; such conditioning of a verb's meaning, on the other hand, is almost never observed with agents (though see, among others, Nunberg et al. (1994) for apparent counterexamples to this generalization, and Harley and Stone (2013) for a recent review and arguments against counterexamples).

(3)   a. kill a cockroach
       b. kill a conversation
       c. kill an evening watching tv
       d. kill a bottle (i.e., empty it)
       e. kill an audience (i.e., wow them)

In response to Marantz's observation, Kratzer (1996) proposes that external arguments are introduced by a functional head VOICE, which composes with the VP via

a special composition rule of EVENT IDENTIFICATION. Adopting a standard notation for semantic types, where e is the type of entities, v the type of events, and t the type of truth values, EVENT IDENTIFICATION takes a function of type $<e,<v,t>>$ and a function of type $<v,t>$ and returns a new function that, when supplied with an individual and event argument, returns the conjunction of the result of the two original functions. VOICE, then, is a function of type $<e,<v,t>>$ introducing thematic roles like AGENT.

(4) EVENT IDENTIFICATION:
$f_{e,vt} + g_{vt} \rightarrow \lambda x.\lambda e.f(x)(e) \wedge g(e)$

(5) $[\![\text{VOICE}]\!] = \lambda x \lambda e.\text{AGENT}(e) = x$

Bale (2007), however, argues that not all external arguments can be severed from the verb in this way, making use of the range of repetitive presuppositions with *again* as a diagnostic for syntactic decomposition. Formally speaking, *again* is a function of type $<<v,t>,<v,t>>$, being an identity function in the assertion and introducing a presupposition that an identical event had happened temporally prior to the asserted event (Dowty, 1979; von Stechow, 1996; Beck and Johnson, 2004, *a.o.*, lexical entry adapted from Bale, 2007).

(6) $[\![again]\!]P(e)$ is defined iff $\exists e^1 \exists e^2 [e^1 \prec e^2 \prec e \ \& \ P(e^1) \ \& \ \neg P(e^2)]$.
When defined, $[\![again]\!]P(e) = P(e)$.

Under Kratzer's (1996) proposal, VP prior to combining with VOICE is a function of type $<v,t>$, meaning that it is an available attachment site for *again*, which can take the VP as its argument. Attaching *again* to VP prior to combining with VOICE would thus produce a presupposition of an earlier event of the type denoted by the VP but crucially excluding the external argument. Bale (2007) shows that such *subjectless presuppositions* are indeed produced with non-stative transitive verbs (e.g., *hug, kick, rake*). With these verbs, contexts with a prior event containing a *different agent* from the asserted event can satisfy *again*'s repetitive presupposition, suggesting that Kratzer's proposal is essentially correct for these verbs (example (29a) in Bale, 2007).

(7) CONTEXT: Seymour's dryer broke. He called **a repairwoman who simply hit the dryer until it started working**. The dryer broke down two days later. So... **Seymour hit the dryer again.**

However, Bale (2007) shows that not all verb classes permit presuppositions excluding the subject. For example, stative transitive verbs (e.g., *hate, love, own, doubt*) and all intransitive verbs (e.g., *run, arrive*), are incompatible with subjectless presuppositions, as shown in the following contexts with *love*, *run*, and *arrive* (examples (47a), (54), and (55) in Bale, 2007). Note that the passive is felicitous for stative transitive verbs; this is expected if passives involve an existentially quantified external argument such that any context containing an experiencer subject argument, even if it is a different one from the asserted event, will satisfy *again*'s presupposition.

(8) CONTEXT: Seymour's mother loved Frank, although she was the only one who did. After a while she no longer cared for him. However, Seymour became attached to the man, and developed strong feelings for him after his mother's love subsided. So...
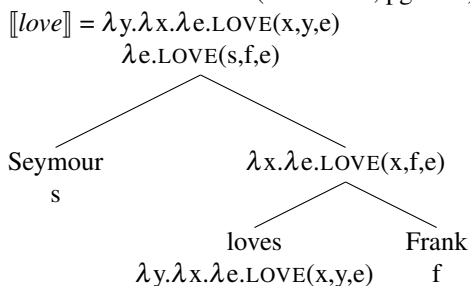
a. **# Seymour loved Frank again.**

b. **Frank was loved again.**

(9) CONTEXT: Seymour's wife was the first person ever to arrive at the new airport. Then a week later...
 # Seymour arrived again.

(10) CONTEXT: Last week, Jon's wife ran all morning. Then after she got home, Jon was able to do some exercise. So...
 # Jon ran again.

This set of facts can be summarized by the statement in (11), which we term BALE'S GENERALIZATION.

(11) BALE'S GENERALIZATION:
Presuppositions with *again* that exclude the subject are only possible with non-stative transitive verbs. They are not possible with stative transitive verbs or intransitive verbs.

Bale concludes from his generalization that the external arguments of stative transitive verbs and intransitive verbs must not be severed and introduced by VOICE, unlike the agent arguments of non-stative transitives; such an analysis would predict the uniform availability of subjectless presuppositions across all verb classes. Rather, Bale reasons, the experiencer of stative transitives, the agent of unergatives, and the theme of unaccusatives must be lexically encoded in the verb and taken as arguments directly, with no intervening functional head introducing the thematic role and these arguments. That is, stative transitive verb roots must be functions taking two individuals and one event argument, and are thus of type $<e,<e,<v,t>>>$, as shown in (12). In this case, *again* can only attach after both individual arguments have been saturated, predicting the impossibility of a subjectless presupposition.[1]

(12) Stative transitive verbs (Bale 2007, pg. 472)
$[\![love]\!] = \lambda y.\lambda x.\lambda e.\text{LOVE}(x,y,e)$

$\lambda e.\text{LOVE}(s,f,e)$

Seymour
s

$\lambda x.\lambda e.\text{LOVE}(x,f,e)$

loves
$\lambda y.\lambda x.\lambda e.\text{LOVE}(x,y,e)$

Frank
f

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[1]Following Bale, we provide both Davidsonian and Neo-Davidsonian translations for the verbs in (12) and (13), and use the Davidsonian translation in the trees (Davidson, 1967; Castañeda, 1967). In other examples, we will make use of Neo-Davidsonian representations throughout. We will also depart from Bale in treating thematic roles as functions from events to individuals, in line with recent work in event semantics (Carlson, 1998; Landman, 2000; Champollion, 2010). By this latter point, we mean that AGENT, for instance, is a function that takes an event and, if defined, returns the unique individual acting as the agent of that event. This is distinct from the type $<e,<v,t>>$ functions that the functional heads VOICE and *v* denote in our analysis, which serve to restrict the denotation of an event predicate to that set of events with a particular individual bearing a particular role in the events in question.

Likewise, intransitives are uniformly functions from individuals to predicates of events of type $<e,<v,t>>$. Therefore, unergative verbs like *dance* require their agent argument to be saturated before producing a constituent of the right semantic type for modification by *again*. In this way, the agent of such verbs will always be included in *again*'s presupposition when it modifies the VP.

(13) Intransitive verbs (Bale 2007, pg. 472)
$[\![dance]\!] = \lambda x.\lambda e.\text{DANCE}(e)\ \&\ \text{AGENT}(e) = x$

$\lambda e.\text{DANCE}(m,e)$

Mary   dances
m $\lambda x.\lambda e.\text{DANCE}(x,e)$

Our focus in this paper will largely be on the behavior of agentive intransitive verbs. For this reason, we will speak of *agentless presuppositions* rather than using Bale's more general term subjectless presupposition, and only use the term subjectless presupposition when the subject is not an agent. Note that because the agent role is part of the lexical semantics of intransitive verbs like *dance*, such verbs are expected to be completely incompatible with repetitive presuppositions of *again* that exclude the agent argument. In what follows, we demonstrate that this is, in fact, not the case.

3 Contra Bale: Agentless presuppositions track the presence of an internal argument

We show, using the same diagnostic as Bale (2007), that even distinguishing between non-stative transitives and intransitives in terms of how they associate with their agent arguments makes wrong predictions. The evidence here comes from classes of agentive intransitive verbs that may appear with an optional internal argument. We illustrate with four classes of agentive intransitive verbs that exhibit transitivity alternations: verbs of performance, *wipe*-verbs, verbs of contact, and verbs of vocalization (Levin, 1993). These verbs may appear with or without an additional argument. For performance verbs, the additional argument expresses the kind of performance or particular piece being performed (14). Contact verbs and *wipe*-verbs without an object merely denote an action; when present, objects are where the contact or action is directed. For example, *John kicked* means that John moved his leg in a kicking motion without necessarily coming into contact with anything, and the optional object denotes the object affected by the contact event (16). Finally, vocalization verbs may appear with a PP argument, normally headed by the preposition *at*, which denotes the target of the vocalization event; without this optional argument, the verb denotes an action that need have no target (17).

(14) Performance verbs: *dance, recite, sing, whistle, chant*

- Unspecified object alternation:
  1. Sandy sang.

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2. Sandy sang a song/a ballad.
3. Sandy danced.
4. Sandy danced a jig.

<div align="right">(Levin, 1993, pg. 178)</div>

(15) *Wipe* verbs: *wipe, sweep, wash, rinse scrub*

- Unspecified object alternation:
  1. Brian was wiping the counter.
  2. Brian was wiping.
  3. John swept the floor.
  4. All last night, John swept.

<div align="right">(Levin, 1993; Rappaport-Hovav and Levin, 2010)</div>

(16) Physical contact verbs: *kick, punch, slap*

- Affectee alternation
  1. John kicked.
  2. John kicked Bill.
  3. John punched.
  4. John punched Bill.

(17) Vocalization verbs: *bark, growl, roar, hiss, shout, scream, snap, whisper*

- Directed-towards alternation:
  1. The dog barked.
  2. The dog barked at the cat.
  3. Susan whispered.
  4. Susan whispered at Rachel.

<div align="right">(Levin, 1993, pg. 205)</div>

As shown in the contexts below, sentences with these verbs are infelicitous with agentless presuppositions of *again* when used intransitively. However, an agentless presupposition becomes possible when an internal argument is present.

(18) CONTEXT: At a ball in honor of the king, John danced the Irish jig. The king was so impressed that he had his court dancer James learn this dance, and. . .
  a. **# James danced again.**
  b. **James danced the Irish jig again.**

(19) CONTEXT: John decided to clean up the house he and Mary lived in ahead of a party so he swept the floor. The next day, Mary, thinking John did not sweep the floor, picked up the broom and...
  a. **# Mary swept again.**
  b. **Mary swept the floor again.**

(20)   CONTEXT: John kicked his friend Joe. Later...

    a. **# Bill kicked again.**

    b. **Bill kicked Joe again.**

(21)   CONTEXT: A cat named Milo walked down the street. Rover barked at him through the fence. Milo passes another yard, where Fido noticed him, and...

    a. **# Fido barked again.**

    b. **Fido barked at him again.**[2]

These facts are unexpected if we assume with Bale (2007) that agentive intransitive verbs take their agent arguments directly as arguments, since in the (b) examples it would seem like the agent argument can be outside the scope of *again*'s presupposition. This suggests that there is indeed a constituent available that excludes the agent argument, *contra* the prediction of Bale's analysis. On the other hand, if we take the felicity of (18b)-(21b) to mean that these verbs can have their agents introduced by VOICE, then the (a) examples remain unexplained, since there should be a constituent that excludes the agent argument of the appropriate type for modification by *again*. Given Bale's approach to the problem, we run into an apparent paradox: we would seem to have to introduce the agent argument VP-internally in some cases, but VP-externally in others.

    A straightforward "solution" would be to assume two variants of these verbs: an intransitive variant, which lexically encodes its agent, and a transitive one, which does not and must associate with the agent via VOICE. This would account for the facts in a way compatible with Bale's analysis, but it comes at a great cost. First, it results in a proliferation of lexical entries that are identical except for the fact that one appears with a lexically specified agent argument and the other with a lexically specified theme. More importantly, however, such an analysis misses an important generalization about the availability of agentless presuppositions: in the presence of an internal argument, the agent may be excluded from the presupposition of *again*, but in its absence, such a presupposition is unavailable. We state this below as the INTERNAL ARGUMENT GENERALIZATION.

(22)   INTERNAL ARGUMENT GENERALIZATION
    Presuppositions with *again* that exclude the agent are only possible when an internal argument is present.

This generalization is very similar to Bale's, in that it includes transitive expressions with agents and excludes stative verbs, and intransitives that cannot be optionally transitive. It differs from Bale's original claim in that it does not tie the differential availability of subjectless presuppositions with *again* to particular classes of verbs differing in their transitivity, but rather specifies the possibility of transitivity alternations as the relevant factor regulating the possibility of such presuppositions. In other words, it does not imply an analysis whereby (in)transitivity is reified in the lexical entries

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[2]An anonymous reviewer seems to question the correctness of the contrast in (21a) and (21b), though not on the basis of their own judgments. We have presented this contrast to five other native speakers of English, who confirmed the contrast between (21a) and (21b).

of particular verbs, but permits an analysis that accounts for the flexibility of certain kinds of verbs without multiplying lexical entries beyond necessity. In what follows, we develop just such an analysis that derives the INTERNAL ARGUMENT GENERAL-IZATION.

4 Deriving the Internal Argument Generalization

In this section, we propose an analysis that combines a uniform syntactic analysis of the introduction of the agent via a functional projection outside of the vP with a novel semantic treatment of roots, from which the INTERNAL ARGUMENT GENERALIZA-TION follows. The section is structured as follows. First, we develop the theoretical framework and formal machinery that we adopt for the analysis. Second, we apply these tools to an analysis of the data presented in the previous section. We conclude this section with a rebuttal of a possible counteranalysis of a subset of the data.

4.1 Formal background

The general theoretical backdrop we adopt is that of DISTRIBUTED MORPHOLOGY (Halle and Marantz, 1993), where the surface verb is composed of an acategorial root combined with a functional head that determines the root's syntactic category. To this, we add the assumption that functional heads like v and VOICE can come in different "flavors" (Folli and Harley, 2005; Alexiadou et al., 2015, *a.o.*).[3] Categorizing v heads can come in different semantic flavors: as identity functions over root denotations, or as thematic role introducers akin to how VOICE can introduce the AGENT role (Kratzer, 1996). We take the crucial factor determining what kinds of v heads a particular root can combine with to be conceptual; a particular root will be able to combine with a v head introducing a THEME role if it denotes a set of events that canonically involves a theme participant in the world. Under this approach, transitivity alternations are generalizations on the kinds of v heads roots can combine with, implemented using a selectional feature for particular roots on these heads (Merchant, 2019). Importantly, we take conceptual specifications for particular kinds of thematic arguments to be disjoint from the syntactic expression of them; the same root can combine both with a v head introducing an argument and one where no argument is introduced (see for example the discussion in Carlson 1984; we return to this issue later).

(23) a. $[\![v]\!] = \lambda \mathrm{x}.\lambda \mathrm{e}.\theta(\mathrm{e}) = \mathrm{x}$
      b. $[\![v]\!] = \lambda \mathrm{F.F}$

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[3]As an alternative to functional heads coming in different flavors, one could posit that functional heads can be interpreted in particular ways semantically based on surrounding structural contexts, i.e., contextual allosemy (e.g., Wood and Marantz, 2017). Hence, v can be interpreted as an identity function based on structural conditions like whether a specifier is projected or in the context of particular roots, for example. The choice of perspective does not affect the results of the analysis, though there may be other reasons to favor one approach over another. For instance, the use of contextual allosemy rules might allow more fine-grained control over the distribution of particular thematic roles, where an account appealing to different flavors of v may need to appeal to additional syntactic mechanisms to ensure that certain v heads are incompatible with certain roots.
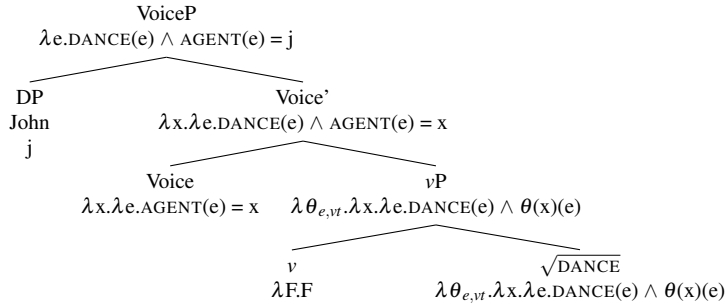
We now turn to the semantics of the verb root itself, and how it combines with the categorizing *v* head. Specifically, we propose that verb roots take three arguments: an eventuality argument, an individual argument and a *thematic role* argument that relates that individual to the event, but leaves the particular role underspecified. This argument may be the AGENT role contributed by VOICE, or some other role, such as THEME or GOAL, dependent on the presence of particular flavors of *v* heads. Formally, a verb root like $\sqrt{\text{DANCE}}$ or $\sqrt{\text{BARK}}$ is of type $<<e,<v,t>>,<e,<v,t>>>$, taking a thematic role function as its first argument, followed by an individual and an event argument.

(24) $[\![\sqrt{\text{DANCE}}]\!] = \lambda\theta_{e,vt}.\lambda x.\lambda e.\text{DANCE}(e) \wedge \theta(x)(e)$

4.2 Analysis

With these analytical tools in place, we can begin to see why the agentless presuppositions with *again* depend on the presence of an internal argument. Consider the intransitive variant of $\sqrt{\text{DANCE}}$, which we analyze as in (25). Since *v* does not introduce an argument nor a thematic role and is interpreted as an identity function as in (23b), it passes the denotation of its sister unchanged higher up the structure. Notice now that the root's first argument is supplied by VOICE and thus the root's thematic role argument is saturated by the AGENT role.
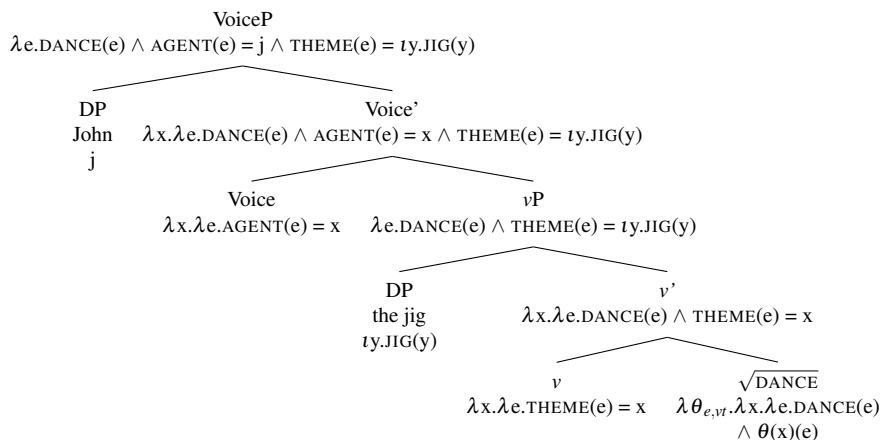
(25) John danced.

VoiceP
$\lambda e.\text{DANCE}(e) \wedge \text{AGENT}(e) = j$

DP
John
j

Voice'
$\lambda x.\lambda e.\text{DANCE}(e) \wedge \text{AGENT}(e) = x$

Voice
$\lambda x.\lambda e.\text{AGENT}(e) = x$

*v*P
$\lambda\theta_{e,vt}.\lambda x.\lambda e.\text{DANCE}(e) \wedge \theta(x)(e)$

v
$\lambda F.F$

$\sqrt{\text{DANCE}}$
$\lambda\theta_{e,vt}.\lambda x.\lambda e.\text{DANCE}(e) \wedge \theta(x)(e)$

Recall now that *again* is of type $<<v,t>,<v,t>>$, requiring a function of type $<v,t>$ as its first argument. The only constituent of the correct type for *again* to attach is at the VoiceP level, which includes the agent. The *v*P, where *again* would need to attach in order to produce an agentless presupposition, is of type $<<e,<v,t>>,<e,<v,t>>>$, the wrong type to serve as *again*'s argument. We thus successfully predict that in the intransitive variant, an agentless presupposition is not possible, in line with the INTERNAL ARGUMENT GENERALIZATION.

In the presence of an internal argument, however, little *v* will be interpreted as in (23a). It is therefore semantically contentful, and serves to introduce the THEME role. The root $\sqrt{\text{DANCE}}$ takes this *v* as its first argument, saturating the thematic role argument position of the root. The DP introduced in *v*'s specifier then saturates the root's individual argument. Because the root's thematic role argument has long since been saturated by the THEME role introduced by *v*, VOICE, which introduces the AGENT role, composes with *v*P via EVENT IDENTIFICATION.

(26)　John danced the jig.

VoiceP
λe.DANCE(e) $\wedge$ AGENT(e) = j $\wedge$ THEME(e) = ιy.JIG(y)

DP
John
j

Voice'
λx.λe.DANCE(e) $\wedge$ AGENT(e) = x $\wedge$ THEME(e) = ιy.JIG(y)

Voice
λx.λe.AGENT(e) = x

vP
λe.DANCE(e) $\wedge$ THEME(e) = ιy.JIG(y)

DP
the jig
ιy.JIG(y)

v'
λx.λe.DANCE(e) $\wedge$ THEME(e) = x

v
λx.λe.THEME(e) = x

$\sqrt{\text{DANCE}}$
$\lambda\theta_{e,vt}.\lambda$x.$\lambda$e.DANCE(e) $\wedge$ θ(x)(e)

Note now that in the transitive structure, there are two constituents of type $<v,t>$ which can serve as *again*'s first argument: at the little *v*P level and at the VoiceP level. Attaching at VoiceP produces a repetitive reading which includes the agent argument and crucially, attaching at *v*P now excludes the agent argument. We thus account for the fact that the transitive variant of the verb root $\sqrt{\text{DANCE}}$ modified with *again* permits an agentless presupposition, since such a presupposition is produced when *again* attaches to *v*P. This position is not available in the intransitive variant because of a semantic type clash, due to *v* being interpreted as an identity function and not introducing a thematic role and an argument in its specifier. The exact same analysis can be applied directly to other verbs with optional DP arguments, such as *kick* and *sweep*: in the intransitive variant, *v* is interpreted as an identity function and the AGENT role is fed into the thematic role argument of the root, ruling out any agentless presuppositions. In the transitive variant, *v* introdcues the THEME role and an argument saturating the thematic role and individual arguments of the root, thus making *v*P a suitable argument for *again* and delivering an agentless presupposition.

Verb roots that exhibit a difference in the availability of agentless presuppositions when they take a PP argument can be analyzed the same way, modulo how exactly the semantic contribution of the head of the PP is analyzed. One analytical possibility is to analyze the head of the PP, *at*, as semantically contentful, serving to introduce thematic roles like GOAL. On this analysis, *at* would take an individual argument corresponding to its DP complement. It also takes the *verb root* as an argument, and feeds the GOAL thematic role, the individual denoted by its complement, and an event argument to the verb root. In this way, it would ultimately produce a constituent of type $<v,t>$ which *again* could take as an argument, thereby successfully predicting the availability of an agentless presupposition. This treatment of *at* is given in (27).

(27)　$[\![at]\!] = \lambda$x.λF.λe.F(λy.λe.GOAL(e) = y)(x)(e)

Alternatively, we can have the categorizing *v* itself introduce the GOAL thematic role. On this approach, *at* is semantically vacuous, denoting an identity function over individuals, and the PP headed by *at* is directly selected by *v*. This approach is taken by

Merchant (2019), who observes that the form of a preposition for roots that take a PP as an internal argument can vary across its realizations as either a verb, noun, or adjective. A representative example with $\sqrt{\text{PRIDE}}$ is provided below.
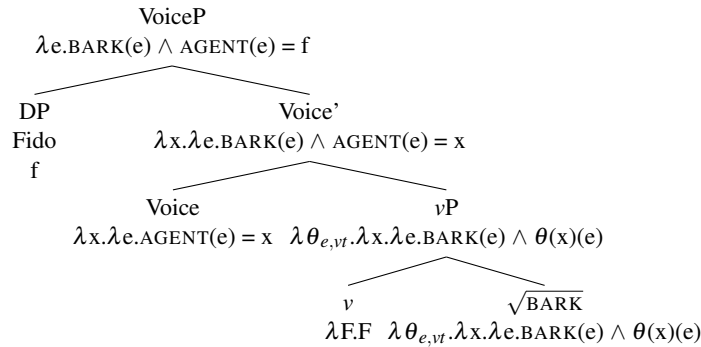
(28)   a.   She prides herself on/*in/*of her thoroughness.

         b.   Her pride in/*on/*of her thoroughness is understandable.

         c.   She is proud of/*on/*in her thoroughness.

Merchant (2019) concludes that the selection of a PP is not encoded in the root but by the categorizing head. In addition, the categorizing head can specify the exact form of the preposition heading the PP it selects. Incorporating this insight, we can treat v as directly encoding the P that it selects for, while also contributing the GOAL role fulfilled by the DP introduced within the PP. The interpretation of such a v is given below; we assume again along with Merchant (2019) that in addition to specifying the form of the preposition and the thematic role, v heads specifying a PP argument and the form of a preposition also encodes an idiosyncratic list of roots that it can combine with. Under this view, the P head itself is semantically inert, being licensed by a selectional feature of v.

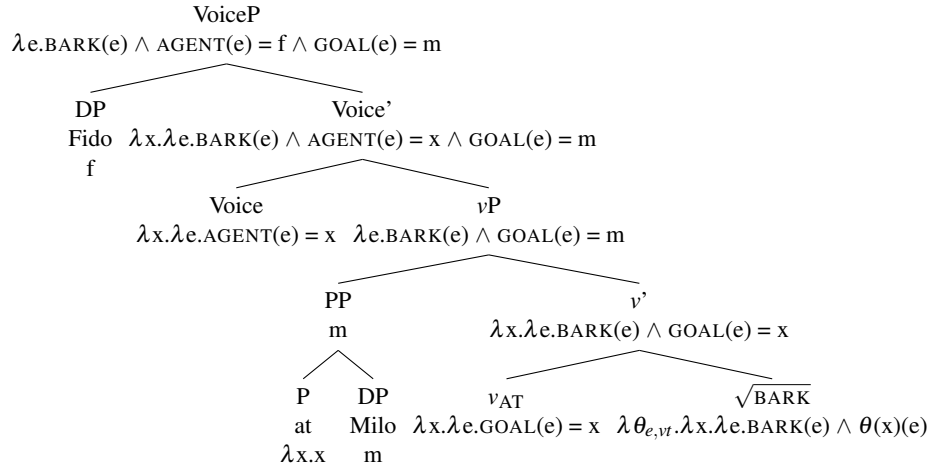(29) $[\![v_{\text{AT}}]\!] = \lambda x. \lambda e. \text{GOAL}(e) = x$

With these assumptions in place, cases where agentless presuppositions are permitted with intransitive roots that take a PP argument will receive the same analysis as those that optionally take a DP complement. For the root $\sqrt{\text{BARK}}$, for example, agentless presuppositions are not permitted in the intransitive variant, because v is interpreted as an identity function, and vP takes the AGENT role contributed by VOICE as an argument. This means that vP is not of the correct semantic type for *again* to take as an argument; only VoiceP is type $<v,t>$, parallel to (25). This is shown in (30) below.

(30)   Fido barked.

               VoiceP
      $\lambda e. \text{BARK}(e) \wedge \text{AGENT}(e) = f$

   DP   Voice'
   Fido $\lambda x. \lambda e. \text{BARK}(e) \wedge \text{AGENT}(e) = x$
    f

           Voice vP
   $\lambda x. \lambda e. \text{AGENT}(e) = x$ $\lambda \theta_{e,vt}. \lambda x. \lambda e. \text{BARK}(e) \wedge \theta(x)(e)$

                  v $\sqrt{\text{BARK}}$
          λF.F $\lambda \theta_{e,vt}. \lambda x. \lambda e. \text{BARK}(e) \wedge \theta(x)(e)$

When a PP is present, however, v will introduce the GOAL thematic role, saturating the root's thematic role argument, with the individual denoted by the PP saturating the individual argument. This achieves the same effect as in (26): apart from VoiceP, vP will now also be a constituent of type $<v,t>$, making it available for *again* to take as an argument. When attached here, *again* will not include the agent in its presupposition, thus allowing for an agentless presupposition, as (31) shows.
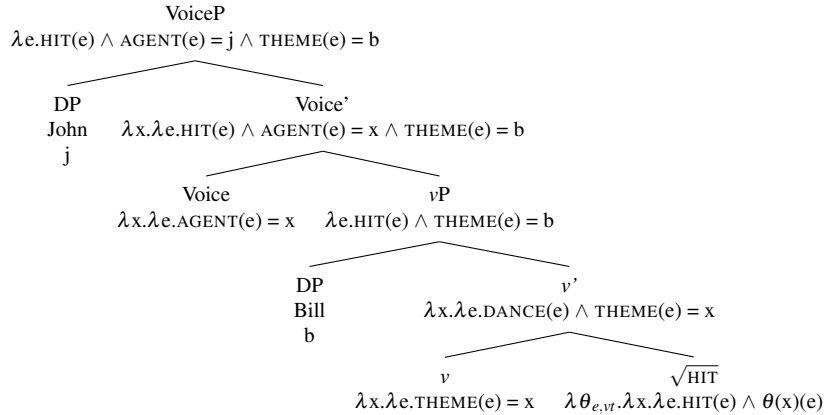
(31) Fido barked at Milo.

VoiceP
$\lambda e.\text{BARK}(e) \wedge \text{AGENT}(e) = f \wedge \text{GOAL}(e) = m$

DP   Voice'
Fido $\lambda x.\lambda e.\text{BARK}(e) \wedge \text{AGENT}(e) = x \wedge \text{GOAL}(e) = m$
 f

Voice   vP
$\lambda x.\lambda e.\text{AGENT}(e) = x$ $\lambda e.\text{BARK}(e) \wedge \text{GOAL}(e) = m$

PP   v'
m $\lambda x.\lambda e.\text{BARK}(e) \wedge \text{GOAL}(e) = x$

P   DP v_{AT} $\sqrt{\text{BARK}}$
at   Milo $\lambda x.\lambda e.\text{GOAL}(e) = x$ $\lambda \theta_{e,vt}.\lambda x.\lambda e.\text{BARK}(e) \wedge \theta(x)(e)$
$\lambda x.x$ m

Note that in all of the above cases, we maintain a conservative syntactic analysis of the introduction of the agent: on our analysis, there is no need to distinguish intransitive and transitive verbs with respect to how they compose with their agents, *contra* Bale (2007). Rather, agents are uniformly introduced in the specifier of VoiceP, as in Kratzer (1996). However, departing from Kratzer's analysis, we posit that roots take an under-specified thematic role argument, which may be supplied by VOICE or by a lower *v*. This combination of a conservative syntax and a novel semantics for verb roots allows us to successfully derive the INTERNAL ARGUMENT GENERALIZATION.

What of agentive transitive verbs that do not readily admit an intransitive variant? Here, it will simply be the case that certain roots *must* combine with categorizing *v* heads that contribute a thematic role, as a result of the interaction between a root's conceptual specification for thematic arguments and selectional features for roots on *v* heads. In particular, these roots cannot combine with a *v* head interpreted expletively as in (23b). As such, a thematic role and individual argument must be introduced by *v* for semantic composition to proceed in the presence of a root like $\sqrt{\text{HIT}}$. We can therefore give roots like $\sqrt{\text{HIT}}$ denotations analogous to those of the other verbs discussed in this section, with an identical syntactic and compositional semantic analysis.

(32) John hit Bill.

VoiceP
$\lambda e.\text{HIT}(e) \wedge \text{AGENT}(e) = j \wedge \text{THEME}(e) = b$

DP
John
j

Voice'
$\lambda x.\lambda e.\text{HIT}(e) \wedge \text{AGENT}(e) = x \wedge \text{THEME}(e) = b$

Voice
$\lambda x.\lambda e.\text{AGENT}(e) = x$

vP
$\lambda e.\text{HIT}(e) \wedge \text{THEME}(e) = b$

DP
Bill
b

v'
$\lambda x.\lambda e.\text{DANCE}(e) \wedge \text{THEME}(e) = x$

v
$\lambda x.\lambda e.\text{THEME}(e) = x$

$\sqrt{\text{HIT}}$
$\lambda \theta_{e,vt}.\lambda x.\lambda e.\text{HIT}(e) \wedge \theta(x)(e)$

This is completely in line with our approach to the INTERNAL ARGUMENT GEN-ERALIZATION, and shows that we manage to account for the facts about strictly transitive verbs just as well as Bale (2007). We thus have a completely unified analysis of agentive verbal roots, whether intransitive, transitive, or optionally transitive.

4.3 Distinguishing among arguments: *to* PPs and *for* benefactives

Our approach seems to make a very strong prediction: all else being equal, we expect that the introduction of any thematic role suffices to make an agentless presupposition possible. However, this does not seem to be the case. Consider, for instance, the verb *donate*, which may appear in intransitive, transitive, and ditransitive frames. as shown in (33).[4]

(33)   a. Mary donated.

   b. Mary donated the book.

   c. Mary donated to the library.

   d. Mary donated the book to the library.

Unsurprisingly from our perspective, the intransitive variant in (33a) fails to give rise to an agentless presupposition. Likewise, the transitive and ditransitive variants in (33b) and (33d) respectively are compatible with agentless presuppostions, as our account straightforwardly predicts. We show this in (34).

(34)   CONTEXT: Mary donated a large number of books to her local library. The library returned the books, noting they were damaged. Later, Bill repaired the damage to the books and took and gave them to the library, who accepted them this time. So...

   a. **# Bill donated again.**

---

[4]We thank an anonymous reviewer for bringing this particular case to our attention.

b. **Bill donated the books (to the library) again.**[5]

Where the analysis seems, at first blush, to go astray is in the treatment of (33c), where only the PP argument of the verb is present. If this argument is treated analogously to the PP arguments of verbs like *yell* or *bark*, we predict that their presence should allow for an agentless presupposition. This prediction, however, seems not to be borne out, as (35) shows.

(35) CONTEXT: Mary donated a large number of books to her local library. The library returned the books, noting they were damaged. Later, Bill repaired the damage to the books and took and gave them to the library, who accepted them this time. So...
       # **Bill donated to the library again.**

Despite making use of the same context as (34) and the presence of the PP argument, an agentless presupposition does not seem to be available in (35), in contradistinction to the sentence in (34b) that contains an internal DP argument. It would seem then that there is an asymmetry between *donate*'s DP and PP arguments that is not immediately explained by the account we have developed so far.

This said, we do not consider these cases to be fatal for our analysis. Rather, we hold that the lesson to be drawn from such examples is that arguments may be added in distinct ways. Internal arguments that are DPs, as well as certain PP arguments, such as the PP argument of vocalization verbs, are introduced via a *v* denoting a thematic role of the appropriate type to be taken as an argument by the root. The PP argument of *donate*, on the other hand, works differently from these: the head *to* denotes a GOAL thematic role, and combines first with its complement, an individual argument. This means that this PP will denote a predicate of events, as in (36).[6]

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[5]One might suggest that this is in fact a restitutive, rather than a repetitive, reading of *again*, such that it is the state of the books being in the library's possession, rather than the donation event, that is being repeated. This possibility can be ruled out by the following context, which shows that *again* is infelicitous with *donate* when no previous donation event occurred.

(1) CONTEXT: The library had Moby Dick, White Teeth, and The Corrections in its collection, but a forgetful borrower failed to return them, and the library subsequently removed them from their records. Years later, the borrower gave the library the books as a donation, having forgotten that they had borrowed them from there in the first place.
      # **The borrower donated the books (to the library) again.**

This can be distinguished from the behavior of verbs like *give*, which do permit restitutive readings with *again* (Beck and Johnson, 2004).

(2) CONTEXT: The library had Moby Dick, White Teeth, and The Corrections in its collection, but a forgetful borrower failed to return them, and the library subsequently removed them from their records. Years later, the borrower gave the library the books as a donation, having forgotten that they had borrowed them from there in the first place.
      The borrower gave the library the books again.

[6]We do not claim that other ditransitive verbs, specifically those that participate in the double object-dative alternation like *give* and *send*, can be given the same analysis in their dative variants. Most likely, there will be individual syntactic and semantic differences between verbs like *donate*, which do not alternate, and verbs like *give* and *send*, which do. See for example Rappaport-Hovav and Levin (2008) and Beavers
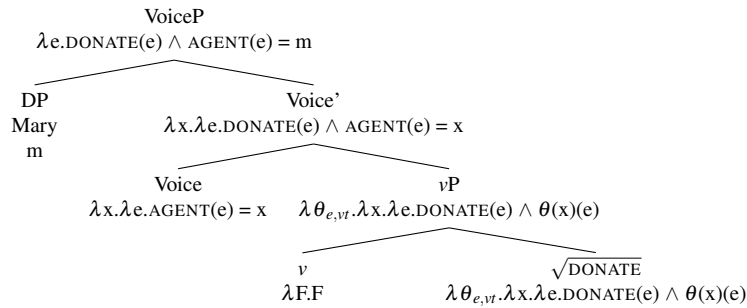
(36)　⟦*to the library*⟧ = λe.GOAL(e) = 1

The root of *donate* is analyzed as a function taking a thematic role, individual, and event argument, on par with the agentive intransitive verbs we have examined so far.
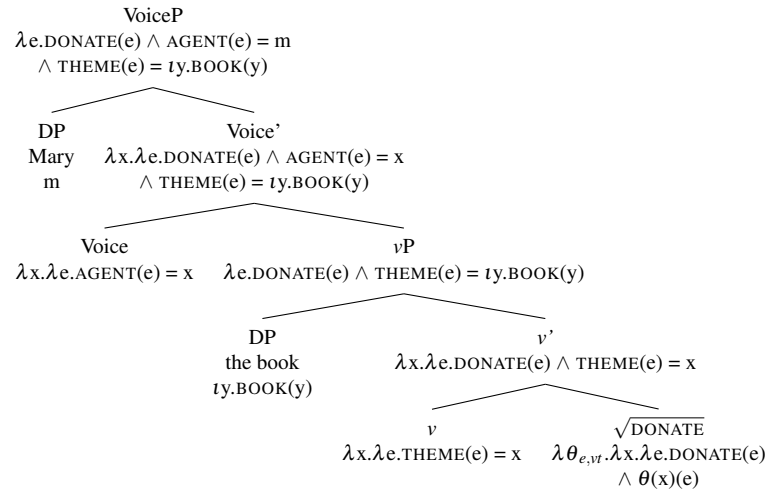
(37)　⟦$\sqrt{\text{DONATE}}$⟧ = $\lambda\theta_{e,vt}.\lambda$x.$\lambda$e.DONATE(e) $\wedge$ θ(x)(e)

This straightforwardly predicts that the intransitive use in (33a) will disallow an agentless presupposition, and the transitive use involving a DP object in (33b) will allow for one; in the former, *again* will only be able to modify VoiceP (38), while in the latter, *v*P is of the right type for *again* to modify (39).

(38)　Mary donated.

                VoiceP
    λe.DONATE(e) $\wedge$ AGENT(e) = m

  DP   Voice'
  Mary λx.λe.DONATE(e) $\wedge$ AGENT(e) = x
  m

        Voice   *v*P
   λx.λe.AGENT(e) = x $\lambda\theta_{e,vt}.\lambda$x.$\lambda$e.DONATE(e) $\wedge$ θ(x)(e)

              v $\sqrt{\text{DONATE}}$
            λF.F $\lambda\theta_{e,vt}.\lambda$x.$\lambda$e.DONATE(e) $\wedge$ θ(x)(e)

(39)　Mary donated the book.

               VoiceP
  λe.DONATE(e) $\wedge$ AGENT(e) = m
    $\wedge$ THEME(e) = ιy.BOOK(y)

    DP   Voice'
   Mary λx.λe.DONATE(e) $\wedge$ AGENT(e) = x
   m $\wedge$ THEME(e) = ιy.BOOK(y)

      Voice   *v*P
  λx.λe.AGENT(e) = x λe.DONATE(e) $\wedge$ THEME(e) = ιy.BOOK(y)

                 DP   *v*'
             the book λx.λe.DONATE(e) $\wedge$ THEME(e) = x
             ιy.BOOK(y)

                      v $\sqrt{\text{DONATE}}$
                  λx.λe.THEME(e) = x $\lambda\theta_{e,vt}.\lambda$x.$\lambda$e.DONATE(e)
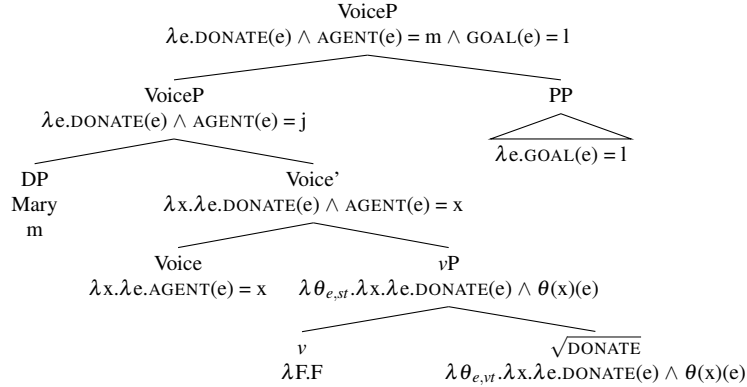 $\wedge$ θ(x)(e)

Notice now that the PP in (36) is not of the right semantic type to serve as the thematic role argument of the root. Rather, the root must first combine with a functional head introducing a thematic role. After the verb root's thematic role argument is saturated, the PP can then combine before the root's individual argument is saturated via EVENT IDENTIFICATION, or after the individual argument has been saturated

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and Koontz-Garboden (2020) for extensive discussion of semantic differences between different classes of verbs that appear in one of these frames or alternate between both.
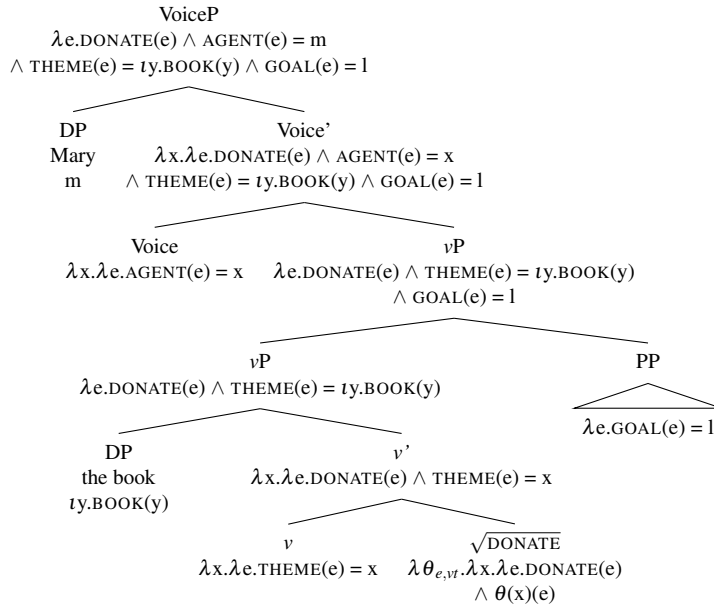
via PREDICATE MODIFICATION. For illustrative purposes, we demonstrate the latter option in (40).

(40) Mary donated to the library.

VoiceP
λe.DONATE(e) $\wedge$ AGENT(e) = m $\wedge$ GOAL(e) = l

VoiceP
λe.DONATE(e) $\wedge$ AGENT(e) = j

PP
λe.GOAL(e) = l

DP
Mary
m

Voice'
λx.λe.DONATE(e) $\wedge$ AGENT(e) = x

Voice
λx.λe.AGENT(e) = x

vP
$\lambda\theta_{e,st}$.λx.λe.DONATE(e) $\wedge$ θ(x)(e)

v
λF.F

$\sqrt{\text{DONATE}}$
$\lambda\theta_{e,vt}$.λx.λe.DONATE(e) $\wedge$ θ(x)(e)

As can be seen here, *again* will only be able to modify VoiceP, as with intransitives generally. We are therefore able to account for the fact that the introduction of the goal PP to *donate* will not suffice to make an agentless presupposition available. On the other hand, when the theme DP is present, this will saturate the thematic role and individual arguments of the verb root, allowing for both the adjunction of the goal PP and of *again*, giving rise to an agentless presupposition, the right result.

(41) Mary donated the book to the library.

VoiceP
λe.DONATE(e) $\wedge$ AGENT(e) = m
$\wedge$ THEME(e) = ιy.BOOK(y) $\wedge$ GOAL(e) = l

DP
Mary
m

Voice'
λx.λe.DONATE(e) $\wedge$ AGENT(e) = x
$\wedge$ THEME(e) = ιy.BOOK(y) $\wedge$ GOAL(e) = l

Voice
λx.λe.AGENT(e) = x

vP
λe.DONATE(e) $\wedge$ THEME(e) = ιy.BOOK(y)
$\wedge$ GOAL(e) = l

vP
λe.DONATE(e) $\wedge$ THEME(e) = ιy.BOOK(y)

PP
λe.GOAL(e) = l

DP
the book
ιy.BOOK(y)

v'
λx.λe.DONATE(e) $\wedge$ THEME(e) = x

v
λx.λe.THEME(e) = x

$\sqrt{\text{DONATE}}$
$\lambda\theta_{e,vt}$.λx.λe.DONATE(e)
$\wedge$ θ(x)(e)

This analysis of the arguments of *donate* can be extended to other PPs, such as benefactive PPs headed by *for*, as in (42). We could treat *for* as semantically contentful,

serving to introduce the BENEFACTOR role, as in (43).[7]

(42) John danced for the king

(43) ⟦*for the king*⟧: λe.BEN(e) = k

Given this analysis and our general approach to verbal roots, we predict that agentless presuppositions will only arise with benefactives when an internal argument is introduced by *v*P. This is exactly what we observe: benefactive PPs do not license agentless presuppositions on their own, as (44) shows.

(44) CONTEXT: Lucy performed an Irish jig for the king. The king was so impressed that he had his court dancer, Bill, learn and perform the dance for him on another occasion...
    a. **# Bill danced for the king again.**
    b. **Bill danced the Irish jig for the king again.**

This approach to thematic role-introducing PPs makes a further prediction that such PPs should be able to attach outside of the scope of *again*. Since they can be introduced via PREDICATE MODIFICATION, they can combine after *again* attaches to the verb and its theme and hence fall outside its scope. This prediction is borne out, as (45) shows; here, the PPs are attached to the right of *again*, which Bale (2007) notes means that they are interpreted outside the scope of *again*'s presupposition. That these are felicitous in the contexts provided lends additional support to our proposal for the analysis of benefactive PPs and the goal PP argument of verbs like *donate*.

(45) a. CONTEXT: Lucy donated some books to the library, but the library returned them, saying they were too old and fragile. Later on...
      Mary donated them again *to the local museum*, where they are now on display.
    b. CONTEXT: John danced the Irish jig for the king. Later on...
      Bill danced the Irish jig again *for the queen*.

4.4 Double object constructions and low applicatives

Our analysis also permits for a variation on Pylkkänen's (2008) approach to double object constructions in English, which she analyzes as involving low applicatives denoting a (possible) possession relation. As Pylkkänen (2008) notes, a transitive verb in English can optionally take on a second argument in a double object construction only if a (possible) possession relation can be construed between the two object arguments. An example is given in (46).

(46) Lucy bought Tom Finnegan's Wake.

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[7]Wood and Marantz (2017) analyze *for* as a prepositional root modifying a high applicative head in Pylkkänen's (2008) sense, introducing the BENEFACTOR thematic role. They face issues with deriving the surface word order where *for* precedes its DP object; Jim Wood (personal communication) indicated there might be preposition incorporation of some sort to derive the surface order.

For Pylkkänen, the low applicative head takes two individual arguments, corresponding to the THEME and POSSESSOR roles, respectively. The verb itself, denoted by the variable f over type $<e,<v,t>>$ functions in (47), is also taken as an argument, producing a predicate of events.

(47) $\llbracket \text{Appl}_{\text{LOW}} \rrbracket =$
$\lambda x.\lambda y.\lambda f.\lambda e.f(x,e) \wedge \text{THEME}(x,e) \wedge \text{TO-THE-POSSESSION-OF}(x,y)$

Our proposal for the semantics of verb roots here can be extended to incorporate Pylkkänen's approach to double object constructions in English, with two modifications. First, we remove the argument for the verb, f, from the denotation of the applicative head, yielding (48).[8]

(48) $\llbracket \text{APPL} \rrbracket = \lambda x.\lambda y.\lambda e.\text{THEME}(e) = x \wedge \text{TO-THE-POSSESSION-OF}(e,x,y)$

Notice that, upon taking its first individual argument, the applicative is of the right semantic type to be taken as an argument by a verb root: $<e,<v,t>>$. We propose, then, that it is the root that takes the applicative as its argument, rather than *vice versa* as in Pylkkänen's analysis; the composition of the applicative head and the verb root is shown in (49).

(49) Applicative composing with the root

$$\sqrt{\text{BUY}}_{\text{APPL}}$$
$\lambda x.\lambda e.\text{BUY}(e) \wedge \text{THEME}(e) = f \wedge \text{TO-THE-POSSESSION-OF}(e,f,x)$

$\sqrt{\text{BUY}}$
$\lambda\theta_{e,vt}.\lambda x.\lambda e.\text{BUY}(e) \wedge \theta(x)(e)$

APPL
$\lambda y.\lambda e.\text{THEME}(e) = f$
$\wedge \text{TO-THE-POSSESSION-OF}(e,f,y)$

APPL
$\lambda x.\lambda y.\lambda e.\text{THEME}(e) = x$
$\wedge \text{TO-THE-POSSESSION-OF}(e,x,y)$
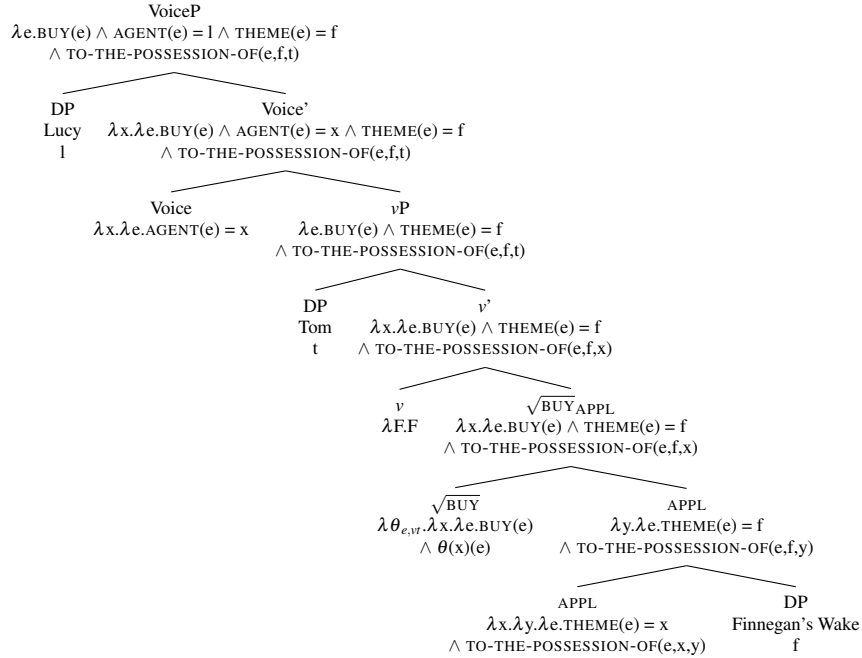
DP
Finnegan's Wake
f
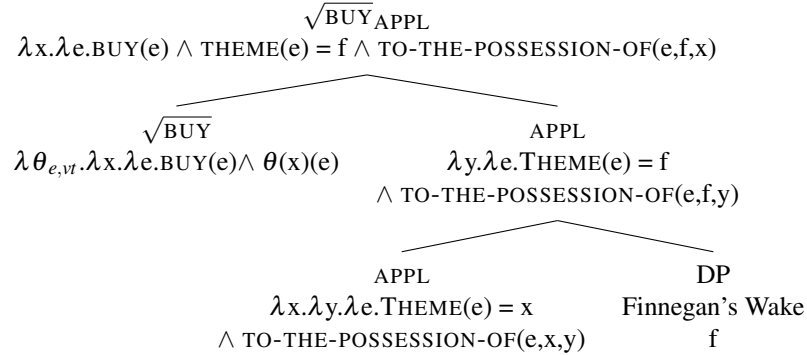
This, of course, leads to a question: if APPL is the complement of the verb root, when is the second individual argument saturated? If we assume that APPL is not a categorizing v head in the DISTRIBUTED MORPHOLOGY sense, we can then combine the root with another v head.[9] Crucially, this v head need not be a thematic role function,

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[8]An additional minor difference from Pylkkänen's analysis is the addition of an event argument to the TO-THE-POSSESSION-OF relation, similar to Basilico (2008) and Bruening (2010). Note that Pylkkänen's original TO-THE-POSSESSION-OF relation does not contain the event argument of the verb. Larson (2010) shows that since the indirect object argument denoting the possessor is not related to the event denoted by the verb, Pylkkänen's analysis for sentences like (47) predicts that it should be felicitous in a scenario in which Lucy bought Finnegan's Wake and another person, say John, brought it to Tom. This is clearly not a possible reading of (46), and the addition of an event argument to the TO-THE-POSSESSION-OF relation precludes it.

[9]This, of course, is not a necessary assumption. One could assume that APPL is a flavor of v since it does introduce the THEME role, specifying that the individual argument is a THEME of the event denoted by the verb. If so, then the root is categorized as verbal in the DISTRIBUTED MORPHOLOGY sense, and

since the remaining individual argument of the root is already related in a TO-THE-POSSESSION-OF relation with the individual argument interpreted as THEME. This v head thus denotes an identity function, introducing the DP that saturates the POSSESSOR argument of APPL. The full derivation is given in (50).[10]

(50)   Lucy bought Tom Finnegan's Wake.

VoiceP
$\lambda e.\text{BUY}(e) \wedge \text{AGENT}(e) = l \wedge \text{THEME}(e) = f$
$\wedge$ TO-THE-POSSESSION-OF(e,f,t)

DP
Lucy
l

Voice'
$\lambda x.\lambda e.\text{BUY}(e) \wedge \text{AGENT}(e) = x \wedge \text{THEME}(e) = f$
$\wedge$ TO-THE-POSSESSION-OF(e,f,t)

Voice
$\lambda x.\lambda e.\text{AGENT}(e) = x$

vP
$\lambda e.\text{BUY}(e) \wedge \text{THEME}(e) = f$
$\wedge$ TO-THE-POSSESSION-OF(e,f,t)

DP
Tom
t

v'
$\lambda x.\lambda e.\text{BUY}(e) \wedge \text{THEME}(e) = f$
$\wedge$ TO-THE-POSSESSION-OF(e,f,x)

v
λF.F

$\sqrt{\text{BUY}}$APPL
$\lambda x.\lambda e.\text{BUY}(e) \wedge \text{THEME}(e) = f$
$\wedge$ TO-THE-POSSESSION-OF(e,f,x)

$\sqrt{\text{BUY}}$
$\lambda \theta_{e,vt}.\lambda x.\lambda e.\text{BUY}(e)$
$\wedge \theta(x)(e)$

APPL
$\lambda y.\lambda e.\text{THEME}(e) = f$
$\wedge$ TO-THE-POSSESSION-OF(e,f,y)

APPL
$\lambda x.\lambda y.\lambda e.\text{THEME}(e) = x$
$\wedge$ TO-THE-POSSESSION-OF(e,x,y)

DP
Finnegan's Wake
f

In this way, we maintain a unified analysis of the roots of verbs like *buy*; they are uniformly functions from thematic roles and individual arguments to predicates of events. Additionally, we also predict that the benefactive double object construction differs from the addition of benefactive *for*-phrases. As shown previously for intransitive verbs in (45b), benefactive *for*-phrases can scope above *again* such that *again* can presuppose a different benefactive argument. This can be replicated with transitive verbs like *buy*. This is expected under the analysis proposed; that is, *for* phrases are predicates of events that combine with the verb (and its theme, if any) via EVENT IDENTIFICATION or PREDICATE MODIFICATION.

it can simply combine directly with the argument interpreted as the POSSESSOR in the possession relation introduced by APPL. This would then bring the syntax of these constructions closer to Basilico's (2008). Nothing crucial hinges on this choice; since we merely aim to show that our analysis proposed here can be extended to the analysis of double object constructions, we will not attempt to differentiate between these two choices.

[10]Alternatively, the second v head may introduce a BENEFACTOR role in English, as per Pylkkänen's (2008) analysis of high applicatives. This v head would then combine with the root and APPL constituent via PREDICATE MODIFICATION, endowing the DP argument introduced in its specifier with both a POSSESSOR and BENEFACTOR role, capturing the dual interpretations the indirect object receives in an English benefactive double object construction as observed by Basilico (2008) and Wood and Marantz (2017). Again, as far as we can tell, the choice here does not affect the core proposal and analysis in any crucial way.

(51) CONTEXT: Lucy previously bought the book Finnegan's Wake for Bill. Tom,
      hearing that the book was really good, asked if Lucy can buy him a copy too.
      Lucy agreed, went to the book store, and bought Tom a copy.
      Lucy bought Finnegan's Wake again *for Tom*.

In contrast, *again* can never presuppose only the theme direct object to the ex-
clusion of the possessor indirect object in the double object construction, whether the
theme is linearly to the right of *again* or not, as verified in the example below, making
use of the same context in (51). The analysis in (50) predicts this, since there is no con-
stituent that is of the right semantic type for *again* that includes only the theme direct
object and the verb and not the possessor indirect object.

(52) CONTEXT: Lucy previously bought the book Finnegan's Wake for Bill. Tom,
      hearing that the book was really good, asked if Lucy can buy him a copy too.
      Lucy agreed, went to the book store, and bought Tom a copy.

   a. **# Lucy bought Tom Finnegan's Wake again.**
   b. *** Lucy bought Tom again Finnegan's Wake.**

We thus see that our analysis is able to accommodate a range of argument structural
phenomena involving prepositional phrases and double object constructions, making
correct predictions about their interaction with *again*.

5 Alternative analyses

In this section, we present possible alternatives to the analysis we developed above.
The first counteranalysis aims to reduce apparent agentless repetitive presuppositions to
restitutive presuppositions generated by modification of a stative constituent by *again*,
while the second attempts to account for the alternation in the availability of agentless
presuppositions without adopting our analysis of verbal roots. We will demonstrate
that each of these alternative approaches leads to incorrect predictions that our own
account avoids.

5.1 Verbs of performance as creation verbs

One possible analysis of unergative verbs like *dance* taking an optional DP comple-
ment is to treat them as creation verbs, where the DP corresponds to a created object,
as in *build the house*. On this view, informally speaking, *dance the Irish jig* would
be interpreted as *there was a dancing event e and e was an event causing there to be
an Irish jig*. Cashing this out syntactically would require that there be a small clause
constituent that denotes a stative property of existence, or, alternatively, some kind
of interpretive rule that maps the DP to a stative predicate semantically (see Marantz
2005, 2007 and Wood and Marantz 2017 for such an analysis of creation and change-
of-state verbs). For concreteness, we illustrate a possible structure for a small clause
analysis, utilizing a silent event predicate EXISTS to denote the state of existence.[11]

---

[11]This is in contrast to approaches like Hale and Keyser (1993) and Folli and Harley (2005), who treat
creation verbs as involving a DP that is the complement to an agentive flavor of *v* they label v_{DO}.

This small clause constituent would be of type $<v,t>$, serving as the argument of a causative v, which introduces the CAUSE relation between an event and a state and thus is of type $<<v,t>,<v,t>>$ (Kratzer, 2005). Under this analysis, the fact that an agentless presupposition is allowed when there is an optional object can be attributed to the fact that sentences containing verbs of performance contain as part of their structure a stative constituent that requires a causative v, and that the vP is the correct type for *again* to take as an argument. This position excludes the agent introduced by VOICE and generates a *restitutive* reading presupposing that the Irish jig existed before. On this approach, then, the apparent agentless presupposition is illusory, and has a completely different source from the sorts of presuppositions with which Bale (2007) was originally concerned.

(53)   [AGENT VOICE [CAUSE [$_{SmallClause}$ EXISTS DP]]]

We wish to point out three problems for such an analysis. First, note that it says nothing about the intransitive uses of verb roots like $\sqrt{\text{DANCE}}$ or $\sqrt{\text{BARK}}$ and how they disallow subjectless presuppositions, as originally observed by Bale (2007). One could say that in the intransitive variant where these roots are interpreted as activity verbs, there is simply a different flavor of little v, something like the v_{DO} of Folli and Harley (2005) denoting a doing event. Even so, assuming then that the agent is introduced by VOICE, one would still predict the intransitive variant to permit an agentless presupposition, contrary to fact.[12]

Second, while verbs of performance like $\sqrt{\text{DANCE}}$ may plausibly be analyzed as creation verbs, this analysis does not extend so easily to the other cases, like $\sqrt{\text{SWEEP}}$ or $\sqrt{\text{BARK}}$, the latter of which takes a PP argument. One might think roots like $\sqrt{\text{BARK}}$ are interpreted on par with motion constructions such that there is a small clause constituent that denotes some kind of state. However, the interpretation of *bark at Fido*, for example, is not *there is a barking event and it is an event causing a bark to be at Fido*, as one would expect if these are semantically on a par with motion verbs like *dance* where *Mary danced into the room* means *there is a dancing event and it was an event whose agent is Mary and caused Mary to be in the room*. Likewise, such analyses would also say nothing about the intransitive use of *bark* disallowing agentless presuppositions, since the agent would presumably still be introduced by VOICE.

Most importantly, though, even if we set aside the first two concerns, we see that a creation verb analysis along the lines of (53) makes incorrect predictions about the range of available readings when transitive uses of *dance* are modified by *again*. Specifically, such an analysis predicts the existence of a purely restitutive reading with *again* when it attaches to the small clause result constituent (von Stechow, 1996; Beck and Johnson, 2004). We see plainly that such a reading with *again* is impossible. It is difficult to construct an example with *dance*, since some form of dance existing is intrinsically caused by some event of dancing, so we elect instead to use the verb *sing*, another verb of performance that permits an optional DP argument in the same way

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[12]Folli and Harley (2005) in fact assume that agent and causer arguments are introduced directly by v_{DO} and v_{CAUSE}, in which case such an analysis might work. However, later work like Pylkkänen (2008) and Harley (2013) provide extensive arguments within DISTRIBUTED MORPHOLOGY that VOICE and v should be separate, with VOICE being the exclusive locus of external argument introduction.

dance does. In the context below, because the song *Amazing Grace* was previously performed via humming, a manner different from the asserted event of singing, the repetitive reading of *again* is ruled out. The context thus forces a restitutive reading, in which *again* would target a result state constituent, presumably of the song existing. Crucially, we see that in this context, such a sentence is infelicitous. This indicates that there is in fact no such result state constituent that *again* can target, and the only possible reading is a agentless repetitive reading where the manner of performance of both the asserted and presupposed events is identical.

(54)   CONTEXT: Kristina previously hummed the song Amazing Grace. Lucy really loved the song and wanted to hear it one more time so...

   a.   **# Peter sang Amazing Grace again.**

   b.   **Peter hummed Amazing Grace again.**

In contrast, our own analysis makes no recourse to the presence of a small clause constituent in the transitive variant, and therefore does not make the incorrect prediction that the creation verb analysis makes. The difference between the transitive and intransitive use of such verbs is due to the presence of different flavors of *v* and whether they introduce both a thematic role and an argument in their specifier. In addition, whether *again* attaches to VoiceP or *v*P, the verbal root is always included in *again*'s presupposition, and thus correctly predicts that (54a) is infelicitous in the context given, while (54b) is felicitous. In light of these concerns, we contend that cases where verb roots that can optionally appear in a transitive structure do not involve a small clause result state constituent that can be targeted by *again*.

5.2   Unergatives as underlying transitives with implicit objects

Another alternative analysis, suggested by an anonymous reviewer, concerns the treatment of the unergative verbs we considered, such as *dance*, *bark*, and *kick*, according to which these verbs take implicit internal arguments (Bresnan 1978, Dowty 1982, Alexiadou et al. 2014, Alexiadou et al. 2015, *a.o.*). This phenomenon, termed *object drop* in Levin (1993), is well-attested with verbs of consumption, in which the implicit object is understood existentially.[13]
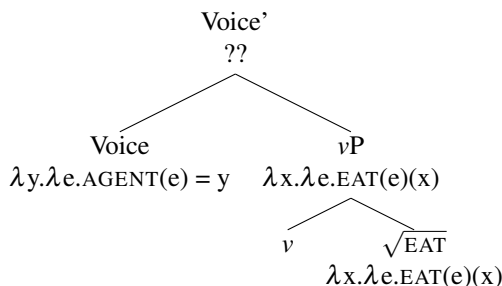
(55)   a.   John ate the bread.

   b.   John ate.   (entails John ate something)

Alexiadou et al. (2014) propose an analysis according to which unergative verbs with optional internal arguments are underlyingly transitive verbs; the unergative use involves EXISTENTIAL CLOSURE over an implicit internal argument, explaining the existential interpretation in (55b). EXISTENTIAL CLOSURE of an implicit argument occurs as a last resort to repair a type-clash with VOICE, which, as in Kratzer (1996),

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[13]More generally, Rappaport-Hovav and Levin (1998) and Levin (1999) term the class of verbs that allow object drop *non-core transitive verbs*, where the optional object is not an argument of a lower sub-event. Because of their ARGUMENT PER SUBEVENT CONDITION, non-core transitive verbs, which already have the agent argument expressed, allow their object arguments to be dropped.
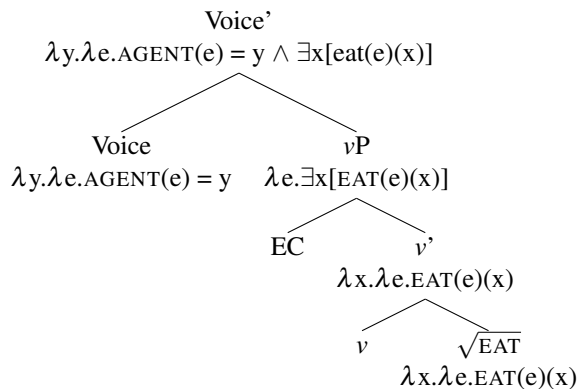
introduces the AGENT role and is of type $<e,<v,t>>$. As a verb like *eat* takes its internal argument directly, it is also of type $<e,<v,t>>$, and cannot compose with VOICE via EVENT IDENTIFICATION if its internal argument position is not saturated.

(56)

$$
\begin{array}{c}
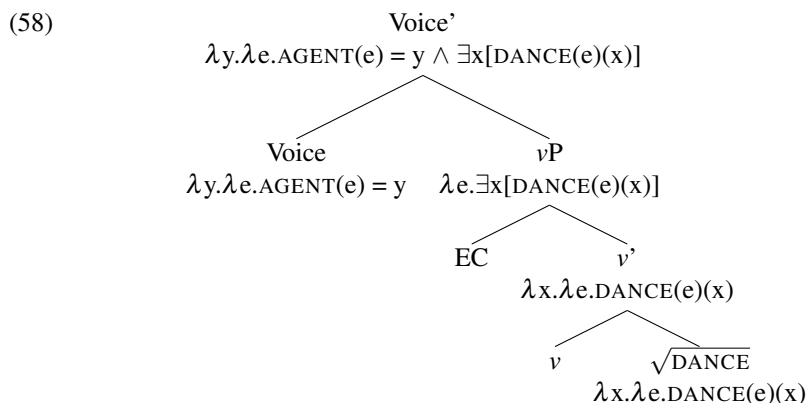\text{Voice'} \\
\text{??}
\end{array}
$$

Voice
$\lambda y.\lambda e.\text{AGENT}(e) = y$

vP
$\lambda x.\lambda e.\text{EAT}(e)(x)$

v

$\sqrt{\text{EAT}}$
$\lambda x.\lambda e.\text{EAT}(e)(x)$

Alexiadou et al. suggest that EXISTENTIAL CLOSURE can apply to repair the type-mismatch between VOICE and vP. This results in existential quantification over the individual argument of the function that vP denotes, producing a function of type $<v,t>$ with which VOICE can compose via EVENT IDENTIFICATION.

(57)

Voice'
$\lambda y.\lambda e.\text{AGENT}(e) = y \wedge \exists x[\text{eat}(e)(x)]$

Voice
$\lambda y.\lambda e.\text{AGENT}(e) = y$

vP
$\lambda e.\exists x[\text{EAT}(e)(x)]$

EC

v'
$\lambda x.\lambda e.\text{EAT}(e)(x)$

v

$\sqrt{\text{EAT}}$
$\lambda x.\lambda e.\text{EAT}(e)(x)$

At first glance, it seems quite natural to extend such an analysis to verbs like *dance*, which intuitively entails the existence of some kind of dance performed. Applying this account to this paper's domain of interest, one might propose that *dance* takes an internal argument (the particular dance performed), and is therefore of type $<e,<v,t>>$. On the assumption that EXISTENTIAL CLOSURE may only apply at the point where VOICE and vP compose as a means to repair the type-mismatch between the two nodes, there will be no appropriately-typed node for *again* to modify, thereby excluding agentless presuppositions.

(58)

$$\text{Voice'}$$
$$\lambda y.\lambda e.\text{AGENT}(e) = y \wedge \exists x[\text{DANCE}(e)(x)]$$

$$\text{Voice} \qquad\qquad vP$$
$$\lambda y.\lambda e.\text{AGENT}(e) = y \quad \lambda e.\exists x[\text{DANCE}(e)(x)]$$

$$\text{EC} \qquad\qquad v'$$
$$\lambda x.\lambda e.\text{DANCE}(e)(x)$$

$$v \qquad\qquad \sqrt{\text{DANCE}}$$
$$\lambda x.\lambda e.\text{DANCE}(e)(x)$$

However, the formal implementation of EXISTENTIAL CLOSURE over an implicit argument as in Alexiadou et al. (2014) would need to be tightly controlled: in particular, if EXISTENTIAL CLOSURE over an implicit argument results in a type $<v,t>$ constituent, intransitive *dance* would be predicted to allow an agentless presupposition as shown in the denotation of the *v*P in (58), contrary to fact. Alexiadou et al. (2014) would critically need to assume that EXISTENTIAL CLOSURE is tightly restricted in its application; for instance, EXISTENTIAL CLOSURE can be applied to repair a type mismatch between *v*P and VOICE, but not between *again* and *v*P. It is unclear to us how this could be enforced in a way that is not stipulative.

Even setting aside this conceptual issue, this account makes incorrect predictions when applied to other classes of verbs we have considered. For example, if EXISTENTIAL CLOSURE is involved in the intransitive variant of *kick*, we would expect (59) to entail that someone was kicked. However, as Carlson (1984) discusses at length, (59) does not entail that someone was kicked; rather, it can be true in a context in which John made a kicking motion with his leg, without coming into contact with anything. The same observation holds of other verbs of contact, such as *punch*.

(59)   John kicked.

This is also true of verbs of vocalization, such as *bark* and *yell*; (60) is felicitous in a context in which John is yelling in frustration, without necessary yelling at anyone in particular.

(60)   John yelled.

The anonymous reviewer suggests that the implicit argument of a vocalization verb is not necessarily the argument the vocalization is directed at, but the "content of communication" that is existentially closed in a different way from other arguments, perhaps, when a goal PP is present, in order to compose with the goal via EVENT IDENTIFICATION. To us, it seems difficult to distinguish such an implicit internal argument representing an event *participant* from the event argument itself, which represents the actual event of yelling or barking and is in fact existentially closed at some point in the derivation.

25

For these reasons, we do not find there to be sufficient motivation to postulate the existence of existentially closed implicit objects for the verbs discussed in this paper. In fact, we find that positing them for certain verb classes leads to incorrect predictions about the entailment patterns of such verbs. That said, we do acknowledge that there must be some representation of the arguments for certain verb classes, including ingestives like *eat* and, perhaps, verbs of performance like *dance*. Our strategy will be to follow Carlson (1984), who proposes that implicit arguments are not represented in the syntax or compositional semantics. Carlson's representation for *John ate* is thus (61).

(61) ∃e[EAT(e) ∧ AGENT(e) = j]

The existential inference, for Carlson, comes not from existential binding of an implicit argument in the compositional semantics, but rather from a type of conceptual or world knowledge, encoded as a *meaning postulate* in the model, stating that every event of eating has a theme: it is "simply the nature of eating" that something is eaten (Carlson 1984, pg. 263).

However, not all verbs that undergo a transitivity alternation entail the existence of a theme; this is the case for the verb *kick*, which Carlson also discusses. Carlson's representation for a sentence like *John kicked*, which is identical to our own, is as in (62).

(62) ∃e[KICK(e) ∧ AGENT(e) = j]

For Carlson, the logical representations of *John eats* and *John kicks* are identical, modulo the choice of verb. The difference between *kick* and *eat* is that, unlike eating events, not all kicking events have a theme. This means that *John kicked* will not entail *John kicked something*, the right result.

While we are agnostic about the applicability of Carlson's analysis to *eat* in particular, we find it convincing for *kick*, and extend this style of treatment to the other roots of interest to this paper. More precisely, we hold that apparent EXISTENTIAL CLOSURE over an implicit argument with verbs like *wipe* and *dance* comes from conceptual knowledge that, say, wiping events involve something being wiped, and dancing events involve the performance of a kind of dance.[14] This can be represented explicitly, if desired, via a meaning postulate in the model, such as (63).

(63) □∀e[WIPE(e) → ∃x[THEME(e) = x]]

This meaning postulate encodes the conceptual knowledge that any wiping event must have a theme. Analogous meaning postulates would not exist for events of kicking and yelling, which are not necessarily conceptually endowed with themes or goals in the way that wiping events are. This accounts for the absence of entailments relating to the existence of a theme with these verbs, in contradistinction to verbs like *wipe*, while assigning the same logical form for sentences involving all of these roots.[15]

---

[14]It is possible as well to dance without performing a particular conventionalized dance, in which case one might treat the events picked out by *dance* as falling into the same class as those picked out by *kick*. In this case, what might appear to be an existentially bound implicit argument is in fact simply the existentially closed event argument of *dance*.

[15]For an overview of other empirical arguments against explicitly representing existentially interpreted implicit arguments in the syntax and semantics, see Williams (2015).

We conclude this section with a brief discussion of alternatives to our analysis of *to*-PPs with ditransitive verbs like *donate*. Our approach differs from 'asymmetric' approaches like Bruening's (2010; 2020), where the PP is an argument of the verb, or 'symmetric' approaches like Harley's (2002), where the PP is the complement of a P_{LOC} head in a causative construction akin to the double-object construction containing P_{HAVE}. Neither of these approaches correctly captures the interaction of *to*-PPs with *again*. By way of an example, Bruening (2020) suggests that ditransitive verbs uniformly take two individual arguments. In the PP frame, the preposition is semantically inert and is selected for by the verb, much like how we analyzed PPs occurring with intransitive verbs of vocalization. Crucially, verbs like *donate* introduce a GOAL thematic role directly. We omit the world argument in his lexical entries for perspicuity.

(64) $[\![donate]\!] = \lambda x.\lambda y.\lambda e.\text{DONATE}(e,x) \wedge \text{GOAL}(e,y)$

For the transitive use of *donate* without the theme argument like *Mary donated to the library*, Bruening (2020, pg. 40) proposes that Existential Closure applies to the theme argument, and the PP, which simply denotes an individual, composes directly with the verb. This analysis predicts that, regardless of whether there is an overt theme, the PP goal should never fall outside the scope of *again*, since *again* can only attach to the verb after both its theme and goal arguments have been saturated. However, this prediction is not borne out; as we demonstrated above, it is indeed possible for *again* to adjoin below the goal PP, as in (45), repeated below in (65).

(65)   CONTEXT: Lucy donated some books to the library, but the library returned them, saying they were too old and fragile. Later on...
Mary donated them again *to the local museum*, where they are now on display.

Such a phenomenon poses a problem for an analysis where goal PPs are directly selected for by ditransitive verbs. In addition, Bruening's analysis would not have an explanation for why agentless presuppositions with optionally ditransitive verbs like *donate* in fact depend on the presence of a theme argument, since his analysis uniformly assumes that agents arguments are introduced by VOICE following Kratzer (1996), and that it combines with the verb after its theme and goal arguments have been saturated. His analysis therefore predicts an agentless presupposition to always be available, contrary to what we observe.

6   On the syntax and semantics of roots

Our derivation of the INTERNAL ARGUMENT GENERALIZATION has led us to an analysis on which arguments and their thematic roles are syntactically and semantically severed from the verb, but verbal roots still take a number of arguments in addition to an event argument. These arguments are a functional argument and an individual argument, which are saturated by a thematic role argument introduced by *v* and the individual denoted by the DP introduced in the specifier of *v*P. We also maintain that VOICE introduces the agent argument in all cases, and that the AGENT role may

saturate the root's functional argument or associate with the denotation of the vP via EVENT IDENTIFICATION, depending on whether the root's thematic role argument has been saturated by another role or not.

Having developed an account of how agents *qua* external arguments relate to the vP, we are now in a position to situate our proposal in the theoretical context of the relation between *internal* arguments and the verb/root. There are two general poles involved in this debate. On one side are those who argue that internal arguments are syntactic complements to the verb/root, with the verb/root directly composing with the internal argument via FUNCTION APPLICATION (Marantz, 1984; Kratzer, 1996; Bale, 2007; Pylkkänen, 2008; Harley, 2014, *a.o.*). (66) displays this analysis.[16]

(66)   a.   Internal argument as complement to verb

$$\sqrt{\text{ROOT}}/\text{VP}$$

$$\sqrt{\text{ROOT}}/\text{V} \quad \text{DP}$$
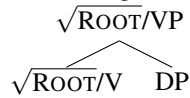
   b. $[\![\sqrt{\text{ROOT}}/\text{V}]\!] = \lambda x.\lambda e.V(x)(e) \cong \lambda x.\lambda e.V(e) \wedge \text{THEME}(e) = x$

On the other side of the debate, it is argued that roots/verbs do not take complements; instead, the internal argument, much like the external argument, is syntactically severed from it, and is introduced as the specifier of a functional projection that dominates the $\sqrt{\text{ROOT}}/\text{VP}$, as in (67) (Schein, 1993; Borer, 2003, 2005; Champollion, 2010, *a.o.*).

(67)   Internal arguments introduced by functional heads

$$
\begin{array}{c}
\text{FP}\\
\diagup \diagdown\\
\text{DP} \quad \text{F'}\\
\diagup \diagdown\\
\text{F} \quad \sqrt{\text{ROOT}}/\text{VP}\\
|\\
\sqrt{\text{ROOT}}/\text{V}
\end{array}
$$
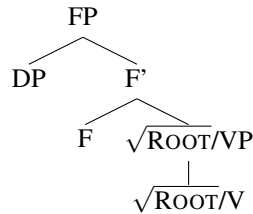
Syntactically, the approach we advocate in this paper is clearly an instance of the latter type of proposal: the root takes no complement, and the internal argument is introduced by a functional projection (here vP). This is certainly necessary for the analysis of the transitivity alternations this paper is primarily concerned with, as non-agent roles must be introduced separately from the verb in order to account for the differential availability of agentless presuppositions depending on the presence of an internal argument. With respect to the semantics, however, our proposal is to some degree reminiscent of Kratzer's (1996), which also posits that verbs take arguments beyond the event variable. Our analysis diverges from this by adding a thematic role argument to the verb, thereby allowing the thematic role of the verb's individual argument to vary depending on the structure in which the verb is embedded, rather than fixed to a role like THEME.

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[16]Not all of these authors adopt DISTRIBUTED MORPHOLOGY, so in our representations illustrating the issue at hand we aim for neutrality by writing $\sqrt{\text{ROOT}}/\text{V}$ for the object corresponding to the idiosyncratic verbal element at the base of the tree.

Not all analyses that sever the internal argument from the verb syntactically make specific claims about the semantics of roots: for instance, Borer (2005) holds that roots are devoid of inherent semantic content, and only receive particular interpretations at the semantic interface given their syntactic context. This kind of proposal is thus compatible with our analysis, whereby roots can be assigned interpretations as functions of type $<<e,<v,t>>,<e,<v,t>>>$. Other proposals in this vein, however, are more specific in their semantics, and explicitly propose that verbs/roots be treated as bare predicates of events, with all individual arguments related to the verb via thematic roles introduced by functional projections. Analyses in this vein include Schein (1993), Champollion (2010), and Lohndal (2012), among others.

(68) Verbs/roots as predicates of events
$[\![\sqrt{\text{ROOT}}/\text{V}]\!] = \lambda e.\text{V}(e)$

A general problem for approaches on which verbs denote predicates of events, with all arguments introduced by functional heads, comes from their interaction with *again*: because the verb is itself type $<v,t>$, such analyses predict the possibility of presupposing that there was simply *some event of the same kind before, with no reference to the arguments of the verb*. Such presuppositions are unattested, however, as the following context demonstrates:

(69) CONTEXT: John hit Bill. Then...
 # Mary hit Steven again.

Note that this holds even if meaning postulates constrain the meanings of these verbs to contain existential statements over internal and external arguments, as in (63) in Carlson's (1984) approach. Since these arguments would be existentially quantified in the meaning postulates, attaching *again* to these verbs should produce a presupposition that there is a previous event containing *any* two individuals serving as the AGENT and THEME of *hit*. In other words, (69) is still predicted to be felicitous, which remains the wrong result.

As an anonymous reviewer notes, the DISTRIBUTED MORPHOLOGY framework offers a way to defend the analysis of roots as bare event predicates. The standard assumption is that roots cannot be modified directly, and must combine with a categorizing *v* head before any arguments or modifiers are introduced. If the internal argument is introduced in the specifier of *v*P, as in our analysis, and *again* is adjoined to *v*P, this would suffice to rule out presuppositions with *again* that exclude all of the arguments of the verb, such as that in (69).

We note that while this solution appears to have some promise, it does not necessarily solve all of the problems with the roots as bare event predicates approach. For one, various authors working within DISTRIBUTED MORPHOLOGY have argued that roots *can* be modified prior to categorization. Pylkkänen (2008), for example, argues that modifiers like *partway* can modify lexical causatives to return a stative reading (70a), which she argues to arise from the modifier attaching to an acategorial stative root verbalized by a *v* head introducing causative semantics (Kratzer, 2005). She shows further that *partway* can also modify the root in an adjectival context (70b), and takes

such category-neutrality to be evidence that the modifier is in fact modifying an acategorial root. According to Pylkkänen, *again* exhibits at least some degree of category neutrality (71) and hence can be reasonably thought of as a root modifier. See also Harley (2014) for arguments that roots can be directly modified.

(70) a. Mary opened the door part way.

b. a partway open door

(71) a. Mary opened the door again.

b. * an again open door / ?? an open again door

c. the once again open door

If these ideas are on the right track, then there is in principle no obstacle to direct modification of the root. It stands to reason that *again* could attach directly to a root of the appropriate type regardless of whether it is a lexical verb labeled V or an acategorial root, thereby giving rise to the problem we see in (69).

Even setting aside these arguments, the requirement that the root first be categorized by *v* before modification by *again* is possible does not generally solve the problem. In particular, the roots of unergatives will be categorized by *v*, with the AGENT role introduced by Voice, thereby incorrectly predicting the possibility of agentless presuppositions with not only the classes of verbs we have discussed, but also verbs like *run* as in Bale's (2007) original observations.

By contrast, our approach never predicts that *again* may presuppose a prior event that fails to share at least one of its participants with the event in the assertion, and this does not depend on syntactic restrictions over and above the composition of the root with its arguments. Rather, *again* is restricted to apply only after the root has combined with at least one thematic role and individual playing that role in the event, and this follows directly from the type-theoretic properties of roots and of *again*. Further, because the thematic role argument of the root is underspecified, this slot may be filled by the internal argument's role, or by the AGENT itself, deriving the dependence of agentless presuppositions on the presence of an internal argument, as captured by our INTERNAL ARGUMENT GENERALIZATION.

In sum, we see that our proposal lies between the two theoretical poles outlined above. Like Kratzer (1996) and much subsequent work, we maintain that the root encodes some representation of an argument participating in a class of events named by the root. Diverging from Kratzer, however, the thematic role of the root's individual argument is also underspecified, and is supplied by the functional heads that also serve to introduce arguments in the syntax, as in approaches that sever all arguments from the verb.

7   Conclusion

This paper began by challenging Bale's (2007) claim that agentive intransitive verbs differ from transitive verbs by directly composing with their external arguments, on the basis of agentless presuppositions with *again*, demonstrating that typically intransitive verbs do permit agentless presuppositions in the presence of an optional internal

argument. We proposed the INTERNAL ARGUMENT GENERALIZATION, according to which agents may only be excluded from the presupposition of *again* if an internal argument is also present. We proposed to derive the INTERNAL ARGUMENT GENERALIZATION from an interaction of syntactic structure and the semantics of verbal roots: verbal roots denote functions taking thematic roles as arguments, in addition to an individual and event argument. In the presence of a thematic role contributed by *v*, the root's thematic role and individual argument are saturated, permitting an agentless presupposition by producing a constituent of the appropriate type to be modified by *again*. In the absence of such a thematic role, the root takes VOICE's AGENT role as an argument, thereby excluding agentless presuppositions. We showed how this approach allows us to distinguish between arguments and thematic roles introduced by *v*P, and then situated our novel approach to verbal roots in the context of a larger theoretical debate about the syntactic and semantic properties of roots.

In concluding this paper, we would like to discuss a few areas for future research. For one, we note that while the research reported here focuses on the structure of English verbal predicates, our ultimate goal is directed toward an understanding of roots and the syntactic decomposition of argument structure cross-linguistically. To our knowledge, agentless presuppositions with *again* and their implications for the syntax have not been investigated in a variety of languages. Our hope is that applying agentless presuppositions as a diagnostic cross-linguistically will reveal universals in the semantics of verbal roots and the syntactic decomposition of argument structure, and provide a window into the range of permissible variation in these areas.

Other areas of future investigation include the representation of thematic roles other than agents. Consider once more our INTERNAL ARGUMENT GENERALIZATION, re-stated below.

(72) INTERNAL ARGUMENT GENERALIZATION
Presuppositions with *again* that exclude the agent are only possible when an internal argument is present.

Notice that this formalization of the generalization accords special status to agents, rather than just any transitive subject; it seems that agents alone may escape the presupposition of *again*, hence our use of the term *agentless presupposition* throughout this paper rather than Bale's (2007) term *subjectless presupposition*.[17] Bale himself noticed that the experiencer argument of transitive stative predicates like *love* may not lie outside of the presupposition of *again*, as shown in (8) in section 2, repeated below in (73).

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[17]An anonymous reviewer points out that non-animate causers can also escape *again*'s presupposition like agents, producing causerless presuppositions.

(1) CONTEXT: In 1710, an earthquake destroyed Lisbon. Today...
A tsunami destroyed Lisbon again.

This suggests that it is more appropriate to make reference to thematic roles broader than AGENT to include CAUSER. This does not invalidate the generalization, however, if we take the generalization to, in fact, be making reference to a broader class of arguments, which one might call INITIATOR in Ramchand's (2008) terms. We could simply say that INITIATOR arguments may escape *again*'s presupposition, rather than AGENT arguments specifically. Since we have focused on agent arguments throughout the paper, we will maintain our reference to agents and agentless presuppositions.

(73) CONTEXT: Seymour's mother loved Frank, although she was the only one who did. After a while she no longer cared for him. However, Seymour became attached to the man, and developed strong feelings for him after his mother's love subsided. So...
    # **Seymour loved Frank again.**

One possible explanation for this is that non-agentive verbs take all of their arguments directly, as Bale (2007) proposed. While treating such verbs as lexically encoding all of their arguments would capture their inability to license a subjectless presupposition with *again*, it would be interesting to explore a deeper reason for this restriction. As an example of one way forward, one could adapt an approach due to Hale and Keyser (2002), who propose that states are *inalienably possessed*, and that the structure of stative verbs like *love* and *respect* contain a covert anaphor. On this view, sentences like *John loves/respects Mary* are decomposed roughly into *John$_i$ gives Mary his$_i$ love/respect*. Suitably formalized, the idea would be that *again* would trigger a presupposition that there was a previous event of giving Mary John's love/respect, but since only John himself can give such a thing, *again*'s presupposition will go unsatisfied in any context in which John did not previously love/respect Mary. This would relate the behavior of stative transitives to that of reflexives with agentless presuppositions: if the internal argument of a verb is a reflexive pronoun, an agentless presupposition is impossible, even if the verb otherwise permits such presuppositions.

(74) CONTEXT: John kicked himself. Then...
    # **Bill kicked himself again.**

It seems clear to us that (74) is infelicitous not for type-theoretic reasons, but because the reflexive, as an anaphor, must corefer with the subject of the clause containing it. The presupposition of *again* in a sentence like (74) will thus only be satisfied in a context in which *Bill* kicked himself before. If a similar approach to stative transitives proves successful, this would defuse Bale's argument that such verbs directly compose with both of their arguments, and allow for a uniform syntax and, possibly, compositional semantics for the roots of eventive and stative verbs.

Conflict of interest

The authors declare that they have no conflict of interest.

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