

# **A Review of Lexical Semantics, Syntax, and Event Structure**

**Ed. by Malka Rappaport Hovav, Edit Doron, and Ivy Sichel,  
Oxford University Press, Oxford, 2010, xvi+401pp.**

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**Keywords:** *event structure, event participant, argument structure, temporality, modality*

## **1. Introduction**

This is a collection of papers presented at a workshop “Syntax, Lexicon, and Event Structure” held in 2006 at the Hebrew University of Jerusalem, honoring Professor Anita Mittwoch on her eightieth birthday. The topics of the workshop were Professor Mittwoch’s lifelong work concerning the linguistic representation of temporal property and its interaction with the lexical semantics of verbs and the syntax and semantics of arguments and modifiers.

Only a subset of infinite occurrences in the world is linguistically relevant. These linguistically relevant properties define the templates for linguistic representation of events, referred to as EVENT STRUCTURE. What are the clues to determine the division of labor between the lexicon, (morpho)syntax, and compositional semantics in encoding event structure? How should we specify event participants and temporal properties associated with the linguistic representation of events? These are the threads running through this volume.

In their introduction, editors present the questions that the collected articles address. The first issues are various temporal dimensions involved in events, such as *aktionsart*, *durativity*, *telicity*, and *incremental themes*. Second, the nature and syntactic encoding of the external argument are addressed. The third topic is correlation between viewpoint aspect and *aktionsart*. Although viewpoint aspect and *aktionsart* must be distinguished from each other, well-known interactions between them do exist, in several languages, for instance, perfective viewpoint is sensitive to the eventivity or stativity of the event. Finally, they turn to modality. The conflict between the imperfective viewpoint and telic *aktionsart* seems to result in the introduction of habitual events which are non-actualized. It seems that modality results from an aspectual conflict between the stativity of habituials and the dynamicity of their episodes in

this case.

In the next three sections, I will summarize each paper in Part I, II, and III, respectively, and some remarks on the possibility of further research will be provided in Section 5. The final section contains the conclusion.

## 2. Part I: Lexical Representation

Chapters in Part I deal with which semantic properties are lexically specified, and how the lexically specified information relates to lexical aspectual properties and argument expression.

Focusing on the observation “Manner/Result complementarity” made in their earlier works, RAPPAPORT HOVAV AND LEVIN (RH&L) attack two issues in Chapter 2: First, assuming that a root can modify ACT (manner) or be an argument of BECOME (result) in a given event schema, it cannot modify both these predicates at once without violating the lexicalization constraint. Thus, there can be no root that expresses both manner and result, and manner/result complementarity follows. Second, they made a precise characterization of the lexicalized meaning components: all result roots specify scalar changes, while all manner roots specify non-scalar changes. The former can also be classified into two groups: two-point scale verbs that are necessarily telic, and multiple-point scale verbs that are not necessarily telic.

In Chapter 3, ADELE GOLDBERG argues against RH&L’s analysis on manner/result complementarity, listing the verbs such as *scale*, *schuss*, *scribble*, *scrawl* as counterexamples. Furthermore, to demonstrate that not all verbs should involve causally linked subevents, she gives several examples including verbs such as *blanch* and *braise*. Thus she claims that exceptions do exist against strong restrictions on what can count as a verb meaning, however, there is, at least, a Conventional Frame Constraint. This chapter concludes that the constraints on what a verb can mean are dependent only on the notion of semantic frame.

ERTESCHIK-SHIR AND RAPOPORT (ES&R) in Chapter 4 postulate a restricted universal inventory of atoms on which a verb’s meaning is based: Manner (**M**) corresponds to adverbials (manner, means, instrument), State (**S**) to adjectives, and Location (**L**) to prepositions. Furthermore, they claim that all kinds of alternations stem from the atom’s meaning and the interpretations that atoms require of the structure they project. The Atom Theory they construct through their analysis of verbs of contact is an enterprising attempt to eliminate multiple lexical representations or linking rules to account for the various syntactic frames of a single verb. The highlight of AT is that the burden for AT is included in constraints on interpretation rather than in constraints on projection.

The gist of Chapter 5 is as follows: because (non-)compositionality cannot work to distinguish idioms from idiom-like expressions, MARTIN EVERAERT’s interpretation of

idioms is close to “a multiword expression” in computational linguistics. He produces an infelicitous example *#He kicked the bucket slowly* and argues that the lexical aspect of the verb *to kick* is retained in the idiom. In this sense, the verb *kick* in the idiom is not to be distinguished from the “normal” verb, so this property must be stipulated in the lexicon: its idiomatic use is encoded as a polysemous subsense in the lexical semantic specification.

### **3. Part II: Argument Structure and the Compositional Construction of Predicates**

How do core verbal meanings determine argument structure and syntactic projection, as well as the role of morphology, syntactic category (verb vs. adjective), and linguistic modality (spoken vs. signed)? This is the question addressed in Part II. In particular, these chapters attack, in particular, the issue of the composition of the external argument as observed in a variety of cross-linguistic alternation phenomena.

In Chapter 6, IRIT MEIR investigates the developmental stage of argument structure marking in two new sign languages, Israeli Sign Language (ISL) and Al-Sayyid Bedouin Sign Language (ABSL). Although developed under very different social conditions, both languages share a marked preference for single-argument clauses, which eliminates the need to mark the different arguments. However, when developing a grammatical marking of argument structure, ABSL relied on word order, while ISL refined verb agreement. To examine the different paths followed by these sign languages provides us with insight into how argument structure marking develops in human language.

In addition to their observation that Blackfoot stem final morphemes do not encode transitivity, RITTER AND ROSEN (R&R) in Chapter 7 argue that a purely syntactic difference is observable: verbs with a transitive final formally license a DP object in the syntax; verbs with an intransitive final do not do so, although they may have an NP or CP complement. In addition, Blackfoot finals determine whether the verb has an external argument, and in the case where it does, the theta-role assigned to that argument. R&R conclude that finals must be overt versions of *v*, and their overtness provides additional empirical support for this category. While Chomsky (1995) characterized *v* as a quasi-lexical functional category in languages such as English, R&R note that Blackfoot finals appear to be quasi-functional lexical morphemes.

Despite the systematic causative morphology and acceptability of causatives formed from transitives and unergatives in Japanese and Hungarian, causatives in both languages reveal an essential difference in their syntactic structure: HORVATH AND SILONI indicate in Chapter 8 that Japanese *-(s)ase* causatives are biclausal, while Hungarian *-(t)at/-t)et* causatives are monoclausal. They argue that in the former, the “causer” argument is introduced syntactically via CAUS head, and the latter is formed in the lexicon via operation

which adds an Agent and modifies the base verb's own agent, if there is one.

The ninth chapter by ARTEMIS ALEXIADOU establishes that two morphological patterns are available for anticausatives across languages. One is a simple VP structure, lacking any representation having to do with the external argument, and the other includes a Voice head specified for the absence of an external argument. Another important claim of this chapter concerns productivity of the alternation, which may differ depending on differences in the size of the root inventory and the functional category inventory in different languages.

IDAN LANDAU in Chapter. 10 observes that Evaluative Adjectives (EA) show an intriguing resemblance to derived nominals rather than to verbs, as shown in the adjectival alternations such as (a) *John was very irritating (to Mary)* vs. (b) *That comment was very irritating (of John (\*to Mary))*. He proposes two theoretical devices: the SAT and R operators. The former, which unselectively saturates all argument positions in any predicate it applies to and renders both arguments of (a) variants inaccessible to direct projection in (b) variants, thus the ungrammaticality of the original goal in the derived adjective follows. In the latter device what he dubs as ‘reification,’ an entity that realizes the property denoted by its complement is introduced, that is, the novel external argument of (b) variants.

#### **4. Part III: Syntactic and Semantic Composition of Event Structure**

Part III focuses on the compositional semantics of temporal operators such as aspect and modality, and examines how the choices of a particular argument and modifier contribute to the interpretation of the sentence as a whole.

LANDMAN AND ROTHSTEIN (L&R) in Chapter. 11 weaken the notion of homogeneity used to explain atelicity (*for*-phrase) to “incremental homogeneity,” where different instances of an event are viewed as stages of the same process. For example, the sentence *John ate {an/three/at most three/many/the/DET} apple(s)* is not incrementally homogeneous, because the object argument is a member of the set of singular (or plural) apples. In contrast, the bare plural object as in *John ate apples*, on the other hand, is the kind  $k_{\text{APPLE}}$ , which ensures the incremental homogeneity of the event. The felicity of a kind subject may depend on including an operator that iterates events in an incrementally homogenous way: *Girls drank a glass of juice #(every twenty minutes) for two hours*.

Different from L&R’s treatment, the 12th chapter by ANITA MITTWOCH focuses on the semantic distinction between *for*- and *in*-adverbials, taken as the basis for the dichotomy between atelic and telic eventualities, whereby the former but not the latter can be formalized by measurability. Mittwoch argues that *in*-adverbials are not measure functions, but denote container intervals. Therefore, *in*-adverbials are uninformative without a fixed upper bound, and obtain a property “discontinuity,” for instance, container intervals do not preserve

summation in contrast to measure functions. Thus, there is a contrast between *She worked on the book for a year* and *She wrote the book in a year*.

In Chapter. 13, CHRISTOPHER PIÑÓN examines a special subclass of verbs of creation—*draw*, and argues for three different meanings of *draw a house*, depending on the denotation of the object. He distinguishes two different “relational” readings that involve the depiction of either a particular house or a particular house-description, from the “notional” reading that involves a general house-depiction, but no house or house-description in particular. His argument is based not only on the semantic differences between three readings, but also on the morphological distinction in Hungarian.

The claim of the 14th chapter by HORROCKS AND MELITA STAVROU is that the availability of aspect-shifting cognate object constructions (COCs) correlates with the presence of resultative phrases and no morphological marking for viewpoint aspect cross-linguistically. Languages such as English, Hungarian and Japanese lacking in the morphological viewpoint aspect, in principle, induce aspectual shift by syntactic context such as result-type phrases, and have aspect-shifting COCs. COCs in Ancient and Modern Greek and Hebrew are not aspect-shifting, and are associated with all verb classes, while those in English are restricted to unergatives.

HAGIT BORER’s central claim in Chapter. 15 that overt/covert “locale” coerces existential interpretations and allows telic readings with non-quantity arguments clearly contrasts with standard syntactic theories that relate existential interpretation to the LF position. A locale can existentially bind event variables associated with both subjects and direct objects in a quantity event, and must do so when these are associated with bare nouns. A locale in a V-S configuration in Hebrew thus licenses weak subjects with unergatives and transitives, making an existential interpretation available. This type of interpretation also allows a telic reading for achievement verbs with non-quantity arguments.

The final chapter by BONEH AND DORON suggests that the modality involved in habituality is the same modality found in dispositionality, but not the same as that found in the progressive aspect. Thus, they conclude that habituality is not exclusively associated with imperfectivity, both semantically and morphologically, postulating an operator Hab which is independent of the imperfective aspect.

## 5. Some Remarks on the RESULT

Although abundant previous works tackle the issues of event structure, many disagreements exist among scholars. RH&L (Ch. 2) and ES&R (Ch. 4) have a certain purpose in common for postulating a small number of ingredients (roots or atoms) that is based on a verb’s meaning, contra GOLDBERG (Ch.3). To make the explanatory analysis convincing, we believe it is important to restrict the range of research to linguistically-relevant properties,

and clearly identify the universal ingredients of verbal meaning. However, three analyses mentioned above differ in their opinions on ‘manner/result complementarity’ discussed in Chapter. 2, for example. This gap is summarized in (1).

(1) Gap in treating manner/result complementarity among three analyses

	<b>RH&amp;L (Ch. 2)</b>	<b>Goldberg (Ch. 3)</b>	<b>ES&amp;R (Ch.4)</b>
<b>manner/result complementarity</b>	○	✗ No such constraint	✗ A verb may have at most two of the three atoms. <b>(M, S and L)</b>

Only the second chapter by RH&L argues for manner/result complementarity. Goldberg says there is no such constraint. ES&R observe that there are only two types of atoms: manner (**M**) and possible results [States (**S**) and Locations (**L**)] and claim that a verb may have one or two atoms. At a first glance, both Goldberg and ES&R completely contradict RH&L’s view. In reality, however, this is not the case for ES&R. Closer scrutiny reveals that a fundamental discrepancy lies in what three analyses counts as a result.

The notion of “change” or possible results (**S** and **L**) in ES&R’s paper does not necessarily correspond to a result subevent in RH&L’s term. This difference is obvious to notice that ES&R treat the verb *hit* as containing both M and L as in (2).

(2) Lexical entry of the verb “hit”

- V /hit/
- M “force”
- L “point of contact”

Furthermore, in the 2007 version of their study, ES&R classified *kick*, *punch* as containing both M and L. As already mentioned in Kageyama (1996), contact verbs such as *hit*, *punch*, *kick* show similar behavior to unergative verbs, while change-of-state verbs behave like unaccusative verbs, as illustrated in (3) and (4).

(3) a. Contact verbs

- He punched the boxer **a lot**.
- She caught the pickpocket and kicked him **a lot**.

b. Change-of-state verbs

- \*The great earthquake broke old houses **a lot**.
- \*They built the cathedral **a lot**.

(4) a. Unergative verbs

- The lecturer talked **a lot**.
- The sun shines **a lot**.

b. Unaccusative verbs

\*Traffic accidents occurred **a lot**.

\*The roses smelled sweet **a lot**.

In these examples, *a lot* expresses the amount of ACT or repetition of ACT as a durative activity. Since unaccusative and change-of-state verbs both lack a durative ACT, the unacceptability follows. Unergative verbs denote only activity events, hence this observation indicates that contact verbs can be represented as [ x ACT ON y ]. Thus, ES&R's treatment of change/result is not at all equivalent to that of RH&L. These things considered, it is unclear that ES&R really contradict RH&L's manner/result complementarity, whatsoever. Further research is necessary to clarify which analysis is more advantageous.

Next, we will proceed to ES&R's PLURALITY concept. They explain that *splash* type verbs involve “dispersal of a plurality of particles,” and extend this notion to verbs of plural atoms: *run* with its plural **M**, *cool* with its plural **S**, and *splash* and *advance* with its plural **L**. Here we observe that plural States (**S<sub>PL</sub>**) seem to be consistent with RH&L's ‘multiple-point scale’ in result verbs which are claimed to lexicalize scalar change. The summary of RH&L's classification is shown in (5).

(5) a. **Manner** verbs lexicalize **non-scaler** (complex) **change**.

b. **Result** verbs (change-of-state verbs and directed motion verbs) lexicalize **scalar change**.

	<b>two-point scales</b>	<b>multiple-point scales</b>
<b>characteristics</b>	having or not having a particular property / “true achievements” requiring instantaneous transition	“degree achievements” “gradable change” verbs / gradable traversals of a path
<b>change-of-state verbs</b>	<i>crack, burst</i>	<b>closed</b> scale (with bound): <i>empty, flat</i> <b>open</b> scale: <i>cool, lengthen</i>
<b>directed motion verbs</b>	<i>arrive, depart, enter, exit...</i>	<b>closed</b> scale (with bound): <i>come, return</i> <b>open</b> scale: <i>descend, rise</i>
<b>telicity</b>	necessarily telic	not necessarily telic

In their paper, RH&L do not specify how verbs with a multiple-point scale look in canonical realization rules (a kind of Lexical Conceptual Structures). Ultimately, the puzzles we have to solve are shared by different approaches in this volume, which leaves the door open for future research.

## 6. Conclusion

To summarize, *Lexical Semantics, Syntax, and Event Structure* contains interesting papers that reveal complex interactions between the lexical semantics of verbs, referential properties of arguments and their morphosyntactic expressions, and properties of temporal and locative adjuncts. In addition, what is intriguing in this volume is its various perspectives on a wide range of subjects of research (spoken vs. sign languages, normal predicates vs. idioms). This volume certainly deserves attention from researchers in the field of linguistics in general as well as those with a special interest in event structure.

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10/ Jan. / 2013 Received 17/ Jan. / 2013 Accepted