

## Compositional states\*

E. Matthew Husband  
*Michigan State University/Brown  
University*

**Abstract** Whether a transitive stative predicate licenses an existential interpretation of its subject (EIS) depends on the type of object it has. While previous theories have related this to the object’s ability to function as a topic, I present evidence that the quantized/homogeneous distinction between objects better captures EIS and propose an event composition analysis of EIS for transitive stative predicates. This analysis points to the aspectual nature of EIS and also illuminates other aspectual behaviors of stage-level/individual-level states.

**Keywords:** Aktionsart; existential interpretation; lifetime effects; stage-level/individual-level predicates; states; temporal modification

### 1 Existential interpretation

One property distinguishing between stage-level and individual-level predicates is the availability of existential interpretations of subjects (EIS) which affects, among other things, the interpretation of bare plurals (Carlson 1977; Kratzer 1988/1995).<sup>1</sup> For stative predicates, stage-level states like (1a) license EIS, while individual-level states like (1b) do not license EIS.<sup>2</sup>

- (1) a. Firemen are available. (EIS)  
b. Firemen are altruistic. (\*EIS)

---

\* I would like to thank Marcin Morzycki, Alan Munn, Cristina Schmitt, and Alan Beretta for their suggestions and comments on earlier drafts of this work. Also, my discussions with Polly Jacobson and Emma Cunningham were instrumental in developing the analysis presented here.

<sup>1</sup> Intuitions concerning the interpretation of bare plurals are often not clear cut. However, a bare plural can often be replaced by a singular indefinite which, ignoring the kind reading, displays a contrast in acceptability, as given in (i).

- (i) a. A fireman is available.  
b. \*A fireman is altruistic.

<sup>2</sup> My primary concern here is the availability of EIS. As such, I will ignore the equally interesting issue of the availability of a generic interpretation of bare plural subjects in these sentences. Judgments will only be given concerning EIS with a \* indicating that EIS is judged to be unavailable.

Understanding the properties underlying the licensing of EIS is the goal of this paper. While these properties are not directly evident for adjectival predicates, verbal predicates provide more transparent cases. For instance, the type of object affects EIS in transitive stative predicates (Fernald 1994, 2000).<sup>3</sup> Demonstrative objects license an EIS as in (2), while bare plural objects do not license an EIS as in (3). I will refer to this phenomenon as Object Effects.

- (2) a. Monkeys live in these trees. (EIS)  
 b. Tycoons own this bank. (EIS)  
 (3) a. Monkeys live in trees. (\*EIS)  
 b. Tycoons own banks. (\*EIS)

Recent accounts of Object Effects have focused on information structure constraints. In particular, topic requirement theories have argued that Object Effects occur because a non-subject argument acts as the topic of the sentence, licensing EIS (Heycock 1994; Jäger 2001; Lee 1996). More recently, Kratzer & Selkirk (2007) proposed that the requirement of a syntactically represented topic accounted for Object Effects. For instance, in (4a), the topic is a scrambled discourse-given object *dieses Haus* ‘this house’, so the subject *Maffiosi* ‘mafia members’ may remain low and be non-topical, (4b). However, in (5a), the topic can only be the subject *Maffiosi* ‘mafia members’, so the subject *Maffiosi* ‘mafia members’ must raise to topic position, becoming the topic, (5b).<sup>4</sup> Also, attempting to scramble the bare plural object *Häuser* ‘houses’ leads to degraded judgments, (6).

- (4) a. Ich weiss, dass dieses Haus Maffiosi besitzen. (EIS)  
 I know that this house mafia.members own  
 ‘I know that mafia members own this house.’  
 b. [CP [TopP dieses Haus [TP [vP Maffiosi [V tV ] besitzen<sub>V+V</sub> ] T ] Top ] ]  
 (5) a. Ich weiss, dass Maffiosi Häuser besitzen. (\*EIS)  
 I know that mafia.members houses own  
 ‘I know that mafia members own houses.’  
 b. [CP [TopP Maffiosi<sub>i</sub> [TP t<sub>i</sub> [vP t<sub>i</sub> [vP Häuser besitzen<sub>V</sub> ] v ] T ] Top ] ]  
 (6) ??Ich weiss, dass Häuser Maffiosi besitzen.  
 I know that houses mafia.members own

<sup>3</sup> While not directly relevant here, I take this as initial evidence for the configurational nature of stage-level/individual-level predicates, à la Verkuyl (1972).

<sup>4</sup> Kratzer & Selkirk (2007) also observe that an accent on the predicate is related to EIS. In (4a), the predicate can be deaccented, but in (5a), the predicate must receive a pitch accent.

Topic requirement theories like this predict that EIS is linked to the ability of the object to function as a topic. To be a topic, the object must be strong since weak objects cannot be topics (Jäger 2001). Therefore, topic requirement theories predict that the weak/strong distinction governs the availability of EIS: demonstrative objects are strong and EIS is licensed; bare plural objects are weak and EIS is not licensed.

Interestingly, the alternation of EIS in stative predicates bares a striking resemblance to the alternation of telicity in eventive predicates. Demonstrative objects yield telic interpretations as in (7), while bare plural objects yield atelic interpretations as in (8).

- (7) a. John built this house in six months.  
       b. The students solved these problems in an hour.
- (8) a. John built houses #in six months.  
       b. The students solved problems #in an hour.

Discussing similar observations, Verkuyl (1972) proposed an event composition theory in which a specified quantity object yields a telic interpretation and an unspecified quantity object yields an atelic interpretation. Since then, research has attempted to characterize both the types of objects which affect telicity and the way objects enter into the composition of the VP. Concerning the types of objects, a rich literature has argued that quantity plays an important distinction: quantized objects yield telic interpretations and homogeneous objects yield atelic interpretations (Borer 2005a,b; Kiparsky 1998; Krifka 1989, 1992, 1998).<sup>5</sup>

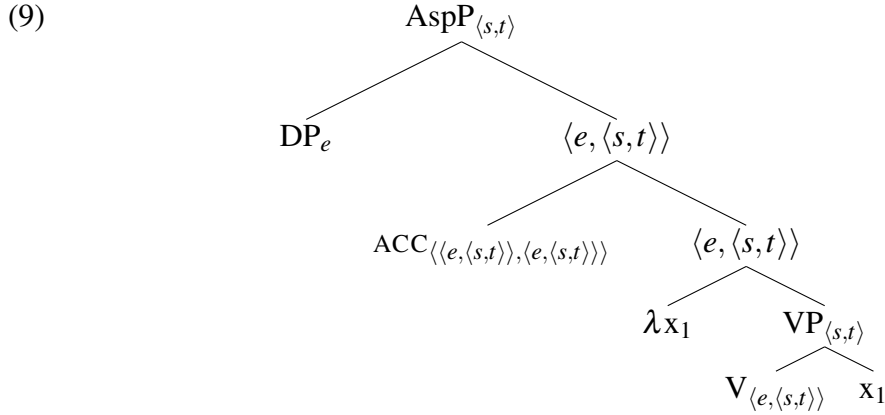
In a recent proposal on the composition of telicity, Kratzer (2004) derives telic and atelic eventive VPs through the meaning of the accusative case. Accusative case enters into the composition of the VP as shown in (9) and, following Krifka

---

<sup>5</sup> I am assuming Borer's (2005a; 2005b) definitions to distinguish between quantized and homogeneous objects, given in (i).

- (i) a. *Quantity*: P is *quantity* iff P is not *homogeneous*.  
       b. *Homogeneous*: P is *homogeneous* iff P is *cumulative* and *divisive*.  
           i. P is *cumulative* iff  $\forall x,y[P(x) \ \& \ P(y) \rightarrow P(x \cup y)]$   
               P is *cumulative* iff for all x and y with property P, the union of x and y also has property P.  
           ii. P is *divisive* iff  $\forall x[P(x) \rightarrow \exists y[P(y) \ \& \ y < x] \ \& \ \forall x,y[P(x) \ \& \ P(y) \ \& \ y < x \rightarrow P(x - y)]]$   
               P is *divisive* iff for all x with property P there is a proper part y of x which also has property P, and for all x and y with property P if y is a proper part of x then the subtraction of y from x also has property P.

(1998), enforces a mapping to events through the denotation given in (10).<sup>6,7</sup> The mapping to events derives a quantized (i.e. telic) event when the object is quantized and derives a homogeneous (i.e. atelic) event when the object is homogeneous.



(10) 
$$\llbracket \text{ACC} \rrbracket = \lambda R_{\langle e, \langle s, t \rangle \rangle} \lambda x \lambda e [R(x)(e) \ \& \ \underbrace{\forall x' [x' \leq x \rightarrow \exists e' [e' \leq e \ \& \ R(x')(e')]]}_{\text{Mapping to Events}}]$$

Event composition theories propose that telicity is linked to the quantity of the object. If the resemblance between EIS and telicity is more than a coincidence, event composition theories would predict that the quantity of the object governs Object Effects as well: demonstrative objects are quantized and license EIS; bare plural objects are homogeneous and do not license EIS.

Therefore, topic requirement theories and event composition theories make different predictions about which types of objects license EIS. However, the literature on Object Effects has not examined data which would distinguish between these two positions. Bare plural objects are both weak and homogeneous, and demonstrative objects are both strong and quantized. Thus, a wider range of data is needed to distinguish which properties license EIS.

6 Semantic types: individuals,  $e$ ; eventualities,  $s$ ; and propositions,  $t$ . Variables: over individuals,  $x$  and  $y$ ; over eventualities,  $e$  for events and  $s$  for states. Compositional operations: Function Application and Predicate Abstraction.

7 For clarity of exposition, I suppress Kratzer’s measure  $f$  in this paper. For Kratzer, measure  $f$  indicates “the assumption that there is some general cognitive mechanism that determines a range of functions that map the referents of certain direct objects into concrete or abstract ‘measuring rods’ that are associated with those referents in some way or other” (394). Certainly some mileage could be gained by considering which “measuring rods” are applicable in stative predicates, but as this is not the main focus here, I set it aside for future consideration.

## 2 Objects effects revisited

Topic requirement theories predict that EIS depends on the weak/strong distinction between objects. Event composition theories predict that EIS depends on the quantized/homogeneous distinction between objects. Therefore, both theories predict that mass noun and bare plural objects will not license EIS and that strong determiners and strong quantifiers will license EIS. The theories differ, however, on the behavior of bare numeral, weak determiner, and weak quantifier objects. Topic requirement theories predict that these object types will not license EIS because they are all weak. Event composition theories predict that these object types will license EIS because they are all quantized. A summary of these predictions is given in the table below and tested in (11–20).

	Mass Noun or Bare Plural	Bare Numeral, Weak Determiner, or Quantifier	Strong Determiner or Quantifier
weak/strong	*EIS	*EIS	EIS
quantity	*EIS	EIS	EIS

Mass noun objects do not license EIS.

- (11) a. Monkeys live on land. (\*EIS)  
b. Tycoons own silverware. (\*EIS)

Bare plural objects do not license EIS.

- (12) a. Monkeys live in trees. (\*EIS)  
b. Tycoons own banks. (\*EIS)

Bare numerals can license EIS, though only marginally.<sup>8</sup>

- (13) a. Monkeys live in three trees. (?EIS)  
b. Tycoons own two banks. (?EIS)

Singular indefinites can license EIS, also marginally.<sup>9</sup>

<sup>8</sup> Contexts like those in (i) bring out EIS in these marginal examples. See [Fernald 2000](#), [Glasbey 1997](#), and [Husband 2010](#) for some discussion on the role of context in licensing EIS.

- (i) a. Monkey Context: “Behind my house is mangrove forest.”  
b. Tycoon Context: “In this city there are over 50 privately owned banks.”

<sup>9</sup> When these sentences are presented in a list, their acceptability improves ([Schmitt 1996](#)).

- (i) a. Monkeys live in a tree, bats live in a cave, and weasels live in a burrow.  
b. Tycoons own a bank, lawyers own a firm, and hippies own a coffee shop.

## Compositional states

- (14) a. Monkeys live in a tree. (??EIS)  
b. Tycoons own a bank. (??EIS)

Weak quantifiers can license EIS.

- (15) a. Monkeys live in several trees. (EIS)  
b. Tycoons own several banks. (EIS)  
(16) a. Monkeys live in many trees. (EIS)  
b. Tycoons own many banks. (EIS)

Definites can license EIS.

- (17) a. Monkeys live in the trees. (EIS)  
b. Tycoons own the bank. (EIS)

Demonstratives can license EIS.

- (18) a. Monkeys live in these trees. (EIS)  
b. Tycoons own this bank. (EIS)

Strong quantifiers can license EIS.

- (19) a. Monkeys live in every tree. (EIS)  
b. Tycoons own every bank. (EIS)  
(20) a. Monkeys live in each tree. (EIS)  
b. Tycoons own each bank. (EIS)

Summarizing the data above, mass noun and bare plural objects do not license EIS (11–12). All other object types license EIS. Bare numeral and weak determiner objects are generally less acceptable, though EIS is possible (13–14). Weak quantifier, strong determiner, and strong quantifier objects license EIS (15–20). This pattern of data supports event composition theories over topic requirement theories. In particular, the evidence that weak quantifier objects license EIS is strong evidence against topic requirement theories. EIS, then, appears to be a matter of aspect.

### 3 The aspectual nature of EIS

At their heart, event composition theories are theories about the part-structures of individuals and eventualities. While the relationship between part-structure and telicity is now well understood, the relationship between part-structure and EIS does not seem so straightforward. Since EIS is about individuals, we need a way to

talk about the part-structure of individuals. [Carlson \(1977\)](#) provides us with such a system using two different sorts in the domain of individuals: a stage of an individual, “roughly, a spatially and temporally bounded manifestation of something”; and an individual, “that whatever-it-is that ties a series of stages together to make them stages of the same thing” (115). In this system, stage-level states are about some stage of an individual, and individual-level states are, in a sense, about all the stages of an individual.

What, then, does this tell us about the representation of stative predicates and their Aktionsart? Consider the role of quantity in determining the behavior of a transitive stative predicate. Transitive stative predicates which license EIS are those which have quantized objects. They are also those which are about a stage of an individual. Suppose that what a stage of an individual is is a quantized representation of that individual. Stage-level states, then, would be about a quantized stage of an individual. On the other hand, transitive stative predicates which do not license EIS are those which have homogeneous objects. They are also those which are about all the stages of an individual, i.e. the individual itself. Suppose that what an individual itself is is a homogeneous representation of the individual. Individual-level states, then, would be about homogeneous stages of an individual.<sup>10,11</sup>

What is aspectual about stative predicates, then, is how they relate to the stages of their subjects. Stage-level states predicate over a quantized stage of an individual, while individual-level states predicate over homogeneous stages of an individual. EIS is aspectual because it reflects the internal temporal structure of individuals. Since a quantized stage of an individual is a spatiotemporally bounded manifestation of an individual, its existence is inferred. Homogeneous stages of an individual, however, are not spatiotemporally bounded, and existence is not guaranteed.<sup>12</sup>

## 4 Quantity in stative predicates

### 4.1 The composition of stative VPs

Since both stative and eventive predicates are sensitive to the same types of objects, I propose that VP-internal composition of states and events is the same, following [Kratzer’s \(2004\)](#) event(uality) composition. Through the mapping to events encoded in the semantics of case, the eventuality argument receives the part-structure of its

<sup>10</sup> This approach is somewhat akin to suggestions from [Chierchia \(1998\)](#) about using parts of individuals across worlds to understand genericity.

<sup>11</sup> Under the theory being developed here, predicates only select for stages of individuals as the sortal type of their arguments, constraining the sortal types predicates select for. Individuals themselves are only indirectly accessed through a homogeneous predicate.

<sup>12</sup> This idea draws on [McNally’s \(1998\)](#) discussion about the location (in)dependence of stage-level/individual-level predicates.

object. Examples of a quantized stative VP and a homogeneous stative VP are given in (21) and (22) respectively.

$$(21) \quad \llbracket \text{own this bank} \rrbracket = \lambda s [\text{own}(\text{this-bank})(s) \ \& \ \forall x' [x' \leq \text{this-bank} \rightarrow \exists s' [s' \leq s \ \& \ \text{own}(x')(s')]]]$$

$$(22) \quad \llbracket \text{own banks} \rrbracket = \lambda s [\text{own}(\text{banks})(s) \ \& \ \forall x' [x' \leq \text{banks} \rightarrow \exists s' [s' \leq s \ \& \ \text{own}(x')(s')]]]$$

For a quantized state, the mapping to events derives a quantized state because its object is quantized. For (21), the demonstrative object *this bank* is quantized and thus there is no proper part which is also *this bank*. The meaning of accusative case maps the quantized part structure of *this bank* to the part structure of the state  $s$  by stating the existence of substates  $s'$  which are ownings of the proper parts of *this bank*. Since *this bank* has only one part, namely itself, the only substate  $s'$  asserted is the one identical with the state  $s$ .

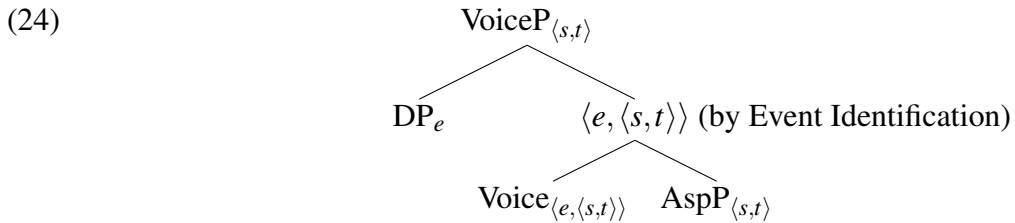
For a homogeneous state, the mapping to events derives a homogeneous state because its object is homogeneous. For (22), the bare plural object *banks* is homogeneous and thus has proper parts which are also *banks*. The meaning of accusative case maps the homogeneous part structure of *banks* to the part structure of the state  $s$  by stating the existence of substates  $s'$  which are ownings of the proper parts of *banks*. Since *banks* has unbounded numbers of proper parts which are also *banks*, an unbounded number of substates  $s'$  is asserted.

## 4.2 Introducing the subject

Following Kratzer (1996), I assume that the external argument is introduced by a functional head, Voice. The denotations of Voice heads are composed with meaning of a predicate by the compositional rule of Event Identification, given in (23), which adds conditions to the eventuality, as in (24). Kratzer also proposes that Event Identification is constrained by Aktionsart: the predicates it is combining together must be of the same Aktionsart type, constraining the relationship between  $\theta$  roles and eventive and stative predicates.

$$(23) \quad \text{Event Identification:}$$

$$\begin{array}{ccc} f_{\langle e, \langle s, t \rangle \rangle} & g_{\langle s, t \rangle} & \rightarrow & h_{\langle e, \langle s, t \rangle \rangle} \\ \lambda x \lambda e [f(x)(e)] & \lambda e [g(e)] & \rightarrow & \lambda x \lambda e [f(x)(e) \ \& \ g(e)] \end{array}$$



As discussed above, EIS is related to the quantity of the predicate. To capture this relationship, I propose extending Kratzer's stative Voice head to include a mapping to objects, given in (25).<sup>13</sup> The stative Voice head performs two roles. First, as in Kratzer 1996, it relates the external argument to the eventuality via its  $\theta$  role, holder. Second, it maps the part-structure of the eventuality to the subject's part-structure, asserting that for every substate, there is a part of the subject which is the holder of that substate.

$$(25) \quad \llbracket \text{Voice}_S \rrbracket = \lambda x \lambda s [\text{Holder}(x)(s) \ \& \ \underbrace{\forall s' [s' \leq s \rightarrow \exists x' [x' \leq x \ \& \ \text{Holder}(x')(s')]]}_{\text{Mapping to Objects}}]]$$

Examples following from (21) and (22) are given in (26) and (27), respectively. In both cases, the stative voice head introduces the subject as the holder of the state and also introduces a mapping to objects. For quantized states like (26), the state consists of a single state, an owning of this bank, as discussed above. The mapping to objects asserts the existence of a stage of the subject for each substate, but since there is only one substate, namely, the state itself, only one stage of the subject is asserted as the holder of that state. Since this is a quantized stage, it is spatiotemporally bounded and EIS is licensed. For homogeneous states like (27), the state consists of a homogeneous part structure of substates, each an owning of banks, as discussed above. The mapping to objects asserts the existence of a stage, i.e. a part, of the subject for each of these substates such that that stage of the subject is the holder of that substate. Since this is a homogeneous set of stages, no spatiotemporal bound is given and EIS is not licensed.

$$(26) \quad \llbracket \text{Tycoons own this bank} \rrbracket = \lambda s [\text{Holder}(\text{Tycoons})(s) \ \& \ \forall s' [s' \leq s \rightarrow \exists x' [x' \leq \text{Tycoons} \ \& \ \text{Holder}(x')(s')]] \ \& \ [\text{own}(\text{this-bank})(s) \ \& \ \forall x' [x' \leq \text{this-banks} \rightarrow \exists s' [s' \leq s \ \& \ \text{own}(x')(s')]]]]]$$

$$(27) \quad \llbracket \text{Tycoons own banks} \rrbracket = \lambda s [\text{Holder}(\text{Tycoons})(s) \ \& \ \forall s' [s' \leq s \rightarrow \exists x' [x' \leq \text{Tycoons} \ \& \ \text{Holder}(x')(s')]] \ \& \ [\text{own}(\text{banks})(s) \ \& \ \forall x' [x' \leq \text{banks} \rightarrow \exists s' [s' \leq s \ \& \ \text{own}(x')(s')]]]]]$$

<sup>13</sup> Examples like those in (i) and (ii) suggest that a similar mapping appears to also be needed in events, given in (iii). Note that it is a mapping to events as the part-structure of the subject affects the part-structure of the event.

- (i) a. Settlers crossed the desert for years.
- b. #The settlers crossed the desert for years.
- (ii) a. Water leaked through the roof for an hour.
- b. #A gallon of water leaked through the roof for an hour.

$$(iii) \quad \llbracket \text{Voice}_E \rrbracket = \lambda x \lambda s [\text{Agent}(x)(e) \ \& \ \underbrace{\forall x' [x' \leq x \rightarrow \exists e' [e' \leq e \ \& \ \text{Agent}(x')(e')]]}_{\text{Mapping to Events}}]]$$



has no feelings at all towards Obama. However, that would be false given (32).

- (32) Glenn Beck's hating Obama was contagious.
- a. Glenn Beck is the Holder of the hating Obama state.
  - b. \*Glenn Beck is only related to the hating Obama state.
- (33) Glenn Beck's hating of Obama was contagious.
- a. Glenn Beck is the Holder of the hating Obama state.
  - b. Glenn Beck is only related to the hating Obama state.

Since nominalization tests can diagnose the presence of Voice in stative predicates, two further predictions arise from the hypothesis that Voice is the locus of the mapping to objects which affects EIS. First, since accusative case is assigned to their objects, the quantity of the object should affect EIS in possessive gerunds. Second, since accusative case is not assigned to their objects, the quantity of the object should not affect EIS in *of* gerunds. Also, since *of* gerunds do not project Voice, they should be unable to license EIS because they do not introduce the mapping to objects necessary for EIS. This predicts that *of* gerunds will not license EIS.

While the judgments of EIS is difficult in these sentences, to the extent they are clear at all, all of the predictions are born out. The objects of possessive gerunds affects EIS, given in (34), and, regardless of their objects, *of* gerunds do not license EIS, as in (35).<sup>15</sup>

- (34) a. News anchors' hating these politicians was contagious. (EIS)  
 b. News anchors' hating politicians was contagious. (\*EIS)
- (35) a. News anchors' hating of these politicians was contagious. (\*EIS)  
 b. News anchors' hating of politicians was contagious. (\*EIS)

## 5 Other aspectual phenomena

I have analyzed EIS as an aspectual issue reflecting the internal temporal make-up of individuals, but there are other properties of stage-level/individual-level predicates which are, perhaps, more naturally consider aspectual. Here I extend the analysis to two of these: lifetime effects and restrictions on temporal modification.

### 5.1 Lifetime effects

An individual-level predicate in the past tense often triggers an inference that the subject is dead, as in (36). This *lifetime effect* has been discussed in several studies (Kratzer 1988/1995; Magri 2009; Mittwoch 2007; Musan 1995, 1997; Percus 1997).

<sup>15</sup> Many thanks to E.T. Cunningham for her clear judgments on these data.

(36) Gregory was from America.  $\rightsquigarrow$  Gregory is dead.

Musan (1997), for instance, captures lifetime effects through a conversational implicature. Predicates in the past tense assert that a situation is over, and since individual-level predicates hold throughout an individual's lifetime, the past tense of an individual-level predicate triggers a conversational implicature: if the subject was still alive, it would be more informative to use the present tense.

A question to ask, however, is how one knows when a predicate is individual-level, especially given the Object Effects of transitive stative predicates. This knowledge cannot be part of the verb's meaning, and it is not clear how it would arise from the verb's arguments. Instead, I have argued that the stage-level/individual-level behavior of transitive stative predicates is determined compositionally from the configuration of the verb with its particular arguments.

I propose that lifetime effects arise compositionally from the quantity of predicates. Consider the following examples. Demonstrative objects lead to weak lifetime effect (if there at all), as in (37a). Since demonstrative objects derive quantized predicates which apply to a quantized state of the subject, lifetime effects do not arise because only some stage of the individual is put in the past. However, bare plural objects lead to a strong lifetime implication, as in (37b). Since bare plural objects derive homogeneous predicates which apply to homogeneous stages of the subject, i.e. the individual itself, lifetime effects arise in these cases because all of the stages of the individual are put in the past. Thus, the quantity of the object not only affects EIS, but also appears to be linked to the lifetime effects on the subject.

- (37) a. John owned this bank.  $\not\rightsquigarrow$  John is dead.  
 b. John owned banks.  $\rightsquigarrow$  John is dead.

## 5.2 Restrictions on temporal modification

Individual-level predicates place tight restrictions on temporal modification. Most temporal modifiers cannot appear with individual-level predicates. (38a) is typical of individual-level predicates. However, Percus (1997) observed that some temporal modification is acceptable with certain individual-level predicates. Although the predicate is still individual-level, given a proper span of time, a temporal modifier like *in his adulthood* in (38b) can be acceptable.

- (38) a. #John was tall yesterday.  
 b. John was tall in his adulthood.

Percus argued that examples like (38b) show that individual-level predicates are not incapable of receiving temporal modification. Instead, he proposes that

examples like (38a) are blocked because they are “out-of-the-blue” utterances and are evaluated with respect to our global context, i.e. our world knowledge. World knowledge tells us that individual-level predicates denote properties of individuals which tend to be stable from one time point to another (Chierchia 1995).

- (39)  $P$  is tendentially stable iff  $\forall s_1, s_2 \in Wd, x, [P(s_1)(x) = 1 \ \& \ s_2 \text{ follows } s_1 \text{ temporally} \ \& \ P(s_2)(x) \text{ is defined}] \rightarrow P(s_2)(x) = 1$

Concerning stability and the restrictions it places on individual-level predicates, questions similar to those posed for lifetime effects arise. How do we know if a transitive stative predicate is stable?

As with lifetime effects, I propose that the quantity of predicates derives their stability. Take the following examples into consideration. Demonstrative objects yield stative predicates which are temporally unrestricted, as in (40a). The state composed from a demonstrative object is quantized and, thus, is not temporally stable because they have multiple instances which are not open ended and can come and go. Bare plural objects yield temporally restrictive stative predicates, as in (40b). The state composed from a bare plural object is homogeneous and, thus, tends to be stable because their temporal contour is open ended and extends indefinitely. Only temporal modifiers which encompass these indefinite temporal extensions can modify homogeneous stative predicates. Thus, the range of temporal modification for quantized stative predicates is much wider than homogeneous stative predicates. So, as with lifetime implications, the quantity of the object not only affects EIS, but also affects the restriction on temporal modification.

- (40) a. John owned this bank yesterday.  
b. #John owned banks yesterday.

## 6 Conclusions

Like events, the interpretation of states depends on the type of their objects. While previous theories linked these Object Effects to topic requirements, a wider investigation found that quantity affects EIS, suggesting that EIS is related to event composition. I proposed that states inherit the quantity of their objects, and that subjects inherit the quantity of their state. Quantized stative predicates apply to a quantized stage of the subject, licensing EIS. Homogeneous stative predicates apply to homogeneous stages of the subject, blocking EIS. EIS, then, is a matter of aspect and its analysis links it to other aspectual behaviors of stage-level/individual-level states.

## References

- Abney, Steven P. 1987. *The English noun phrase in its sentential aspect*: MIT dissertation.
- Borer, Hagit. 2005a. *In name only*. Oxford: Oxford University Press.
- Borer, Hagit. 2005b. *The normal course of events*. Oxford: Oxford University Press.
- Carlson, Gregory N. 1977. *Reference to kinds in English*: University of Massachusetts, Amherst dissertation.
- Chierchia, Gennaro. 1995. Individual-level predicates as inherent generics. In Gregory N. Carlson & Francis Jeffrey Pelletier (eds.), *The generic book*, 176–223. University Of Chicago Press.
- Chierchia, Gennaro. 1998. Reference to kinds across language. *Natural Language Semantics* 6(4). 339–405. doi:10.1023/A:1008324218506.
- Fernald, Theodore B. 1994. *On the nonuniformity of the individual- and stage-level effects*: University of California, Santa Cruz dissertation.
- Fernald, Theodore B. 2000. *Predicates and temporal arguments*. Oxford: Oxford University Press.
- Glasbey, Sheila. 1997. I-level predicates that allow existential readings for bare plurals. In A. Larson (ed.), *Proceedings of Semantics and Linguistic Theory VII*, 169–179. Cornell University, Ithaca, NY.
- Heycock, Caroline. 1994. Focus projection in Japanese. In *Proceedings of the Northeastern Linguistics Society*, vol. 24, 159–187. Citeseer.
- Husband, E. Matthew. 2010. *On the compositional nature of stativity*: Michigan State University dissertation.
- Jäger, Gerhard. 2001. Topic-comment structure and the contrast between stage level and individual level predicates. *Journal of Semantics* 18. 83–126. doi:10.1093/jos/18.2.83.
- Kiparsky, Paul. 1998. Partitive case and aspect. In M. Butt & W. Geuder (eds.), *The projection of arguments: Lexical and compositional factors*, 265–307. CSLI, Stanford, CA.
- Kratzer, Angelika. 1988/1995. Stage-level/individual-level predicates. In Gregory N. Carlson & Francis Jeffrey Pelletier (eds.), *The generic book*, 125–175. University of Chicago Press.
- Kratzer, Angelika. 1996. Severing the external argument from its verb. In J. Rooryck & L. Zaring (eds.), *Phrase structure and the lexicon*, 109–137. Dordrecht, Kluwer.
- Kratzer, Angelika. 2004. Telicity and the meaning of objective case. In J. Guéron & J. Lecarme (eds.), *The syntax of time*, 389–424. The MIT Press.
- Kratzer, Angelika & Elisabeth Selkirk. 2007. Phase theory and prosodic spellout: The case of verbs. *The Linguistic Review* 24(2-3). 93–135.

- doi:10.1515/TLR.2007.005.
- Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. In R. Bartsch, J. van Benthem & P. van Emde Boas (eds.), *Semantics and contextual expression*, 75–115. Foris: Dordrecht.
- Krifka, Manfred. 1992. Thematic relations as links between nominal reference and temporal constitution. In I.A. Sag & A. Szabolcsi (eds.), *Lexical matters*, 29–53. Cambridge University Press.
- Krifka, Manfred. 1998. The origins of telicity. In S. Rothstein (ed.), *Events and grammar*, 197–235. Kluwer Academic Publishers.
- Lee, Chungmin. 1996. Generic sentences are topic constructions. In T. Fretheim & J.K. Gundel (eds.), *Reference and referent accessibility*, 213–222. John Benjamins Amsterdam/Philadelphia.
- Magri, Giorgio. 2009. A theory of individual-level predicates based on blind mandatory scalar implicatures. *Natural Language Semantics* 17(3). 245–297. doi:10.1007/s11050-009-9042-x.
- McNally, Louise. 1998. Stativity and theticity. In S. Rothstein (ed.), *Events and grammar*, 293–307. Kluwer Academic Publishers.
- Mittwoch, Anita. 2007. Tenses for the living and the dead: Lifetime inferences reconsidered. In S. Rothstein (ed.), *Theoretical and crosslinguistic approaches to the semantics of aspect*, 171–187. John Benjamins Publishing Co.
- Musan, Renate. 1995. *On the temporal interpretation of noun phrases*: MIT dissertation.
- Musan, Renate. 1997. Tense, predicates, and lifetime effects. *Natural Language Semantics* 5(3). 271–301. doi:10.1023/A:1008281017969.
- Percus, Orion J. 1997. *Aspects of A*: MIT dissertation.
- Schmitt, Christina J. 1996. *Aspect and the syntax of noun phrases*: University of Maryland dissertation.
- Verkuyl, Henk J. 1972. *The compositional nature of the aspects*, vol. 15 Foundations of Language Supplementary Series. Dordrecht: Reidel.

E. Matthew Husband  
 Department of Linguistics and Languages  
 Michigan State University  
 A-614 Wells Hall  
 East Lansing, MI 48824  
[husbande@msu.edu](mailto:husbande@msu.edu)