[REVIEW]

On the Compositional Nature of States

By E. Matthew Husband, John Benjamins Publishing Company, Amsterdam/
Philadelphia, 2012, xvi+170pp.

SUMIYO NISHIGUCHI

Tokyo University of Science

Keywords: aktionsart, adjectives, quantization, existential

1. Overview

The main claim of this book is that the difference between stage-level and individual-level states is compositionally derived from verbal and adjectival predicates and arguments. According to Husband, telicity is not a lexical property, but is instead configurationally derived. Moreover, quantized objects license an existential interpretation of external arguments and a stage-level interpretation.

Husband's starting point is the work of Verkuyl (1972), which clarifies the contribution of argument structure to eventualities. For example, the events in (1a) and (1b) are interpreted duratively so that modification by *in an hour* is unacceptable. On the contrary, the presence of an internal argument, the demonstrative noun phrase *this book*, facilitates a telic interpretation resulting from *in an hour*.

- (1) a. John read *in an hour.
b. John read books *in an hour.
c. John read this book in an hour. (p. 2)

Moreover, an existential interpretation of external arguments emerges from the presence of internal arguments. (2a), which lacks an internal argument, and (2b), with the bare noun phrase *battles*, do not infer the existence of veterans. On the other hand, (2c) can refer to specific veterans due to the presence of the demonstrative noun phrase *this battle*.

- (2) a. Veterans remember. (generic only)
 b. Veterans remember battles. (generic only)
 c. Veterans remember this battle. (existential possible) (p. 2)

The structure of the book after the introductory chapter is as follows:

Chapter 2 presents an analogy between factors that license an existential interpretation and telicity, arguing that the determination of stage-level or individual-level behavior is a property of the VP predicate and not the verbs themselves. Chapter 3 claims that the licenser of an existential interpretation is the quantization of the internal argument. Chapter 4 focuses on adjectival predicates and scale structure. Finally, Chapter 5 discusses the role of quantization in grammar and cognition.

First, Chapter 2 demonstrates that, as Verkuyl (1972) claims for events, stage/individual-level states are not determined by the verb alone, but are instead a “configurational category,” meaning that they are compositionally determined. The difference between stage-level and individual-level states is then compositionally derived from verbal and adjectival predicates and arguments. What triggers an alternation of the existential interpretation of an external argument is also actively involved in the configuration of telicity. All statives investigated here alternate with regard to the availability of an existential interpretation of their subjects, which is a stage-level reading, in accordance with Fernald’s (1994) generalization that all eventive predicates are stage-level predicates, and all individual-level predicates are stative predicates.

Further, quantized objects license existential interpretations in statives:

- (3) a. Students understand this homework.
- b. Students understand. (p. 35)

(3) may suggest that the verb *understand* is lexically polysemous, which does not however account for the presence or absence of the internal argument *this homework*. An alternative view would be that *this homework* itself has the lexical properties of a stage-level predicate, which cannot be true either, as shown in (4).

- (4) This homework is boring. (individual-level)

Statives without direct objects are unable to license existential interpretations. On the other hand, verbs of the non-alternating class, i.e. activity and achievement verbs, are insensitive to quantized objects. That is, the presence of the quantized internal argument *the cart* does not provide telicity in (5).

- (5) Mary pushed the cart for five minutes/*in five minutes.

While individual-level verbs, even those accompanied by demonstratives, have no existential interpretation, stage-level verbs even without an argument license an existential interpretation.

Chapter 3 discusses the composition of verbs with their objects. It introduces the literature that supports Fernald’s claim that object effects in

statives are due to the information structure of clauses. Husband's observation is that objects contribute to the temporal interpretation of statives and that the availability of the existential interpretation of subjects is aspectual in nature.

- (6) International students live in this dorm. (generic/existential)

Following Krifka's definitions for quantization as seen in (7) and Borer's definition of homogeneity (8), Husband shows that quantized predicates license both existential and non-existential readings. Stage-level predicates are quantized.

- (7) *Quantized*: $\forall X \subseteq U_p[\text{QUA}_p(X) \leftrightarrow \forall x, y[X(x) \ \& \ X(y) \rightarrow \neg y <_p x]]$
 X is quantized iff for all x and y both with property X , y is not a proper part of x (Krifka (1998), Husband (2012: 72))

- (8) *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 .

(Borer (2005: 74), Husband (2012: 74))

Bare plural objects are weak quantifiers according to Milsark (1974) and are shown to be homogeneous, while demonstrative objects are strong quantifiers that are demonstrated to be quantized. In (9b), the demonstrative eliminates what is called the lifetime effect of the past tense present in (9a), which implies that the existential reading of the subject is aspectual in nature.

- (9) a. George lived in trees $\leadsto$ George is dead.
 b. George lived in this tree $\nrightarrow$ George is dead (p. 82)

In order to account for the relation between internal arguments and telicity, Husband borrows the feature-checking mechanism that Kratzer (2004) applies to cases in Finnish, a language where if the VP is unbounded, the direct object is partitive, while a bounded VP takes the accusative case (Kiparsky (1998)). In the framework of the Minimalist Program, verbal inflectional features are interpretable counterparts of uninterpretable case features (Chomsky (1995, 2001), Pesetsky and Torrego (2001)). The uninterpretable feature [acc] on the DP corresponds to the interpretable verbal

inflectional feature linked to telicity (Kratzer (2004)).

Following Kratzer (1996), Husband asserts that external arguments are introduced by a Voice head. Kratzer (1996) applies the Neo-Davidsonian method for external arguments, following Marantz (1984), Kratzer (1996) and Pykkänen (2002), which are not considered to be true arguments. In this approach, the functional category Voice head introduces the Agent for eventive predicates or the Holder for stative predicates, and composes with an already saturated predicate by means of Event Identification, overcoming type mismatch, as shown in (11). Event Identification is a means for composing the Agent argument with the already saturated event description such as in *feed the dog* which is a function from events of type *s* to truth-values of type *t* in (10).

- (10)
$$\begin{array}{ccc} f & g & h \\ \langle e, st \rangle & \langle st \rangle & \rightarrow \langle e, st \rangle \\ \lambda x \lambda e [Agent(x)(e)] & \lambda e [feed(the\ dog)(e)] & \lambda x \lambda e [Agent(x)(e) \& feed(the\ dog)(e)] \end{array}$$

(Kratzer (1996: 122))

- (11)
$$\begin{array}{c} \langle s, t \rangle \\ \swarrow \quad \searrow \\ DP \quad \langle e, \langle s, t \rangle \rangle \text{ (by Event Identification)} \\ \swarrow \quad \searrow \\ Voice_{\langle e, \langle s, t \rangle \rangle} \quad \langle s, t \rangle \end{array}$$
 (p. 99)

Husband supplies reasons to believe that statives also host a Voice head that introduces an external argument. Gerunds can be used to detect the presence of Voice. For instance, while Glenn Beck should be the holder of a state of hating Obama in the possessive gerund in (12), he is not required to be so in *of*-gerunds, as in (13). He argues that (12) and (13) demonstrate the presence of Voice in statives.

- (12) 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.
(p. 102)

- (13) 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.
(p. 102)

In Chapter 4, Husband turns his attention to predicative adjectives, most of which are statives. The scale structure of adjectives is a special case of quantization, and the property of state introduced by predicative adjectives coordinates with their scale structure. Verbal and adjectival stative predi-

cates not only follow the same compositional mechanisms but are affected by similar argument configurations.

“Closed scale” adjectives as described in Kennedy and McNally (2005), such as *drunk*, provide an existential reading while “open scale” adjectives such as *tall* do not, as illustrated in (14).

- (14) a. Norwegians are (completely) drunk. (existential possible)
 b. Norwegians are (#completely) tall. (generic only)
 (p. 15, *completely* is added)

Adjectives denote measure functions from individuals to a degree on the relevant scale, of the type $\langle e, d \rangle$; therefore, they need to combine with a null degree morpheme *pos* first to return type $\langle e, t \rangle$, a function from individuals to truth-values (Kennedy (1997)). Husband presents multiple lexical entries for *pos*:

- (15) a. $[[\text{pos}_{\text{open}}]] = \lambda g \in D_{\langle e, d \rangle} \lambda x [g(x) \geq \text{standard}(g)]$
 b. $[[\text{pos}_{\text{lower-bound}}]] = \lambda g \in D_{\langle e, d \rangle} \lambda x [g(x) > \min(g)]$
 c. $[[\text{pos}_{\text{upper-closed}}]] = \lambda g \in D_{\langle e, d \rangle} \lambda x [g(x) = \max(g)]$ (p. 115)

These combine with open, lower-closed and upper-closed adjectives respectively. For example, when (15a) combines with an open-scale adjective *tall*, a relative standard of tallness is introduced. The composition of (15b) and a lower-bound adjective *bent* returns a function from an individual to a proposition that *x*’s degree of bending is higher than the minimum degree. On the other hand, combining (15c) with an upper-closed adjective *full* introduce a maximum degree of fullness. There is also a feature-checking mechanism between *pos* and different kinds of adjectives.

An additional observation is that degree achievements may receive a telic interpretation without actually having telos, or endpoint. For instance, in (16), after being cooled, the soup can get even cooler which suggests that there is no endpoint to cooling.

- (16) The soup cooled in 10 minutes, and continued to cool 30 more minutes after that. (p. 126)

Exploring the Kennedy-Levin Extension “Scale structure is a specific case of quantization” (Kennedy and Levin (2008)), Husband finds that open scales, which lack natural transitions (that is, from open-scale to closed-scale adjectives) are homogeneous, while closed scales, which have natural transitions, are quantized. The book provides examples to show this. Husband claims that the quantization of the scale structure of adjectives is mapped to eventualities. One of the methods for mapping scale structure onto the event structure of the emerging predicate would be for the pos_v morpheme to take the measure function of the adjective and derive

a property of eventuality (Kennedy and Levin (2008)). In Russian, for instance, predicative adjectives can be either nominative or instrumental and these contribute to individual/stage level interpretations separately. This link between case and predicative adjectives demonstrates that predicative adjectives bear case.

Husband goes on to present counterexamples to what he calls object expression alternation. Stowell (1991) first pointed out that regarding evaluative adjectives (Cinque (1990)), as seen in (17), (a)-type examples can be either stage- or individual-level, while (b)-type examples have only a stage-level interpretation.

- (17) a. John was very generous (to Mary). [stage/individual-level]
 b. That tribute was very generous (of John) (*to Mary).
 [stage-level only] (p. 143)

The external argument *John* in (a) is realized in the PP in (b), while the internal argument *Mary* in (a) cannot appear in (b) (Landau (2009)). Husband claims that the determiner *that* contributes to the stage-level interpretation, while bare plural subjects do not receive an existential interpretation as in (18).

- (18) Comments are very irritating (of reviewers). (generic only)
 (p. 145)

Here, the adjective acts as the internal argument of the copular verb, raising to the same position as the internal argument of a transitive verbal stative predicate.

Chapter 5 presents a summary of the previous chapters and mentions previous works on cognition around quantized and homogeneous nominals.

In sum, this book presents an aspectual characterization of states and emphasizes that quantization forms a core explanation for aspectual behavior. There are two primary ways in which the quantity of objects is linguistically expressed: i) by a determiner system as in English; and ii) by case, as in Finnish. Both of these types are linked to aktionsart. In English, bare nominals are interpreted as homogeneous and trigger atelicity and individual-level behavior. In Finnish, partitive-case nominals are interpreted as homogeneous and trigger atelicity and individual-level behavior.

2. Comments

This is an interesting analysis of statives, presenting a compositional analysis mapping quantization of nominals into the telicity of events. In addition to eventives, the book clearly demonstrates how the telicity of statives

is derived from their internal arguments.

However, it should be pointed out that the statement that “the difference between stage-level states, with an existential reading for a subject, and individual-level states, with a generic reading for a subject, is compositionally derived from verbal and adjectival predicates and arguments” actually applies to both internal and external arguments. As suggested by an anonymous reviewer, in (19) the object “battles” can be existential. Husband needs to have a mechanism to render internal arguments existential based on the properties of subjects as well.

(19) Those veterans remember battles. (cf. (2b))

The author successfully explains the mapping between quantized and homogeneous nominals and telicity, but the absence or presence of an existential interpretation is not yet fully explicated. Since *this bank* is not divisive, there is no sub-state of owning it in (20b). There exists only a single state of *owning this bank*. On the other hand, *banks* is cumulative and divisive so that there are sub-states wherein tycoons own some of, or “part” of the banks in (20a). The distinction between *owning this bank* and *owning banks* is thus well derived. However, Husband does not supply an explanation for the lack of existential import for (20a), which would be desirable.

- (20) a. $[[\text{Tycoons own banks}]] = \lambda s[\text{Holder}(\text{Tycoons})(s) \ \& \ \forall s' [s' \leq s \rightarrow \exists x' [x' \leq \text{Tycoons} \ \& \ \text{Holder}(x')(s')]] \ \& \ \text{own}(\text{banks})(s) \ \& \ \forall x' [x' \leq \text{banks} \rightarrow \exists s' [s' \leq s \ \& \ \text{own}(x')(s')]]]$
 b. $[[\text{Tycoons own this bank}]] = \lambda s[\text{Holder}(\text{Tycoons})(s) \ \& \ \forall s' [s' \leq s \rightarrow \exists x' [x' \leq \text{Tycoons} \ \& \ \text{Holder}(x')(s')]] \ \& \ \text{own}(\text{this-bank})(s) \ \& \ \forall x' [x' \leq \text{this-bank} \rightarrow \exists s' [s' \leq s \ \& \ \text{own}(x')(s')]]]$
 (p. 101)

Furthermore, Event Identification adopted here is an ad hoc rule that combines the type $\langle a, b \rangle$ with $\langle b \rangle$. Such a rule, if applied, could combine a one-place predicate with a zero-place holder; for example, coordination of the two predicates *sleep* and *rain* would become possible as in (21).

- (21) $\lambda x[\text{sleep}(x)] \cdot [\text{rain}] \rightarrow \lambda x[\text{sleep}(x) \ \& \ \text{rain}]$

What I can suggest alternatively, although it is as ad hoc as Husband’s proposal, is the use of a more general rule, lambda abstraction, instead of the introduction of Event Identification. The lambda abstraction of *g* would make it a function of type $\langle a, \langle s, t \rangle \rangle$. If lambda abstraction is specified to be over individuals which returns $\langle e, \langle s, t \rangle \rangle$, Predicate Modification given in (22), which combines $\langle a, b \rangle$ with $\langle a, b \rangle$, would identify the argument to be the Agent of the event, or the Holder of the state, as shown in

(23) and (24).

(22) Predicate Modification:

If α is a branching node, $\{\beta, \gamma\}$ is the set of α 's daughters, and $[[\beta]]$ and $[[\gamma]]$ are both in $D_{\langle e, t \rangle}$, then $[[\alpha]] = \lambda x \in D_e. [[\beta]](x) = [[\gamma]](x) = 1$ (Heim and Kratzer (1998: 65))

REFERENCES

- Borer, Hagit (2005) *The Normal Course of Events*, Oxford University Press, Oxford.
- Chomsky, Noam (1995) *The Minimalist Program*, MIT Press, Cambridge, MA.
- Chomsky, Noam (2001) "Derivation by Phase," *Ken Hale: A Life in Language*, ed. by Michael Kenstowicz, 1–52, MIT Press, Cambridge, MA.
- Cinque, Guglielmo (1990) "Ergative Adjectives and the Lexicalist Hypothesis," *Natural Language and Linguistic Theory* 8, 1, 1–39.
- Fernald, Theodore B. (1994) *On the Nonuniformity of the Individual- and Stage-Level Effects*, Doctoral dissertation, University of California, Santa Cruz.

- Heim, Irene and Angelika Kratzer (1998) *Semantics in Generative Grammar*, Blackwell, Malden, MA.
- Kennedy, Chris (1997) *Projecting the Adjective: The Syntax and Semantics of Gradability and Comparison*, Doctoral dissertation, University of California, Santa Cruz.
- Kennedy, Chris and Beth Levin (2008) "Measure of Change: The Adjectival Core of Degree Achievements," *Adjectives and Adverbs: Syntax, Semantics and Discourse*, ed. by Louise McNally and Christopher Kennedy, 156–182, Oxford University Press, Oxford.
- Kennedy, Chris and Louise McNally (2005) "Scale Structure, Degree Modification, and the Semantics of Gradable Predicates," *Language* 81, 345–381.
- Kiparsky, Paul (1998) "Partitive Case and Aspect," *The Projection of Arguments: Lexical and Compositional Factors*, ed. by Miriam Butt and Wilhelm Geuder, 265–307, CSLI Publications, Stanford.
- Kratzer, Angelika (1996) "Severing the External Argument from Its Verb," *Phrase Structure and the Lexicon*, ed. by Johan Rooryck and Laurie Zaring, 109–137, Kluwer, Dordrecht.
- Kratzer, Angelika (2004) "Telicity and the Meaning of Objective Case," *The Syntax of Time*, ed. by Jacqueline Guéron and Alexander Lecarme, 389–424, MIT Press, Cambridge, MA.
- Krifka, Manfred (1998) "The Origins of Telicity," *Events and Grammar*, ed. by Susan Rothstein, 197–235, Kluwer, Dordrecht.
- Landau, Idan (2009) "Saturation and Reification in Adjectival Diathesis," *Journal of Linguistics* 45, 315–161.
- Marantz, Alec (1984) *On the Nature of Grammatical Relations*, MIT Press, Cambridge, MA.
- Milsark, Gary (1974) *Existential Sentences in English*, Doctoral dissertation, MIT.
- Pesetsky, David and Esther Torrego (2007) "The Syntax of Valuation and the Interpretability of Features," *Phrasal and Clausal Architecture: Syntactic Derivation and Interpretation: In Honor of Joseph E. Emonds*, ed. by Simin Karimi, Vida Samiian and Wendy K. Wilkins, 262–294, John Benjamins, Amsterdam.
- Pylkkänen, Liina (2002) *Introducing Arguments*, Doctoral dissertation, MIT.
- Stowell, Timothy (1991) "The Alignment of Arguments in Adjective Phrases," *Perspectives on Phrase Structure: Heads and Licensing, Syntax and Semantics* 25, ed. by Susan Rothstein, 105–135, Academic Press, San Diego, CA.
- Verkuyl, Henk J. (1972) *The Compositional Nature of the Aspects*, Reidel, Dordrecht.

[received December 20, 2013, revised and accepted May 15, 2014]

Department of Management
Tokyo University of Science
500 Shimokiyoku, Kuki-city
Saitama 346-8512
e-mail: nishiguchi@rs.tus.ac.jp