

A Semantic Analysis of Stative Passive Participles*

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Abstract

This study examines the semantics of stative passive participles in adjectival passives, focusing on their interaction with event-related modifiers. Unlike eventive passives that denote entire events, stative passives express only result states specified by VPs. However, stative participles seem to retain the event structure of VPs, allowing certain event-related modifiers, unlike ordinary adjectives. The study investigates why some event-related modifiers are acceptable while others are not, aiming to explain this distribution through a semantic analysis.

Keywords: event, state, adjectival passive

1. Introduction

In this study, I investigate the semantics of stative passive participles that appear in the predicate position of the adjectival passive. Whereas the verbal, or eventive, passive denotes an event in the same way as its corresponding active form, the adjectival, or stative, passive denotes the result state of the event, as illustrated in (1).

- (1) The door was opened.
 - a. *Eventive passive*
Someone opened the door.

b. *Adjectival passive*

The door was in a state of having become open.

(Embick (2004: 356), slightly modified)

Sentence (1) shows that *opened* is ambiguous: it can be interpreted as either indicating the entire opening event (1a) or the resulting state of that event (1b). The eventive interpretation disappears when the participle is selected by a raising verb that takes an adjectival phrase, as illustrated in (2).

- (2) a. The door remained opened. (Embick (2004: 388))
 b. The door remained open.

In (2a), the participle *opened*, like the adjective *open* in (2b), permits only a stative interpretation.

Yet stative passive participles differ crucially from ordinary adjectives in that they preserve the event structure of the verbs from which the participles are derived. This is revealed by the distribution of event-related modifiers, which modify not the state expressed by the participle, but rather a causal event that leads to the state. As shown in (3), the manner adverb *carefully*, which modifies an agentive event, can occur with participles but not with adjectives.

- (3) a. The package remained carefully opened.
 b. *The package remained carefully open. (Embick (2004: 357))

Sentence (3a) conveys that the package was in a state resulting from being opened carefully. In contrast, (3b) is ungrammatical. This contrast demonstrates that stative passive participles, unlike adjectives, retain an eventive component that can be modified.

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Although event modification of stative passive participles is possible, not all modifiers are allowed in stative passives. While *carefully* is grammatical in (3a), Ramchand (2018: 73) indicates that *carelessly* and *recently*, which modify the closing event in (4) are ungrammatical.

(4) a. ?The door is recently/carelessly closed.

b. ?The door turned out to be recently/carelessly closed.

(Ramchand (2018: 73))

Similar contrasts are observed with instrumental and agentive modifiers, as illustrated in (5).

(5) a. The dog is tied up with a rope (*by a policeman).

b. Some words are underlined with a {highlighter/blue pen/*short pen}.

(McIntyre (2015: 942))

These observations raise the question of what determines the acceptability of event-related modifiers, which target the agentive or causing event rather than the result state expressed by the stative participle. McIntyre (2015) proposes the State Relevance Hypothesis as a generalization: event-related modifiers are unacceptable unless they contribute to the description of the state expressed by the stative passive participle or the description of the holder of that state. The hypothesis correctly captures the contrasts in (5), as further discussed in Section 2.2. However, the State Relevance Hypothesis remains purely descriptive; it does not explain why relevance to the result state should regulate event-related modification. This study aims to provide such an explanation by investigating the semantics of stative passive participles and deriving the constraints underlying this generalization.

The structure of this paper is as follows: Section 2 reviews previous studies.

Ramchand (2018) argues that stative participles consist solely of a result projection, with no syntactic or semantic representation of causing subevents, and therefore contribute only the property of a resulting state. Yet, as McIntyre (2013, 2015) observes, many attested cases of event-related modification support the presence of causing subevents in stative participles, revealing that a purely result state analysis is overly restrictive. His State Relevance Hypothesis enables us to address these empirical facts, but as noted above, it remains a descriptive generalization.

In Section 3, I introduce the notion of the identifying state (ID-state) proposed by Ramchand (2018) for the English progressive. I argue that the nature of the ID-state underlies both the semantics of the progressive and that of stative participles, and that State Relevance follows from this common underlying property. Building on the verbal decomposition proposed in Ramchand (2008), I propose that an ID-state may be associated with different subparts of an event depending on the verb's causal structure, and I argue that the ID-state associated with the final caused subpart yields the semantics of stative passive participles.

Section 4 shows that the distribution of event-related modifiers follows from the notion of the ID-state. Section 5 presents further consequences of the analysis. I argue that the present proposal not only derives the State Relevance Hypothesis but also accounts for additional patterns that the hypothesis itself cannot capture—specifically, the variable acceptability of stative participles involving resultative secondary predicates with unselected objects. Section 6 concludes.

2. Previous Studies

2.1. Stative Participle as a Result Subportion of a Verb

Ramchand (2018) proposes that VPs, including voice related projections, represent causal and force-dynamic event descriptions, abstracted away from space and time, which she calls *event essences* or *event concepts*.¹ These event concepts provide the abstract causal structure from which both progressive and participial

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meanings are derived. Assuming the decomposed event structure, Ramchand argues that stative participles lack agentive or eventive components altogether. Thus, modifiers targeting such components are not allowed, and modifiers of participles are restricted to those that modify states expressed by the participles. Let us turn to consider how she implements the idea that stative participles lack eventive components in their syntax and denotations, while still expressing the result of the event.

Ramchand (2008, 2018) proposes that a verb is decomposed into at most three heads representing subevent descriptions: Init(ial) heads, Proc(ess) heads, and Res(ult) heads, as illustrated in (6).

- (6) a. [_{InitP} initiator [_{Init'} Init [_{ProcP} undergoer [_{Proc'} Proc [_{ResP} resultee [_{Res'} Res XP]]]]]]]
 b. $\lambda e[e = e_1 \rightarrow e_2 \rightarrow e_3 \ \& \ \text{init}(e_1) \ \& \ \text{initiator}(e_1, x) \ \& \ \text{proc}(e_2) \ \& \ \text{undergoer}(e_2, x) \ \& \ \text{res}(e_3) \ \& \ \text{resultee}(e_3, x)]$
 (cf. Ramchand (2008))

Each head in (6a) denotes a subevental property in (6b), $\text{init}(e_1)$, $\text{proc}(e_2)$ and $\text{res}(e_3)$, which represent properties of initiational states, events of change, and result states, respectively. The specifier of each head is interpreted as an initiator, an undergoer, or a resultee, which are the arguments that the corresponding subevental properties are predicated of. Finally, as originally proposed by Hale & Keyser (1993), the embedded relation between these heads is interpreted as a causal or ‘lead to’ relation, represented by the first conjunct ‘ $e = e_1 \rightarrow e_2 \rightarrow e_3$ ’ in (6b). In (6a), an Init head embedding ProcP is interpreted as the initial state causing the process event. A Proc head embedding ResP, in turn, is interpreted as leading to the result state.

Based on the decomposed verbal structure, Ramchand (2018: 84) argues that “The denotation of the *-en/ed* participle is just a property of states, when it projects

only the stative part of the verbal root's denotation. Verbs with Res in their lexical meaning give rise to *-en/ed* forms that are just a result stative projection.” In other words, adjectival participles (i.e., *-en/ed* participles) have only ResP as their structure, lack Init and Proc heads constituting the base form of the verb, as shown in (7).

- (7) a. $[_{\text{ResP}} \text{resultee } [_{\text{Res}} \text{Res XP}]]$
 b. $\lambda e_3[\text{res}(e_3)]$ (cf. Ramchand (2018: 82))

For example, stative participle *destroyed* has structure (7a) and denotes $\text{res}(e_3)$ which constitutes result part of the denotation of the base form *destroy*.

- (8) a. $\llbracket \text{destroy} \rrbracket = \lambda e \lambda e_1 \lambda e_2 \lambda e_3 [e = e_1 \rightarrow e_2 \rightarrow e_3 \ \& \ \text{destroy}_{\text{init}}(e_1) \ \& \ \text{destroy}_{\text{proc}}(e_2) \ \& \ \text{destroy}_{\text{Res}}(e_3)]$
 b. $\llbracket \text{destroyed} \rrbracket = \lambda e_3 [\text{destroy}_{\text{Res}}(e_3)]$
 (cf. Ramchand (2018: 79))

The denotation in (8b) shows that the meaning of stative participles lacks event properties $\text{init}(e_1)$ and $\text{proc}(e_2)$, which constitute causational and dynamic event parts of the base form indicated in (8a). Although denotation (8b) lacks those event properties, Ramchand (2018: 78) argues that “it makes reference to our conceptual knowledge of destruction events in characterizing that final state.” In other words, a result depends on what type of event induces that result. The partial projection of Res preserves this causal dependence without Init and Proc projections.

The absence of Init and Proc captures the infelicity of modifiers of such causational and dynamic events, as repeated in (9), where *recently/carelessly* is understood as modifying the closing event.

- (9) a. ?The door is recently/carelessly closed.

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- b. ?The door turned out to be recently/carelessly closed.

(Ramchand (2018: 73))

While the meaning of *closed* depends on the closing event, the expression itself represents only the stative Res component and contains no causing or eventive component that the adverbs in (9) can target. Consequently, only Res is available for modification, and low adverbials that modify result states are, as expected, felicitous, as shown in (10).

- (10) a. The door was built closed.
 b. Her hair is still sloppily combed.
 c. She is still well dressed.

(Ramchand (2018: 82))

The relevant adverbials are *closed* in (10a), *sloppily* in (10b) and *well* in (10c). These adverbials provide additional information about the resulting state described by the verb. *closed* specifies how the door is after it is made. Similarly, *sloppily* and *well* characterize the manner and quality of the resulting *combed* and *dressed* states respectively.

Although an analysis of stative participles as ResP explain the felicity of certain modifiers, it faces a problem when other adverbs are taken into consideration. Specifically, as shown in (3a) repeated below, there is an adverb that felicitously modifies a causal event.

- (11) The package remained carefully opened.

(Embick (2004: 357))

In fact, even *carelessly* can be felicitous in sentence (12), which is taken from a book review.

- (12) Some ebooks seem carelessly thrown together with little attention to sentence structure, grammar and spelling.

(<http://amazon.co.jp/Kissing-Asphalt-Unbreakable-Spirit%E2%80%94ResilientAF-ebook/dp/B0CGY411P6>)

The phrase *carelessly thrown together* in (12) is a complement of *seem*, indicating that it is a stative participle.

Moreover, according to Google search results, *recently* is attested in stative participles such as *recently built*, as shown in (13).

- (13) When I was there it seemed recently built since there was still some construction going on.

(<https://carryonluggageonly.wordpress.com/2020/07/15/bratislava/>)

These data suggest that completely excluding eventive components from the syntactic structure is too restrictive to account for acceptable event-related modifiers like (11). If stative participles lacked any eventive structure, there would be no constituent for event-related modifiers to attach to, and their occurrence should be uniformly impossible—contrary to fact. This empirical issue motivates an analysis in which Init and Proc are present in stative participles. Although analyzing stative participles as ResP captures the availability of result-state modifiers, it does not adequately explain event-related modifiers, which target Init and Proc. We therefore need an account of why the acceptability of event-related modifiers varies, as shown by the contrasts in (9), (11), (12), and (13). In the next section, I turn to McIntyre’s (2015) generalization concerning the acceptability of event-related modifiers.

2.2. The State Relevance Hypothesis

As McIntyre (2015: 942) notes, positing that hasty writing is well-established while slow writing is not would be ad hoc. Instead, to account for the differences in the acceptability of event-related modifiers, McIntyre (2015) proposes the State Relevance Hypothesis, according to which event-related modifiers are unacceptable unless they contribute either to the description of the state expressed by the stative passive participle or the description of the holder of that state. By *event-related*,

McIntyre (2015:939) means “for instance that *hastily* in (15) modifies an event of writing, and not the having-been-written state that the participle expresses.”² Put differently, the State Relevance Hypothesis generalizes over modification of Init and Proc.

According to State Relevance, the contrast in (15) arises because a hasty manner of writing may contribute to the shape of the letters, whereas a slow manner of writing leaves no corresponding trace specific to slow writing. The same reasoning extends to the contrast between *carefully* in (11) and *carelessly* in (9a): the careful manner of opening the package contributes to the resulting state, while the careless manner of closing the door does not.

Comparable contrasts are observed among prepositional modifiers introducing instruments or agents, which can in principle modify stative participles if they satisfy State Relevance.

- (16) a. The dog is tied up with a rope (*by a policeman).
 b. Some words are underlined with a {highlighter/blue pen/*short pen}.
 (McIntyre (2015: 942))

Sentence (16a) shows that the event of tying up the dog can be modified by the instrumental phrase *with a rope*, but not by the agent-introducing *by*-phrase, *by a policeman*. Similarly, sentence (16b) demonstrates that even among the instrumental modifiers, *with a highlighter/blue pen* can modify the underlining event, but *with a short pen* cannot. The modifier *with a rope* in (16a) contributes the description of the state of the dog tied up, since the state is maintained *with a rope*. In contrast, *by a policeman* is unacceptable because neither the state nor the description of the dog involves a policeman. Even if a policeman caused the tying event, he does not contribute to the description of the dog’s resulting state. Similarly, *with a highlighter/blue pen* in (16b) is felicitous because it contributes to the description of

the resulting state, namely the color of the underline, whereas *with a short pen* is not since the length of a pen is irrelevant to the resulting underline expressed by the participle.

These data suggest that stative participles include Init or Proc and that their modification is possible but semantically constrained, as required by the State Relevance Hypothesis. Ramchand's account cannot permit such event-related modifiers because it assumes only result-state components in the syntax and semantics of stative participles. McIntyre's (2015) State Relevance Hypothesis correctly describes the distribution of these modifiers, but it does not explain why the generalization holds.

In the next section, adapting Ramchand's (2018) semantics of the progressive, I propose an explanation for the effect of State Relevance. I develop a constraint on the relation between a VP and the state derived from that VP, arguing that this constraint is of the same type as that imposed on the progressive and that it derives the effect of State Relevance.

3. Proposal

3.1. Identifying State

Following Ramchand (2008, 2018), I assume that a verb is decomposed into three heads, Init, Proc, and Res, and the causal relation between them is interpreted according to their structural position. In addition, I assume the notion of identifying states (ID-states) proposed by Ramchand (2018). The definition of ID-states is given in (17).

(17) Identifying State: Definition

For every event description P, an Identifying State for P is a stative eventuality that manifests sufficient cognitive/perceptual identifiers of the event property P.

(Ramchand (2018: 58))

According to Ramchand (2018), an ID-state allows speakers to infer an event when the state provides sufficient evidence for it, given their world knowledge. ID-states are conceptual snapshots that, with adequate context or background knowledge, enable inference of extended events under the right conditions. She proposes that the progressive denotes an ID-state, as illustrated in (18).

(18) V-ing:

- a. $[\text{ingP } -\text{ing VP}]$
- b. $\lambda e.[e \text{ is an ID-State for property } \llbracket \text{VP} \rrbracket]$

According to her, *-ing* is a function from event descriptions to descriptions of states that are ID-states for the event descriptions. *V-ing* denotes states from which one can infer the description of VP, which *-ing* selects. This explains the observation of Abusch (1985) that both sentences in (19a, b) can be judged true in the given context.

(19) Context: John was walking in front of a truck.

- a. John was crossing the street.
- b. John was walking to his death. (Abusch (1985: 178))

In (19a), from the observation that John is walking in the street, one can reasonably infer the event description of the VP— $\llbracket \text{John cross the street} \rrbracket$ —Hence, the sentence is true. In (19b), the same observable situation, namely that John is walking in front of a truck, allows one to infer the event description, $\llbracket \text{John walk to his death} \rrbracket$. Hence, the sentence is also true.

In contrast, the ID-state also explains why the sentences in (20) are both judged false in the same situation.

(20) context: A coin is flipping in the air.

a. The coin is coming up heads.

b. The coin is coming up tails. (Dowty (1979: 147))

A single snapshot of the coin in the air gives no perceptual evidence for whether it will land heads or tails. Because the event description of VPs, $\llbracket$ the coin land heads $\rrbracket$ and $\llbracket$ the coin land tails $\rrbracket$ cannot be identified from that state, neither can qualify as an ID-state. Consequently, both (20a) and (20b) are judged false.

A potential issue for the analysis of the progressive as an ID-state, as formulated in Ramchand (2018), concerns how it handles sentences such as (21a).

(21) a. The rat is dying. Progressive/*Result state

b. $\llbracket$ The rat is dying $\rrbracket = \lambda s.\text{about_to_die}(s, \text{the rat})$
 $\neq \lambda s.\text{dead}(s, \text{the rat})$

While Ramchand does not explicitly claim that the progressive licenses a result-state interpretation, the ID-state formulation makes it unclear how the analysis blocks such an interpretation. In (21), for example, the state expressed by the rat is dying does not correspond to a result state, even though the associated result state (the rat is dead) would itself qualify as an ID-state under Ramchand's definition. This shows that analyzing the progressive simply as an ID-state for $\llbracket$ VP $\rrbracket$ is not sufficient. It is necessary to specify what can count as an ID-state for $\llbracket$ VP $\rrbracket$. Therefore, *V-ing* should denote ID-states associated with the process subparts of an event. In this way, the judgements of (19) and (20) can be viewed depending on whether the event's results can be inferred from the process alone.

3.2. Stative Participles as ID-states of Last Caused Properties

Given that ID-states are associated with a certain subpart of an event, it is conceivable that an ID-state may be associated with a result subpart of an event. I argue that stative passive participles correspond to expressions of such ID-states. More specifically, I propose that stative participles denote ID-states associated with *the last caused subeventuality*, i.e. the most deeply embedded subeventuality in the causal chain, as indicated by shaded eventualities in ‘ $e_1 \rightarrow e_2$ ’, ‘ $e_2 \rightarrow e_3$ ’ or ‘ $e_1 \rightarrow e_2 \rightarrow e_3$ ’, where e_1 , e_2 and e_3 are eventualities described by $\text{init}(e_1)$, $\text{proc}(e_2)$, and $\text{res}(e_3)$, respectively.³

To formulate the relation expressed by “an ID-state associated with a subeventuality”, I propose to extend the domain of what can be identified by an ID-state from an entire event description $\llbracket \text{VP} \rrbracket$ to its subevent descriptions, namely $\text{init}(e_1)$, $\text{proc}(e_2)$, or $\text{res}(e_3)$. Thus, the association with a given subeventuality can be formulated as an ID-state for properties of that subeventuality. This makes it possible to restrict the ID-states for $\llbracket \text{VP} \rrbracket$ to those that identify its subeventual description. In other words, a stative participle expresses an ID-state for the entire event denoted by VP itself and for its last caused subeventuality, as formalized in (22), where Stat, which stands for stativizer, represents the suffix that forms a stative participle by attaching to verbal projections.

- (22) a. $\llbracket \text{Stat} \rrbracket = \lambda P \lambda e [e \text{ is an ID-state for } P \text{ and for a last caused property } P' \text{ in } P]$
- b. P' is the last caused property in P iff
- (i) P is a property of an event that consists of subevents described by $\text{init}(e_1)$, $\text{proc}(e_2)$, or $\text{res}(e_3)$.
 - (ii) $P' = \lambda e [e \text{ is a subevent of } e' \ \& \ P(e') \ \& \ \neg \exists e'' (e'' \text{ is a subevent of } e' \ \& \ e \rightarrow e'')]$

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Hereafter, I use VP to indicate complements of Stat. Denotation (22a) indicate that Stat is a function that takes an event property P represented by VP and yields the set of states *e* that qualify as ID-states both for the whole eventuality described by P and for its last caused subeventuality described by P'.³ I assume that once Stat combines with a verbal predicate P, the causal structure of P uniquely determines P' as the last caused subeventual property—namely, the most deeply embedded subevent with no further caused subevent (as defined in (22b)). Thus, P' is fixed by P at composition. In this way, the semantics of stative participles is associated with the last caused subeventuality in the causal chain. Because an ID-state for a subeventuality also identifies the entire event of which it is a part, the participle relates both to the last caused subeventuality and to the whole event.

Note that although verbs lacking a lexical result state typically do not form adjectival passives, the present analysis does not in principle exclude them. Consistent with this, McIntyre (2013) reports that there exist rare but attested cases such as (23), which describe ongoing situations as progressives do.

- (23) a. The flute seems well played, from what I can hear amidst the surface.
 b. That blue car seems badly driven, so keep away from it.

(McIntyre (2013: 24))

As McIntyre (2013: 23) points out that “(23a, b) cannot be uttered if the music is over or the car is stationary.” These cases are compatible with the present proposal because, for activity verbs, which are specified with [Init, Proc], the last caused subeventuality corresponds to the Proc event, yielding a progressive interpretation. However, the precise conditions under which such non-result verbs yield stative participles remain unclear (see footnote 3). Hereafter, I focus on sentences in which the last caused property corresponds to the property of *e*₃ described by ResP.

Let us now turn to the syntax of stative passive participles. Firstly, following

Ramchand (2018: 80), I assume that an initiator is introduced in Spec-VoiceP, as illustrated in (24).

- (24) $[_{\text{VoiceP}} \text{initiator} [_{\text{Voice}'} \text{Voice} [_{\text{InitP}} \text{Init} [_{\text{ProcP}} \text{undergoer} [_{\text{Proc}'} \text{Proc} [_{\text{ResP}} \text{resultee} [_{\text{Res}'} \text{Res XP}}]]]]]]]$

Secondly, I follow Bruening (2014) in that the stativizing head selects a projection of Voice without an external argument. For example, the complement of *seems* in sentence (25a) has a structure corresponding to (25b), where Spec-VoiceP is not filled and Stat selects VoiceP.

- (25) a. The package seems opened.
 b. $[_{\text{StatP}} \text{Stat} [_{\text{VoiceP}} \text{Voice} [_{\text{InitP}} \text{Init} [_{\text{ProcP}} \text{undergoer} [_{\text{Proc}'} \text{Proc} [_{\text{ResP}} \text{resultee} [_{\text{Res}'} \text{Res XP}}]]]]]]]$
 c. $[[\text{StatP}]] = \lambda e[e \text{ is an ID-state for } [[\text{VoiceP}]] \text{ and for a last caused property } P' \text{ in } [[\text{VoiceP}]]]$

The formula in (25c) indicates the denotation of (25a), where a last caused property P' corresponds to $\text{res}(e_3)$. Therefore sentence (25a) expresses states which are an ID-state for $\text{res}(e_3)$ and $[[\text{VoiceP}]]$. As Ramchand (2018: 65) notes, the ID-state of a state is just the state. Thus, an ID-state for $[[\text{ResP}]]$ is simply $[[\text{ResP}]]$.⁵ Thus, (25c) can be understood as $[[\text{ResP}]]$ which is an ID-state for $[[\text{VoiceP}]]$ as illustrated in (26).

- (26) $[[\text{StatP}]] = \lambda e_3[\text{ID-state}(e_3, [[\text{VoiceP}]] \& [\text{res}(e_3) \& \text{resultee}(e_3, x)])]$

(26) says the state described by the stative participle is nothing other than the result state described by $[[\text{ResP}]]$, involving the resultee x and event-related modifiers of a result. This result state also serves as an ID-state for $[[\text{VoiceP}]]$. This captures the

intuition that stative participles denote result states while preserving the link to the larger event structure of verb from which those states arise. In the next section, I show how this proposal explains the distribution of flow adverbials and event-related modifiers.

4. Analysis of Modifiers of Stative Participles

In this section, I show that the notion of ID-states explains the distribution of modifiers of stative participles. First, the felicity of low adverbials illustrated in (10) follows from the assumption—shared with Ramchand—that stative participles express a result state described by ResP.

For example, consider sentence *her hair is sloppily combed*, in which adverb *sloppily* modifies ResP as shown in (27).

$$(27) \quad [\text{StatP Stat}[\text{VoiceP Voice} [\text{InitP Init} [\text{ProcP her hair} [\text{Proc}' \text{comb}_{\text{Proc}} [\text{ResP sloppily} \\ [\text{ResP her hair} [\text{Res}' \text{comb}_{\text{Res}} \text{XP}]]]]]]]]]$$

StatP in (26) is interpreted as descriptions of an ID-state for $\llbracket \text{VoiceP} \rrbracket$ and its last caused property, namely $\llbracket \text{ResP} \rrbracket$ contained in $\llbracket \text{VoiceP} \rrbracket$. The denotations of StatP, VoiceP and ResP in (26) are illustrated in (28).

$$(28) \quad \begin{aligned} \text{a. } \llbracket \text{StatP} \rrbracket &= \lambda e [\text{ID-state}(e, \llbracket \text{VoiceP} \rrbracket) \ \& \ \text{ID-state}(e, \llbracket \text{ResP} \rrbracket)] \\ &= \lambda e_3 [\text{ID-state}(e_3, \llbracket \text{VoiceP} \rrbracket) \ \& \ [\text{sloppy}(e_3) \ \& \ \text{comb}_{\text{res}}(e_3) \ \& \\ &\quad \text{resultee}(e_3, \text{her hair})]] \\ \text{b. } \llbracket \text{VoiceP} \rrbracket &= \lambda e \exists x [e = e_1 \rightarrow e_2 \rightarrow e_3 \ \& \ \text{comb}_{\text{init}}(e_1) \ \& \ \text{initiator}(e_1, x) \ \& \\ &\quad \text{comb}_{\text{proc}}(e_2) \ \& \ \text{undergoer}(e_2, \text{her hair}) \ \& \ \text{sloppy}(e_3) \\ &\quad \& \ \text{comb}_{\text{res}}(e_3) \ \& \ \text{resultee}(e_3, \text{her hair})] \\ \text{c. } \llbracket \text{ResP} \rrbracket &= \lambda e_3 [\text{sloppy}(e_3) \ \& \ \text{comb}_{\text{res}}(e_3) \ \& \ \text{resultee}(e_3, \text{her hair})] \end{aligned}$$

Note that an existentially closed initiator is involved in semantic representation (28b). As Ramchand (2018: 89) suggests, Init implicates an agent-like participant for the passive event. This participant is bound by existential closure when Voice does not introduce an external argument. Thus, as shown in (28b), VoiceP denotes the entire event description like *someone sloppily comb her hair*, which involves an existential closed initiator.

StatP, in turn, expresses the state that manifests sufficient perceptual identifiers for $\llbracket \text{VoiceP} \rrbracket$ and its last caused property—that is, the state of her hair’s being sloppily combed described by $[\text{sloppy}(e_3) \ \& \ \text{comb}_{\text{Res}}(e_3) \ \& \ \text{resultee}(e_3, \text{her hair})]$. As noted in the previous section, an ID-state for a state is the state itself (see also footnote 5). This makes the equation of $\llbracket \text{ResP} \rrbracket$ with $\text{ID-state}(e, \llbracket \text{ResP} \rrbracket)$ hold in (28a). Since a stative participle denotes an ID-state for $\llbracket \text{ResP} \rrbracket$ —and therefore $\llbracket \text{ResP} \rrbracket$ itself—the availability of low adverbials follows straightforwardly: modifiers contained in $\llbracket \text{ResP} \rrbracket$ are trivially identifiable from the state denoted by ResP.

In the present case, the visible appearance of her hair—messy but clearly shaped by a comb—allows the speaker to infer the state of being sloppily combed, the result state described by ResP. From this state, the speaker can further infer the entire event *someone sloppily comb her hair* represented by VoiceP. The state of her hair’s being sloppily combed therefore provides sufficient perceptual evidence to identify both $\llbracket \text{ResP} \rrbracket$ and $\llbracket \text{VoiceP} \rrbracket$, enabling it to serve as an ID-state for the two. Consequently, sentence (10b) as describing such a state is acceptable.

The divergence from Ramchand’s analysis lies in assuming that, in addition to Res, the Init and Proc projections are also present in stative participles. The syntactic and semantic presence of Init, Proc, and Res makes modification of these projections possible in principle, though structural availability alone does not determine acceptability. What licenses a modifier is whether it can be inferred from the ID-state that the participle expresses. Projections provide possible attachment sites for

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modifiers, but only those modifiers whose description is recoverable from the ID-state are acceptable. Consider the agent-oriented adverb *carefully*. I assume that *carefully* modifies InitP, since it encodes the initiator's control over the event, as in (29).

- (29) a. The package remained carefully opened. (Embick (2004: 357))
 b. $[\text{StatP Stat } [\text{VoiceP Voice } [\text{InitP } \mathbf{\text{carefully}} [\text{InitP Init } [\text{ProcP the package } [\text{Proc' open}_{\text{Proc}} [\text{ResP the package } [\text{Res' open}_{\text{Res}} \text{XP}]]]]]]]]]$
 c. $[\text{StatP}] = \lambda e_3 [\text{ID-state}(e_3, [\text{VoiceP}]) \ \& \ [\text{open}_{\text{Res}}(e_3) \ \& \ \text{resultee}(e_3, \text{the package})]]$
 d. $[\text{VoiceP}] = \lambda e \exists x [e = e_1 \rightarrow e_2 \rightarrow e_3 \ \& \ \text{careful}(e_1) \ \& \ \text{open}_{\text{init}}(e_1) \ \& \ \text{initiator}(e_1, x) \ \text{open}_{\text{proc}}(e_2) \ \& \ \text{undergoer}(e_2, \text{the package}) \ \& \ \text{open}_{\text{Res}}(e_3) \ \& \ \text{resultee}(e_3, \text{the package})]$

Denotation of StatP in (29b) shows that participle in (29a) expresses the state of the package's being open from which one can identify the entire event description *someone carefully open the package*. In other words, state e_3 serving as an ID-state for $[\text{VoiceP}]$ provides evidence that the opening was performed carefully. For example, the package may be neatly cut along the seam, with no tears or damage to the wrapping and the contents intact. Such observable features of the resulting state allow the speaker to identify the opening as careful, thereby linking the state expressed by the participle to the manner of the preceding event. Consequently, the state e_3 qualifies as an ID-state for the entire event description *someone carefully open the package* described by VoiceP.

By contrast, adverbs like *carelessly* do not contribute to the characterization of the resulting state and are therefore ruled out in (30).

- (30) a. ?The door is recently/carelessly closed.

b. ?The door turned out to be recently/carelessly closed.

(Ramchand (2018: 73))

In (30), *carelessly* describes the manner of the initiator's action, but it does not leave any visible feature in the resulting state of the door. As for the adverb *recently*, a recent closing of the door does not visibly affect the resulting state of the door as well.

In (29), *carelessly* describes the initiator's manner, but leaves no visible feature in the door's resulting state. Similarly, if the closing event is done recently, it is not inferable from the door's closed state. Unlike low adverbials, modifiers targeting causal subevents leave no directly perceptible trace in the resulting state. Their contribution can only be recovered inferentially, rather than through direct perception of the state. Because such inferential evidence is not always available, these modifiers are not generally licensed.

As noted in 2.1. In contrast to (30), *carelessly* can be felicitous in sentence (31).

- (31) Some ebooks seem carelessly thrown together with little attention to sentence structure, grammar and spelling.

(<http://amazon.co.jp/Kissing-Asphalt-Unbreakable-Spirit%E2%80%94ResilientAF-ebook/dp/B0CGY411P6>)

Under my proposal, this sentence is felicitous because the sentence structure, grammar, and spelling reflect and provides evidence for the ebooks having been carelessly put together. Similarly, *recently* is also felicitous in sentence (32).

- (32) When I was there it seemed recently built since there was still some construction going on.

(<https://carryonluggageonly.wordpress.com/2020/07/15/bratislava/>)

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Sentence (32) describes the state of a bridge, and that state includes ongoing construction. This observation provides evidence for the recency of the building event, thereby licensing the modifier *recently*.

Adjectival passives with *by*-phrases and instrumental modifiers can also be explained in terms of evidence.

- (33) a. The dog is tied up with a rope (*by a policeman).
 b. Some words are underlined with a {highlighter/blue pen/*short pen}.
- (McIntyre (2015: 942))

In (33a), the state of the dog being tied up provides perceptual evidence for the presence of a rope—the dog is visibly restrained with it—but it provides no evidence about who tied the dog. Thus, *with a rope* is felicitous, while *by a policeman* is not. A similar contrast appears in (33b). The resulting state of the underlined words visibly reflects the instrument when it leaves a perceptible trace: *with a highlighter* and *with a blue pen* are felicitous because the color they leave is detectable in the state. By contrast, *with a short pen* is infelicitous, since the length of the pen does not manifest itself in the underlined words. Hence, only modifiers that are relevant to the state expressed by the participle are licensed.

Although the agentive *by*-phrase *by a policeman* is unacceptable in (33), they are not generally excluded.

- (34) This text is written by a {moron/non-native speaker/*tall person}.
- (McIntyre (2015: 942))

In (34), agents are acceptable if they can be inferred from the text. The text may reveal, for instance, that the author is a non-native speaker, but it does not give any

indication of the author's height.

In sum, the ID-state expressed by a stative participle must provide enough evidence in the result state to support inference to the entire event description. Modifiers that leave no such evidence therefore are not licensed. Within this ID-state perspective, modifiers divide into two types. Modifiers of ResP are automatically identifiable if $[[\text{ResP}]]$ is identified, because an ID-state for a state is identical to the state itself. In contrast, event-related modifiers attaching to Init or Proc are not included in the ID-state and can only be recovered if their contribution leaves a trace that is inferable from the resulting state. Consequently, only event-related modifiers that leave a perceptible trace in the result state are acceptable. Thus, the ID-state analysis derives the generalization captured by the State Relevance Hypothesis. Under the ID-state analysis, event-related modifiers are unacceptable unless states expressed by participles manifest sufficient identifiers of event-related modifiers. When an event-related modifier contributes to the resulting state, it leaves such identifiers, and the modifier becomes acceptable.

Although the present section has focused on the distribution of event-related modifiers captured by the State Relevance Hypothesis, the next section shows that the analysis extends further to cases involving stative participles of unergative verbs combined with resultative secondary predicates. These constructions display variable acceptability depending on the particular verb-secondary predicate combination. This variability lies beyond the scope of the State Relevance Hypothesis, since the contrast does not arise from the relation between event-related modifiers and the state expressed by the participle. Rather, it stems from the relation between the event description of the VP as a whole and the state expressed by the resultative secondary predicate.

5. A Consequence: Resultative Secondary Predicates with Unselected Objects

Resultative secondary predicates describe a state that comes about as the result of an event described by an unergative verb, which by itself does not specify a result state. Those predicates are predicated not of an argument selected by the verb as illustrated in (35).

- (35) a. The joggers ran the grass *(bare).
 b. The dog barked the baby *(awake).

(Hallman (2013: 79), slightly modified from (Levin and Rappaport Hovav (1995))

In (35a), the verb *run* selects only an agent and does not select *the grass* as an argument. It is introduced as the holder of the result state *bare*. Likewise, in (35b), *bark* does not take an object *the baby*, but here *the baby* is licensed as the holder of the result state *awake*. Without these resultative predicates, the sentences in (35) are ungrammatical. These cases illustrate that the secondary predicate introduces an additional argument—an unselected object—that serves as the resultee of the state specified by the secondary predicate.

Sentences in (35) can also occur with passivization, as shown in (36).

- (36) a. The grass was run *(bare).
 b. The baby was barked *(awake).

(Hallman (2013: 79))

These are verbal passives of (35a, b). Furthermore, they also appear as adjectival passives as shown in (37).

- (37) a. The grass looks run *(bare).

- b. The baby sounds barked *(awake).

(ibid.)

He says, “such examples[=(37)] are not as productive as their verbal counterparts[=(36)].” Then He attributes the low productivity of adjectival passive sentences containing unselected objects to the context-dependent nature of this construction. He suggests that (37b) is less acceptable than (37a): it is easy to picture the specific pattern of a bare patch of grass resulting from being run over, whereas it is harder to conceive of a specific way of a baby's awakening resulting from being barked rather than another way.

This aspect of context dependence can be captured by the notion of the ID-state. Following Ramchand (2008: 124), I assume that unselected objects are introduced by a null Res head which links them to secondary predicates. For clarity, the structure of the stative participle in (37a) is illustrated in (38).

- (38) a. [StatP Stat [VoiceP Voice [InitP run_{Init} [ProcP run_{Proc} [ResP the grass [Res' $\emptyset_{Res}$ bare]]]]]]]
 b. $\llbracket \text{StatP} \rrbracket = \lambda e_3 [\text{ID-state}(e_3, \llbracket \text{VoiceP} \rrbracket) \ \& \ [\emptyset_{Res}(e_3) \ \& \ \text{bare}(e_3) \ \& \ \text{resultee}(e_3, \text{the grass})]]$
 c. $\llbracket \text{VoiceP} \rrbracket = \lambda e \exists x [e = e_1 \rightarrow e_2 \rightarrow e_3 \ \& \ \text{run}_{init}(e_1) \ \& \ \text{initiator}(e_1, x) \ \& \ \text{run}_{proc}(e_2) \ \& \ \text{undergoer}(e_2, x) \ \& \ \emptyset_{Res}(e_3) \ \& \ \text{bare}(e_3) \ \& \ \text{resultee}(e_3, \text{the grass})]$

(38b) gives the denotation of (38a), and (38c) represents the entire event property to be identified from the result state. Thus, the sentence denotes the state of the grass being bare which is also an ID-state for $\llbracket \text{VoiceP} \rrbracket$. The bareness of the grass provides evidence for a running event that leads to this result state. By contrast, when the resulting state does not clearly provide such evidence, as in cases like (37b), the sentence is less acceptable. This follows directly from the ID-state, since the state of

being awake does not, by itself, indicate that barking was the cause of the awakening.

Adjectival passives with unselected objects are an interesting case since their acceptability is not fully captured by the State Relevance Hypothesis, which focuses only on whether modifiers are state-relevant. Sentences with unselected objects show that it is also crucial to consider whether the participle itself contributes to the state described by the secondary predicate. In particular, the acceptability depends on whether a causal relation can be inferred between the stative participle of an unergative verb and the resultative predicate. Thus, the notion of ID-state subsumes the State Relevance Hypothesis but goes further, since it requires that the state provide evidence for the entire event, accounting for broader phenomena.

6. Conclusion

I have investigated the semantics of stative passive participles and their interaction with modifiers of them.⁶ While Ramchand's (2018) result-state analysis explains why only result-state modifiers are always possible, it cannot account for attested cases of event-related modifier—such as *carefully* in *the package remained carefully opened*. McIntyre's (2015) State Relevance Hypothesis offers an important descriptive generalization on such event-related modifiers, but it does not explain why relevance to the state should determine the conditions for licensing those modifiers.

To explain the distribution of event-related modifiers, I extended Ramchand's (2018) notion of Identifying States (ID-states) to stative participles. I argued that a stative participle denotes an ID-state associated with the last caused subeventuality while also identifying the entire event of VP. Because the expressed state must provide sufficient perceptual identifier for the entire event, only modifiers whose contribution leaves a recoverable trace in the resulting state are licensed. This derives the generalization captured by State Relevance: event-related modifiers are acceptable only when they contribute to the state expressed by the participle or its

holder.

Beyond event-related modifier licensing, the same evidential logic explains the acceptability of adjectival passives with resultative secondary predicates and unselected objects—phenomena that fall outside the scope of State Relevance Hypothesis. Their acceptability depends on whether the result state supports inference to the causing event expressed by the participle, as seen in *the grass looks run bare* and less acceptable cases like *the baby sounds barked awake*.

Finally, the proposal suggests that both progressives and stative passive participles encode identificational relations between states and events. By treating both as ID-states associated with specific subeventualities, the analysis offers a unified account of how stativized expressions relate states to an event structure.

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Notes

1) Ramchand (2018) assumes that event concepts represented by VP are instantiated in space and time once embedded in Asp, which introduces an existential closure on the eventuality variable.

2) This paper follows McIntyre's usage of *event-related*.

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- 3) *Eventualities* are used as a cover term for dynamic events and states.
- 4) One might wonder whether, if the last caused property is not limited to a Res state, the present analysis would incorrectly predict that activity verbs should productively form adjectival passives, even though attested cases such as *well played* or *badly driven* are rare.

I speculate that the rarity of adjectival passives based on activity verbs follows from two independent restrictions. (i) Such participles require an activity verb with an undergoer that is distinct from an agent, which excludes unergative activities such as *run*, *laugh*, and *swim*. (ii) Even among activity verbs with such an undergoer, the process must be perceptually accessible in a way that allows a state to serve as an ID-state for the event (e.g. audible playing of a flute; visually salient driving behavior of a car). These two restrictions jointly limit the availability of adjectival passives derived from activity verbs, thereby giving rise to the exceptional nature of examples such as *well played* and *badly driven*. Only a small subset of activity verbs seems to satisfy both conditions. I leave the precise factors licensing these exceptional participles as an open question for future research.

- 5) Ramchand (2018) claims that a state and its ID-state are equivalent, and thus progressive forms of stative verbs are prohibited by semantic economy, since they would stativize verbs that already denote states. In other words, progressivization is banned in cases where (i) holds.

- (i) $[[V]] = [[V\text{-ing}]]$

Note, however, that this prohibition does not apply to ID-states of stative subeventualities such as *res(e)*. This is because, although Stat attaches to VoiceP and involves the

stativization of states, the meaning of [Stat VoiceP] differs from that of VoiceP: $[[\text{VoiceP}]] \neq [[\text{Stat VoiceP}]]$.

6) This paper has not dealt with stative passive participles in attributive position, since, as Ramchand (2018: 73) points out, they can be modified by a wider range of modifiers than those in predicate position. I leave the differences arising from position for future research.

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