

*The psycholinguistics of bilingualism* is an absolute gem to read. It is concise and clear while not skimping at all on breadth and depth. Truthfully, this is a bit unsettling for those of us who have worked in this field. Capturing such a wide array of topics in a single volume is a gargantuan task. Grosjean and Li should be applauded for helping to shape such an excellent text. Most importantly, the editors and authors help to convince the reader of the importance of dynamic processing, whether it be in computer models that have to adapt to language input, brain images that capture how bilinguals switch between languages, or in the nature of speech that takes into account how bilinguals adapt to different linguistic situations. By bringing all of these pieces together, Grosjean and Li have provided a true gift for those who would like to learn more about this field.

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**On the compositional nature of states.** By E. MATTHEW HUSBAND. (Linguistik aktuell/Linguistics today 188.) Amsterdam: John Benjamins, 2012. Pp. xv, 170. ISBN 9789027255716. \$149 (Hb).

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In *On the compositional nature of states*, Husband develops a theory of the stage- vs. individual-level distinction. What determines the stage- vs. individual-level status of a state is not a lexical property of the verb, it is argued, but a function of the combination of the verb and the QUANTIZATION properties of its arguments. A stative verb in combination with a QUANTIZED object gives rise to a stage-level predicate; a stative verb in combination with a HOMOGENOUS object gives rise to an individual-level predicate. This is a novel observation. As H points out, this fact is strikingly parallel to the compositionality of the (a)telicity of a predicate, where, depending on the quantization properties of the direct object, the verb phrase is telic or atelic. This parallel is extended to the scalar properties of adjectives as well, where H observes that if the head adjective is closed-scale, the predicate is interpreted as stage-level, and if the head adjective is open-scale, the predicate is interpreted as individual-level. He argues that the closed- vs. open-scale properties of adjectives themselves are just another manifestation of quantized vs. homogenous properties. Moreover, H argues that the existential interpretation of a subject, which arises in the context of a stage-level predicate, and the generic interpretation, which arises in the context of an individual-level predicate, are themselves fundamentally aspectual notions, the result of a mapping from the quantization properties of the predicate to the subject. An existentially interpreted subject is the result of a stage-level predicate predicating over a single (quantized) stage of an individual; a generically interpreted subject is the result of an individual-level predicate predicating over all (or homogeneous) stages of an individual, that is, over the individual itself. H provides a formal semantic account of the compositional nature of the stage- vs. individual-level alternation and the mapping from predicate to subjects by assimilating approaches from Krifka (1992, 1998), Kratzer (1995, 2004), and Borer (2005). These parallels between eventive and stative predicates as well as the observation that states are compositionally formed make this monograph a must-read for anyone interested in aspect.

My main goal in what follows is to provide a brief summary of the five chapters of this monograph. I focus on what, in my mind, makes this work a valuable contribution to the literature on aspect: the novel observations and connections that H makes regarding the parallels between the compositional nature of eventualities and states, and the critical role of quantization in their compositionality. In the end, I raise two questions about this parallel context of compositionality.

In Ch. 1, ‘Introduction’, H offers two main observations that are the backbone of the monograph. The first, originally from Fernald (1994), is that a stative verb can alternate between a stage- and individual-level interpretation depending on the nature of its arguments.

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

The interpretation of the subject in 1 changes as a function of the direct object. Concretely, when there is no direct object (1a) or when there is a bare plural object (1b), the subject can only receive a generic interpretation. In contrast, in the presence of a demonstrative object (1c), an existential interpretation of the subject is available. H makes the connection with what is already known (since Verkuyl 1972) about eventive predicates and the role of the direct object in their composition, an illustration of which is given in 2.

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

When no direct object is present (2a) or when a bare plural object is present (2b), the predicate is atelic, as indicated by the ungrammatical *in*-adverbial. In contrast, in the presence of the demonstrative object (2c), the predicate is telic, as indicated by the grammatical *in*-adverbial.

The second observation is that the scalar properties of the head adjective in adjectival predicates also have consequences for the stage- vs. individual-level interpretation.

- (3) a. Whiskey bottles are brown.  
 b. Whiskey bottles are full.

The predicate in 3a does not allow an existential interpretation of its subject, while 3b does. *Brown*, in 3a, is an open-scale adjective while *full*, in 3b, is closed-scale. H provides a review of previous approaches to the stage- vs. individual-level distinction (Carlson 1977, Diesing 1992, Verkuyl 1993, Kratzer 1995, Glasbey 1997, Jäger 2001, Kratzer & Selkirk 2007). None fully account for H’s central observations in 1 to 3.

In Ch. 2, ‘States and compositionality’, H discusses the intimate relation between the existential interpretation of a subject and the stage- vs. individual-level distinction among predicates. While many assume that the stage- vs. individual-level distinction is lexical in nature (Diesing 1992, Kratzer 1995), H argues that it is computed at the level of the verb phrase, concluding that states are compositionally derived, similar to eventive predicates.

Evidence for this compositional approach comes, in part, from Finnish, a language often assumed to show an intimate connection between case and aspect (Kiparsky 1998): accusative on the direct object arises in the context of a telic predicate, while partitive on the direct object arises in the context of an atelic predicate. H provides the judgments from 4 below, where only an existential interpretation is possible when the object is accusative. These facts support H’s central thesis.

- (4) a. Tycoonist omistaa pankit.  
 tycoons own banks.ACC  
 ‘Tycoons own these banks.’  
 b. Tycoonist omistaa pankkeja.  
 tycoons own banks.PRT  
 ‘Tycoons own banks.’

In the first part of Ch. 3, ‘The arguments of statives’, H discusses the nature of the property of direct objects that gives rise to an existential interpretation of subjects. The chapter is set up to compare two distinct theories: the WEAK-STRONG determiner distinction (Milsark 1974, 1977), and H’s hypothesis that the relevant property of these objects is their QUANTIZED vs. HOMOGENEOUS nature.

Based on McNally’s (1998) weak-strong approach, where strong DPs are quantificational, while weak DPs are property-denoting, bare plurals, mass nouns, bare numerals (e.g. *two houses*), weak determiners (e.g. *a house*), and weak quantifiers (e.g. *some/many houses*) are

weak, and strong determiners (e.g. *the house*) and strong quantifiers (e.g. *every tree*) are strong. Based on Borer's (2005) mereological definitions, the set of homogenous objects are mass nouns and bare plurals, while the set of quantized objects include bare numerals, weak determiners, weak quantifiers, strong determiners, and strong quantifiers. Distinct predictions are generated from these two approaches about when an existential interpretation of the subject will be generated. Concretely, the weak-strong DP theory predicts that bare numerals, weak determiners, and weak quantifiers will not allow an existential interpretation of the subject, while the mereological theory predicts that these same DPs will. Observe in 5 that an existential interpretation of the subject is available when the object is a weak quantifier, supporting the quantized approach to the stage- vs. individual-level distinction.

- (5) a. Monkeys live in several/many trees.  
 b. Tycoons own several/many books.

In the second part of the chapter, H argues that the stage- vs. individual-level distinction is related to the internal temporal organization of the subject. H claims that stage-level predicates, which have a quantized object, are 'about' a quantized stage of an individual. In contrast, individual-level predicates, which have a homogenous object, are 'about' homogenous stages of an individual, that is, about the individual itself. Thus, stage-level predicates predicate over a quantized stage of an individual, while individual-level predicates predicate over homogenous stages of an individual. In this way, the stage- vs. individual-level distinction is aspectual in nature, since it reflects the internal temporal structure of individuals.

As a formal proposal, H offers an extension of Kratzer's (1996) stative Voice, a functional projection introducing subjects, which includes a mapping to objects à la Krifka (1998). Stative Voice, H claims, has two roles: (i) it relates the external argument to the eventuality via its theta-role, and (ii) it maps the part structure of the eventuality to the part structure of the individual; for every substate, there has to be a part of the subject that relates to that substate's temporal trace. H puts forth the interpretation of subjects of possessive gerunds and *of*-gerunds as evidence for the proposed role of stative Voice. With this, H concludes that eventive predicates and stative predicates are derived via the same compositional mechanisms.

In Ch. 4, 'Adjectival predicates and scale structures', the main focus is that the scale-structure of the head adjective of predicative adjectives is the source of the stage- vs. individual-level interpretation (i.e. *John is drunk* vs. *John is tall*, respectively). A closed-scale adjective, an adjective that maps its arguments onto a maximum or minimum point on a scale and that allows proportional modifiers (e.g. *half/100%/completely drunk*), allows for an existential interpretation of the subject. An open-scale adjective, which does not allow proportional modifiers (e.g. *??half/100%/completely tall*), does not. H then argues that the source of scale structure is not the lexical meaning of the adjective itself, but the result of different FLAVORS of Kennedy's (2007) null degree morpheme *pos*, a morpheme that turns an adjective into a property of individuals. The main motivation comes from observations by Kennedy and McNally (2005), who discuss the scalar ambiguity of *dry*.

H also addresses the range of approaches to scale structure in eventive verbal predicates, through a discussion of Hay et al. 1999, Kennedy & Levin 2008, and degree achievements. He develops the hypothesis that open scales (which lack natural transitions) are homogenous and closed scales (which have natural transitions) are quantized, arguing that it is the quantization of scale structure that is relevant for licensing an existential interpretation of subjects with adjectival predicates.

In Ch. 5, 'Conclusions and speculations', H raises the question about the role of quantization in other cognitive domains. He explores this for nominals in the visual domain. He tentatively offers one way in which quantization may be playing a role in other cognitive systems, suggesting that that may be a core component of cognition in general.

The main thrust of the monograph is to argue that the same compositional mechanisms involved in the computation of the (a)telicity of eventive predicates is involved in the stage- vs. individual-level interpretation of states. Given the numerous parallels between the effect of the quantization properties of arguments on both eventive and stative predicates, the conclusion finds

motivation. While H shows that there are many parallels, less time is spent on where the parallels break down and why they might. For instance, the existential interpretation of a subject is not only a function of the nature of the direct object but appears also to be a function of the nature of the subject itself. Thus, by swapping in a demonstrative subject in 1b, producing *These veterans remember battles*, an existential interpretation becomes available where previously none was. This is not the case for the calculation of the (a)telicity of the predicate, where subjects (unless derived from a position low enough in the verb phrase) do not affect (a)telicity. Why should this be a point of variation between stative and eventive predicates? The second (related) question is why it should be that objects affect the (a)telicity of eventive predicates, evidenced by the (un)grammaticality of *in*-modifiers as in 2 above (as well as *for*-modifiers), while the same objects do not affect the (a)telicity of stative predicates. H, building on Kratzer 1996, assumes that the difference between eventive and stative predicates is located in Voice, which, if stative, selects a stative eventuality and, if eventive, selects an eventive eventuality. If the telic vs. atelic distinction reduces to quantized vs. homogenous, respectively, and the stage- vs. individual-level distinction also reduces to quantized vs. homogenous, respectively, what is the source of the (a)telicity of eventive predicates? Although the answers to these questions are not immediately evident in the context of the compositional nature of states, what H has made evident is that states are compositional in nature.

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**Mathematical linguistics.** By ANDRÁS KORNAI. London: Springer, 2008. Pp. xiv, 290. ISBN 9781846289866. \$99.

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Unlike most books with similar titles, this one is about linguistics and aimed at mathematicians and not the other way around. The preface tells us right away who it is for: ‘The book is accessible to anyone with sufficient general mathematical maturity (graduate or advanced undergraduate). No prior knowledge of linguistics or languages is assumed on the part of the reader’ (viii).

What is covered? Four traditional linguistic topics—phonology, morphology, syntax, and semantics—are well delineated, with a chapter devoted to each. A fifth, phonetics, is also well represented but scattered through various other sections and chapters. Interleaved with these are four mathematical topics: formal systems for discrete objects, finite-state machines, applications of randomness, and models for continuous phenomena.

In the last chapter, Kornai outlines the themes and challenges of the field (if it is one) and asks: ‘Is there, then, a single thread that binds mathematical linguistics together? This book makes the extended argument that there is, and it is the attempt to *find fast algorithms*’ (249). Actually, this does not really explain the book’s design. A clue to it can be found in K’s dissertation (1995). That work is an extended example of EXPLICATION, in the sense of Carnap (1950), combined with the attempt to bridge the gap between phonological theory and speech engineering, to the potential improvement of both. In *Mathematical linguistics*, K attempts to do the same for theoretical linguistics as a whole. It seems to us, however, that K’s presentation reflects the idea of classifying systems by their architectural features, rather than by the running times of algorithms. He also goes well beyond the topics that would be covered in introductory linguistics courses.

K is a phonologist (as well as a mathematician), so a lot of detail and original thinking is evident in the sections on phonology and phonetics. He starts with Bloomfield’s postulates (1926) and Pāṇini, and presents the problems and perspectives of phonology from the ground up. Readers with no background in linguistics—supposedly the targeted readers—might do well to examine an introductory linguistics text, lest their eyes glaze over with the free use of articulatory terms such as postalveolar, coronal, and the like. Later parts of the chapter deal with information-theoretic aspects of phonology. Some aspects of phonology are also dealt with in the next chapter (morphology): the prosodic hierarchy, syllables, and stress systems. This chapter deals in depth with the logic of distinctive features, natural classes, and so on.

In the chapter on morphology (Ch. 4), there are no big surprises in K’s discussion of word structure and derivational and inflectional morphology. But there are a few mistakes: K misuses the term ‘incorporating’ for ‘polysynthetic’ or the like (62), and in discussing the nature of inflections (63), he cites person (in Gunwinggu) as having four values: singular, dual, trial, and plural.