William Croft.Verbs: Aspect and clausal structure. Oxford: Oxford University Press, 2012. xvii + 468 pp. ISBN 978-0-19-924858-2

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Book Review

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In the preface, Croft writes that his book is the outcome of a maturation process that spans more than 25 years. While based on previous research, in its current form, the framework presents an integrated analysis of aspect and force-dynamics in a single representation of verbal semantics.

In the introductory chapter (pp. 1–30), the main thesis is put forward, namely, that it is event structure, more specifically, the interaction between aspectual and causal structure, that plays a primary role in (accounting for) argument realization. Argument realization is concerned with the question what participants can/must be realized and in what form are they encoded. Croft compares his approach to semantics and semantic representation with formal, generative and cognitive approaches and he offers a very brief description and illustration of the three crucial dimensions (temporal, qualitative, causal) in his model. The cognitive-linguistic concepts of "construal" and "semantic frame" are defined and illustrated. The concept of construal refers to the fact that a specific experience in the real world may be captured linguistically in different ways. Applied to aspectual types, for instance, this means that a speaker having witnessed a situation of Jennifer drawing a cat may express that experience by means of *Jennifer was drawing when I entered the room* (Activity) or *Jennifer drew a beautiful cat this morning* (Accomplishment). As for semantic frame, a specific concept (profile) brings up a background (or semantic frame) in which it is embedded. *Land* and *ground* denote (or profile) the same referent, but while *land* profiles the dry surface in contrast with *sea*, *ground* does so in contrast with *air*. Applied to an aspectual question, in Chapter 3, Croft will argue that *Jennifer was drawing a cat* and *Jennifer drew a cat* have different profiles: while a picture of a cat is part of the semantic frame in both cases, it is not profiled in the first clause. The author also addresses the question whether grammatical relations (such as Subject, Object) are global rather than construction-specific.

Chapters 2, 3 and 4 present and illustrate the frame-semantic model for the analysis of aspectual constructions that involves a qualitative and a temporal

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dimension (the q phase and the t phase respectively). In Chapter 2 ("The aspectual structure of events", pp. 31–69) Croft offers a critical discussion of taxonomic questions concerning lexical aspect. The following Vendler-based, but more elaborate and more fine-grained taxonomy is said to capture the basic aspectual potential of predicates:

- States: (a) inherent permanent states (*She is French*), (b) acquired permanent states (*The window is shattered*), (c) transitory states (*The door is open*), (d) point states (*The sun is at zenith*)
- Achievements: (a) (directed) reversible achievements (*The door opened*), (b) (directed) irreversible (*The window shattered*) achievements, (c) (undirected) cyclic achievements (semelfactives) (*The mouse squeaked*)
- Activities: (a) directed activities (*The soup cooled*), (b) undirected (cyclic) activities (*The girls chanted*)
- Accomplishments: (a) incremental accomplishments (*I ate an apple cake*), (b) non-incremental accomplishments (or runup achievements): "not punctual like other achievements, but not incremental like Vendlerian accomplishments" (p. 44) (*Harry repaired the computer*)

Croft proposes a two-dimensional geometric representation of aspect, with a time dimension and a qualitative state dimension ("lexical aspect describes how events are construed as unfolding [in terms of a sequence of qualitative states] over time" (p. 53)), couched within a semantic frame, which, he argues, captures, unlike any of the alternative models discussed, all attested aspectual types and which brings out, in a systematic way, the links and differences between them (p. 65). For each of the aspectual types, t/q phase representations are provided and explained. Predicates may have the potential for more than one aspectual construal. For instance, Figures 1 and 2 are frame-semantic representations of the possible construals of *see*, each with their respective profiled phase of the event:

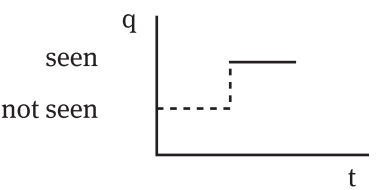

Fig. 1: I see Mount Tamalpais. (transitory state) (= Figure (2.2a) pp. 54–55)

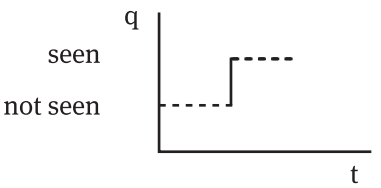

Fig. 2: I reached the crest of the hill and saw Mount Tamalpais. (achievement) (= Figure (2.2b) pp. 54–55)

See is an inceptive state; the event of seeing involves a change from a state of not seeing to a transitory state of seeing, so the q dimension of seeing actually consists of two points only. There is a space between the two states for visual convenience. Both figures represent the semantic frame: in the first sentence, represented in Figure 1, it is the resulting state that is profiled (through the Simple Present construction); the profiled phase is represented by the solid line. In the second sentence, represented in Figure 2, it is the achievement (from not seeing to seeing) that is profiled (through the Simple Past construction).

Chapter 3 ("Change, boundedness, construal", pp. 70–126) illustrates the explanatory potential of the two-dimensional aspectual framework presented in Chapter 2. Croft convincingly shows how his approach offers an elegant treatment of certain aspectual topics, such as the class of directed changes, which encompasses subtypes of the Vendlerian classes (cf. supra)), or the imperfective paradox (cf. e.g., Dowty 1977). The dissociation of "t-boundedness" from "q-boundedness" results in a richer explanatory apparatus, which does away with the conceptual confusion, pervasive in aspectual research, concerning the nature of the boundaries involved in predicates, one inherent or "qualitative", the other, temporal. Q-boundedness refers to the presence of a result state (a telos or a natural endpoint) that is defined on the q-dimension while t-boundedness refers to the profiled temporal boundaries (beginning and end) on the t-dimension. Croft also zooms in on the aspectual potential of predicates (or predicate classes), the relative contribution made by predicate semantics and constructions to aspectual types and the question whether the different aspectual construals (cf. for instance the aspectual interpretations of *see* represented in Figures 1 and 2) should be explained in terms of polysemy, derivation (coercion) or vagueness. He points out some problems for each approach and argues in favor of a usage-based, encyclopedic semantic model, whereby frequency of use determines the strength of the alternative construals and whether or not there is a default. The range of construals of a particular predicate (class) is determined by two factors: the speakers' encyclopedic knowledge of situation types (for instance, we know that lights may flash once or several times) and the conceptualization processes or

construal operations (such as selection, structural schematization, scalar adjustment) that allow for and relate alternative aspectual realizations. Croft illustrates how the construal operations are naturally captured in frame-semantic two-dimensional t/q representations. The potential of Croft's aspectual model is also clear from the discussion of some aspectual adverb constructions (with Locative adverbials, Container adverbials and Durative adverbials) and aspectual constructions with phasal verbs (such as *start*, *be about to* or *succeed in*) in English. In a similar way, it is shown how facets of aspectual realization in Russian, motion verbs that have "determinate" and "indeterminate" uses (analyzed in terms of directed and undirected activity) and aspects of the "perfective/imperfective distinction" (involving temporally (un)bounded construals) can be adequately analyzed in the model developed by Croft.

Chapter 4 ("The interaction of grammatical and lexical semantics: quantitative and qualitative analyses", pp. 127–172) offers a more detailed analysis of the interaction between grammatical and lexical aspect. First, multidimensional scaling (MDS) analysis is presented and applied to Dahl's (1985) crosslinguistic tense-aspect data in order to identify conceptual relationships between tense, grammatical aspect and lexical aspect. (Volume 34.1 of *Theoretical Linguistics*, in which Croft and Poole's original MDS analysis was presented, contains a number of further methodological articles that comment on the technique put forward.) Croft then moves on to explore the aspectual potential of an elaborate set (of classes) of predicates (44 English verbs) in the Simple Present construction, the Simple Past Construction and the Progressive Construction. The author makes explicit a number of constraints (pp. 146–148) on the data set, which offers a sample of the range of variation in aspectual potential of English verbs across the basic TA constructions, and hence enables Croft to provide a semantic analysis of each of them. Different construals define different subtypes of the relevant Construction; the Present subtypes all require the aspectual contour to be a point on the *q* dimension, while it may be a point (point state construal), an interval (transitory state construal) or the entire extent of the *t* dimension (inherent permanent state construal). The Progressive construction "requires an event that is extended and unbounded on both the *t* and *q* dimensions. It then alters that construal to a transitory state – the state being "in the middle" (on both *t* and *q*) of the profiled event" (p. 155). There appear to be hardly any aspectual requirements on the English Past tense; "the English Past simply describes an aspectual profile as including a point or interval that precedes the speech act time" (p. 161). Section 4.3.4 includes some observations on the aspectual profile of the resultative perfect, the experiential perfect and the "continuing result perfect", but no full-fledged analysis is provided. A multidimensional scaling analysis (Section 4.4) is performed on the English data set, supplemented with their Japanese translation

equivalents (from Taoka (2000)), and it is shown, in a visual representation, that the semantic predicate classes form a circular pattern of clusters with a similar aspectual potential (cf. pp. 167–169). The overall conclusion to the data analysis in Chapter 5 is that the "perfective/imperfective grammatical opposition represents two families of closely related aspectual construals" that are grounded "on opposing aspectual contours, the directed contour for perfective and the undirected contour for imperfective" (pp. 171–172). Croft argues that in this way the spatial model of lexical aspect provides a new basis for a semantic definition of grammatical aspect.

The model for the semantic representation of causal event structure that can account for argument realization is presented in Chapter 5 ("Toward a force-dynamic theory of argument realization", pp. 173–219) and elaborated in Chapter 6. The chapter starts with a presentation and critical assessment of some theoretical approaches to argument realization. Building on previous work, the author shows how an event-based, force-dynamic theory of argument realization can overcome the empirical and theoretical problems taken stock of. Force-dynamic relations capture the interaction between entities: for instance, in *Sue broke the coconut for Greg with a hammer*, Sue acts on the hammer (she takes it), the hammer acts on the coconut (by breaking it), and the coconut "acts on" Greg (the coconut breaking is beneficial to Greg). Transmission of force is indicated by means of an arrow in the representation of the causal chain; the segment profiled by the verb is represented by solid arrows; the segment profiled by a nonverbal element (*for*) by a dashed arrow.

Sue	→	hammer	→	coconut	⇢	Greg
SBJ		A.OBL		OBJ		S.OBL

(p. 206)

The realization of arguments is determined by the force-dynamic causal frame and the segment profiled by the verb: "In the same way as a verb in a tense-aspect construction profiles certain contiguous phases of the aspectual contour of the event, a verb in an argument structure construction profiles certain contiguous segments of the cause chain of the event" (p. 206). The initiator of the segment of the causal chain profiled by the verb is designated Subject, and the endpoint Object. The general argument realization rules, given the causal chain and the verbal profile, are as follows:

a. The verbal profile is delimited by Subject and Object (if any)
b. Subject is antecedent to Object in the causal chain:

SBJ → OBJ

c. An Antecedent Oblique is antecedent to the Object in the causal chain; a Subsequent Oblique is subsequent to the Object in the causal chain:

A.OBL → OBJ → S.OBL

d. Incorporated arguments are between Subject and Object in the causal chain:

SBJ → INCORP → OBJ
(p. 207)

The Subject is the argument that causally precedes the Object. Two types of Oblique syntactic arguments are defined by their position relative to the position of the Object in the causal chain (for instance, the instrumental phrase *with a hammer* is an Antecedent Oblique and the beneficiary phrase *for Greg* is a Subsequent Oblique). Rule (d) is necessary to account for patterns of argument incorporation described in the crosslinguistic analyses in Chapter 6. On Croft's approach, there is no reference to semantic roles; unlike in other approaches, the realization rules cover both core arguments and Obliques.

The causal chain is the third dimension (next to the temporal dimension and the qualitative dimension) that is integrated into the representation of event structure:

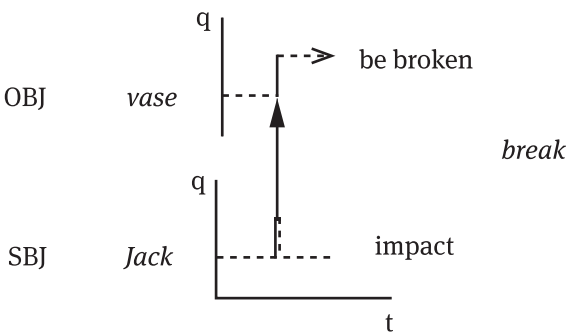

Fig. 3: Three-dimensional representation (modified for two-dimensional display) of the causal and aspectual structure of *Jack broke the vase* (= Figure (5.3) p. 213)

In these representations, the complex verbal semantic structure is decomposed into subevents (involving one participant only) which each have an aspectual contour (two-dimensional (temporal and qualitative) representation)

and which are causally related (third dimension). In other words, each participant has its own subevent in the causal chain, and there is a causal relation with the subevent of the next participant, which proceeds from bottom to top on the vertical dimension. Each subevent is the aspectual profile for that participant, with a t-dimension and a q-dimension. In Figure 3, one subevent is an undirected cyclic achievement, the other a directed irreversible achievement.

In Chapter 6 ("Causal structure in verbal semantics and argument realization", pp. 220–282) Croft elaborates on the framework (the verbal causal chain as directed, acyclic and nonbranching) and provides extensive crosslinguistic evidence for the role of causal structure in argument realization. Voice, ergativity, the construal of noncausal relations (spatial and possessive relations) and noncanonical causal relations (mental events, reflexive events, reciprocal events), causatives and applicatives are addressed in this chapter.

In Chapter 7 ("The interaction of aspect and causal structure in verb meaning", pp. 283–319), the contributions of aspectual structure and the causal dimension are integrated and examined in more detail. Croft formulates some general principles concerning the aspectual profile of complex events lexicalized as a simple verb. While each subevent has its own aspectual profile, the overall event, that is, each verb in a particular tense-aspect construction, does so too. It is the type of subevent that ranks highest in the "verbal aspect hierarchy" that determines the aspectual type of the overall event:

Verbal Aspectual Hierarchy:
Directed change > undirected change > state (p. 286)

For instance, in *Sally pricked the bread* (pp. 287–288), the subevent of Sally pricking the bread is an undirected cyclic achievement; the bread undergoes a punctual directed change; the overall event is a directed achievement. In *Bill tapped the sideboard*, Bill is acting on the sideboard; the sideboard is not affected – it "exists" (state); the overall event is an undirected activity. Croft argues that there is temporal unity in a simple verbal event, that is, the overall event is durative if all the subevent profiles are durative and it is punctual if all subevent profiles are punctual. This chapter offers a very interesting discussion of the three-dimensional representation of event structure of result verbs vs. manner verbs (Levin and Rappaport Hovav 2005) (cf. satellite framing vs. verb framing (Talmy 2000)); it is argued that it is the presence (or absence) of directed change in the aspectual profile that is fundamental to the distinction. The discussion includes the analysis of examples that (potentially) challenge one of constraints on the semantic structure of simple verbs, namely that the causal chain is

nonbranching, that there is temporal unity and that there is only one directed change subevent in an event lexicalized as a simple verb.

In Chapter 8 ("Complex predicate constructions and the semantics of simple verbs", pp. 320–357) complex predicate constructions, such as Resultative constructions, Depictive constructions, Serial Verb constructions, and Converb constructions are analyzed. What characterizes these constructions is that while complex predicates, they are morphosyntactically and semantically more integrated than coordinate constructions. They are usually analyzed as single clauses, but they express a wider range of semantic relations between subevents than simple verbs and can hence shed light on event structures that are (not) lexicalized as a simple verb: "By comparing the kinds of semantic relations that are expressed in complex constructions but not in simple verbs, we may infer further constraints on the subevents and subevent relations that may be lexicalized in simple verbs" (p. 343). The evidence testifies to the constraints on the semantic structure of simple verbs mentioned earlier on. The chapter ends with a very nice overview of the basic premises of the theoretical model.

The principal question addressed in Chapter 9 ("Verb meaning and argument structure constructions", pp. 358–393) is the relative contributions made by verb meaning and by constructional meaning to the meaning of a verb + argument structure construction combination and whether an analysis terms of vagueness, polysemy or coercion is more suitable to account for the facts. The discussion is mainly based on the analysis of (various accounts of) locative constructions and ditransitive constructions, Croft's conclusion being that even though there are regularities in the relationship between verb semantics and the occurrence of verbs in argument structure constructions, "there is no a priori way to determine the contribution of the verb meaning or the constructional meaning to the overall meaning of the combination" (p. 383). It seems therefore necessary to include verb-specific constructions or (narrow) verb-class specific constructions as the crucial level of analysis within an approach that is usage-based.

In the envoi (pp. 394–395), the author gives a brief summary of his model of event structure as it has been developed in the book.

The book contains a 21-page list of references, a very useful glossary of terms and four indices: an index of authors (4 pages), an index of languages (2 pages), an index of grammatical categories and constructions (4 pages), and an index of subjects (10 pages).

Verbs: Aspect and causal structure is an extremely rich book; it presents an encompassing framework of event structure that pins down the features of causal structure and aspectual structure that interact in argument realization. The author explains and motivates the choices made and concepts used in great detail, which makes for accessible and enjoyable reading. The topics addressed consti-

tute very extensive fields of research and Croft reserves ample space to discuss the ways in which his approach is indebted to, compatible with and different from alternative views, but the breadth of the fields almost naturally implies the impossibility of a comprehensive overview and comparison (cf. e.g., Arkadiev 2012 for proposals and theories that it might have been useful to draw into the discussion, e.g., Schopf 1984; Moens and Steedman 1988; and Declerck et al. 2006 could be added to the list). This book is a major achievement; it offers a convincing integrated account of aspectual and causal structure in a frame-semantic, usage-based construction grammar framework, which is illustrated with English data, supplemented with crosslinguistic evidence (cf. esp. Chapter 6). The model will undoubtedly inspire further research and be exploited and put to the test through the application to an expanded data set and further constructions.

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