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Revising Talmy's typological classification of complex event constructions

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1. Introduction

In this chapter, we critically examine Talmy's typological classification of complex event constructions. Talmy first proposed a typological classification of motion event constructions nearly forty years ago (Talmy 1972, 1974, 1985); he later extended his typological classification to event constructions in general, particularly, constructions expressing events with resulting states (Talmy 1991, 2000). Talmy's extension of his typological classification reflects a parallel generalization of the analysis of resultative constructions to include constructions of motion events with a path to a destination (e.g. Goldberg 1995, Rappaport Hovav and Levin 2001).

Talmy's typological classification of complex event constructions has been extremely influential in linguistics and psycholinguistics. More recently, however, it has started to be modified, in order to account for languages that do not quite fit into the classification. New types have been proposed, by Talmy himself and by others. We developed a similar but more detailed typology independently of the analyses offered by other researchers. We propose two revisions to Talmy's typological classification (a brief outline is found in Croft 2003:220–24). The first is given in (1):

(1) Talmy's typological classification of complex event constructions must be elaborated to include additional types.

This first revision offers a richer classification than Talmy's original classification for grammatical constructions that express events.

Talmy's classification has generally been taken as a typological classification of languages: that is, languages encode different complex events consistently with the same morpho-syntactic type. However, this is not the case, and this is the second revision of Talmy's typological classification that we offer:

(2) Talmy's typological classification applies to individual complex event types within a language, not to languages as a whole.

This is in fact the normal state of affairs in typology (Croft 2003:42–45). We demonstrate this fact by using the translation equivalents in Icelandic, Dutch, Bulgarian and Japanese of certain widely cited examples in the resultative construction literature. We demonstrate that all of these languages use more than one of Talmy's types to encode complex events. This point is an important one for contrastive construction grammar studies: the basic unit of comparison and contrast across languages is not the language as a whole, but each construction that is used to express an equivalent state of affairs.

More important, there appear to be implicational scales that govern the encoding of different complex events across languages, which demonstrate that the intralinguistic and crosslinguistic variation is constrained. We argue that the constructions in the revised version of Talmy's typology of complex events represent stages in two parallel grammaticalization paths of event realization. The two grammaticalization paths lead to the univerbation of commonly occurring or "natural" complex events: one from coordination to satellite framing (see §1.2) to compounding, and the other from coordination to verb framing to compounding. This is to say that contrastive studies in construction grammar require the theoretical constructs of typological analysis, such as implicational scales and grammaticalization, in order to capture the relevant crosslinguistic generalizations.

1.1 Motion events: Manner-incorporating and path-incorporating

Talmy's original typological classification was applied only to motion verb constructions (Talmy 1972, 1975, 1985). Talmy developed an analysis of motion events with four basic semantic components:

(3) a. *Figure*: the entity that is moving or located at a specific place
b. *Ground*: the entity which acts as a spatial reference point for the motion/location of the figure
c. *Path*: the path of motion of the figure
d. *Manner*: the manner of motion by which the figure moves along the path

Talmy compared the grammatical encoding of the two semantic components of the motion event – manner and path – across languages and developed a three-way typology of how manner and path are expressed. Talmy's original typological classification was defined in terms of what semantic component is expressed, or 'incorporated' in his terms, in the main verb. Talmy distinguished three types: manner-incorporating, path-incorporating and ground-incorporating.

The manner-incorporating type, as its name indicates, expresses manner in the main verb. An example of a manner-incorporating language, according to Talmy's typological classification, is English (main verb in boldface, satellite in italics):

(4) He **ran** *into* the cave.
(5) The bottle **floated** *into* the cave.
(6) They **rolled** the barrel *into* the cellar.
(7) The wise men **followed** the star *out of* Bethlehem.

In (4)–(7), the manner is expressed by the main verb (in boldface), and the path is expressed by an element other than a verb (in italics), which Talmy calls a *satellite* of the main verb (Talmy 1975:184, 1985: 102; see §1.3 for more on the definition of a satellite).

The path-incorporating type expresses path instead of manner in the main verb. An example of a path-incorporating language according to Talmy's typological classification is Spanish (Talmy 1985: 111; main verb in boldface, satellite in italics):

(8) **Entró** *corriendo* a la cueva.
enter.3SG.PST *running* to the cave
'He ran into the cave.'

In (8), the path is expressed by the main verb (in boldface), while the manner is expressed optionally in a participial form (in italics), i.e. not as a main verb, Talmy also describes the manner expression as a satellite of the verb (Talmy 1985: 110–11).

The ground-incorporating type expresses salient properties of the ground in the main verb such as shape and consistency. An example of a ground-incorporating language according to Talmy's typology is Atsugewi (Talmy 1985: 74; main verb in boldface):

(9) '- w- uh- **st'aq'** -ik: -a
3SG- 3SG- by.gravity **lie.runny.icky.material** -on.ground -3SG
'Runny icky material [e.g. guts] are lying on the ground.'

Talmy's typological classification, like typological classifications in general, is fundamentally constructional in the sense of 'construction' in current versions of construction grammar. Constructions are pairings of form and meaning ranging from individual atomic units (morphemes) to complex grammatical units such as a clause. Typological comparison is always ultimately based on equivalent meanings or functions across languages (Croft 2003: 13–19), and typological classification contrasts different grammatical structures that are used to express the meaning/function in question. Thus, what typologists compare across languages are constructions: particular meanings/functions and the form paired with that meaning or function. There is thus a close relationship between typological theory and construction grammar (Croft 2001, 2008).

1.2 Complex events: Satellite framing and verb framing

In more recent publications, Talmy has broadened his original classification to include constructions denoting events with resulting states of all types, not just motion events describing motion on a path to a destination. This more generalized concept of a path

is called *framing* in Talmy's later work: framing includes concepts such as path, aspect etc. that delimit or otherwise frame the verbal event. The event frame in Talmy's sense corresponds to the *result* in the dichotomy of event types presented by Levin and Rappaport Hovav (2005); the other event component is called *manner* by Levin and Rappaport Hovav. Talmy leaves aside the ground-incorporating type of motion event, and generalizes manner-incorporating and path-incorporating as follows:

> The world's languages generally seem to divide into a two-category typology on the basis of the characteristic pattern in which the conceptual structure of the macro-event is mapped onto syntactic structure. To characterize it initially in broad strokes, the typology consists of whether the core schema [framing event] is expressed by the main verb or by the satellite. (Talmy 2000: 221)

The framing semantic component corresponds to the path. English now represents a satellite framing language, in that the framing component is expressed in a satellite, not the main verb (see §2 for issues in defining 'verb' and 'satellite' across languages). In addition to the motion examples given above, the resultative examples in (10)–(13) show that English is a satellite framing language according to Talmy (in these and all following examples, the framing/result event is in boldface):

(10) She painted the wall **red**.
(11) He wiped the table **clean**.
(12) She pounded the dough **flat**.
(13) They shot him **dead/to death**.

Conversely, Spanish is a verb framing language. The motion event example in (8) uses a path as the framing subevent, expressed in the verb. The examples describing events with resulting states in (14)–(16) also show that Spanish is a verb framing language according to Talmy (Talmy 2000: 240, 243, 247; framing event in boldface) – compare the satellite framing English translations):

(14) Lo **mataron** quemándolo.
him they.**killed** burning.him
'They burned him **to death**.'

(15) **Apagué** la vela soplándo -la.
extinguish:1SG.PST the candle blowing.on -it
'I blew **out** the candle.'

(16) El perro **destrozó** el zapato mordiéndo -lo en 30 minutos.
the dog **destroy**:3SG.PST the shoe biting -it in 30 minutes
'The dog chewed **up** the shoe in 30 minutes.'

Talmy has generalized and also subtly reformulated his typological classification of the encoding of complex events. In the original typology, the question is: which semantic component is expressed by the main verb, manner or path (or ground)? In the new typology, the question is: what morpho-syntactic element is the framing semantic component expressed by, the main verb or a satellite? Both formulations, however, are fundamentally constructional: a pairing of a meaning (the event structure) and a form (a construction with different elements expressing components of the event structure).

2. Symmetric coding strategies for event and frame

Before extending Talmy's typological classification of complex events, we must deal with a definitional problem: identifying 'verb' and 'satellite' across languages. Talmy's definition of the two is given in the following passage:

> The satellite to the verb…is the grammatical category of any constituent other than a nominal or prepositional phrase complement that is in a sister relation to the verb root. The satellite, which can be either a bound affix or a free word, is thus intended to encompass all of the following grammatical forms: English verb particles, German separable and inseparable verb prefixes, Latin or Russian verb prefixes, Chinese verb complements, Lahu nonhead "versatile verbs", Caddo incorporated nouns and Atsugewi polysynthetic affixes around the verb root. (Talmy 2000: 222)

However, the identification of a 'verb' and other parts of speech across languages is highly problematic (Croft 1991, 2001, 2005, 2007, 2009). The basic problem is that linguists employ different criteria in each language to identify a category such as 'verb'. Moreover, the criteria are usually not cross-linguistically comparable, in that they employ language-specific constructions.

A further problem is found in Talmy's definition of 'satellite'. Talmy's definition excludes English prepositions as satellites. This is not so significant for Talmy's original typology. In that typology, all that mattered was which event component was expressed ('incorporated') in the main verb; it did not matter how the other event component was expressed. In the newer classification, however, what matters is which grammatical form encodes the 'framing' or result event. In this case, it does matter whether prepositions are satellites. Semantically, there is no difference in the encoding of components of an event between a form that can only be a preposition and a form that can be a particle as well as a preposition:

(17) a. The bird flew **into** the cave.
b. *The bird flew **into**.

(18) a. The bird flew **over** the house.
b. The bird flew **over**.

The path is encoded in the (a) sentences by the form it whether or not boldface form can be used alone or not, as in the (b) sentences. Yet if we follow Talmy's definition of satellite strictly, (17a) is not a satellite-framing construction, because the framing event

is expressed only in a preposition. The same will be true of all motion events just when they have ground expressions governed by a preposition that cannot also be a particle, and other events with result phrases governed by prepositions such as *to* and *into* that cannot be used as particles (cf. Beavers et al. 2010: 37–38; Filipović 2007: 33–36):

(19) a. She ground the rocks **to** a fine dust.
b. *She ground the rocks **to**.

(20) a. The chocolate bar split **into** three pieces.
b. *The chocolate bar split **into**.

The solution to the problem of defining categories across languages is to employ the same criteria, and hence cross-linguistically valid criteria. As Croft has argued, this means two things. First, cross-linguistically valid criteria are ultimately based in function, or more precisely, in function and how that function is expressed in morpho-syntactic form. For example, verbs (in contrast to nouns and adjectives) can be identified only by comparing the same semantic classes of words and the construction(s) used for the propositional act of predication (Searle 1969, Croft 2001) in each language (vs. reference for "nouns" and modification for "adjectives"). Second, the universals that are found are in fact primarily universals about the constructions used for the cross-linguistically valid criteria.

In the case of Talmy's definition, we will thus define a morpho-syntactic element as a 'verb root' if it can occur as a predicate on its own with the same meaning. Thus, English path expressions and resultative expressions are not 'verb roots' because they cannot occur as predicates on their own:

(21) *The bottle **into** the cave.
(22) *The barn **red**.
(23) *He **dead/to death**.

Likewise, a participial form such as Spanish *flotando* is a satellite because it cannot occur as a predicate on its own:

(24) *La botella **flotando**.
the bottle floating

Anything that is not a verb root but encodes an event component will be analyzed as a satellite. This definition therefore includes English prepositions which encode the framing/result subevent, even if they do not occur without an accompanying ground expression. Beavers (2008: 286, fn. 3) gives the same analysis of satellites for the same reasons as those given above.

This criterion for verbs vs. satellites allows however for a class of *symmetric* constructions for the encoding of event and frame. The two types that Talmy originally proposed, satellite framing and verb framing, are asymmetric in their encoding of the semantic components of an event: one component is expressed by a verb/main predicate,

and the other component by an element that cannot independently function as a verb/main predicate. But many languages use serial verb constructions in which both event and frame are expressed in forms that may occur as predicates on their own:

Mandarin Chinese (Li & Thompson 1981: 58)

(25) tāmen **pǎo chū lái** le
3PL run exit come PF
'They came running out.'

Lahu (Matisoff 1969: 82, 70)

(26) ŋà-hɨ ɡa **qɔ̀ʔ chî tɔ̂ʔ** pî ve
we get **return lift come.out** give NR
'We had to lift (it) out again ['return'] for (them).'

The Mandarin example includes not only manner and path but also deictic orientation, a third semantic component of motion events that Talmy did not discuss in his original work.

Earlier research on serial verb constructions in the Talmy typology treated them as path-incorporating (Schaefer 1986) or verb-framing (Slobin and Hoiting 1994: 492), because the framing/result subevent is expressed as a main verb. But later work analyzed them as a third, symmetric strategy, including the original presentation of this work in 2002 (see Croft (2003b: 220–224), Zlatev and Yangklang (2004), Slobin (2004: 228), and Bohnemeyer et al. (2007: 509)). Yet the serial strategy is not the only symmetric strategy, as was noted in the original presentation of this work. A more grammaticalized but still symmetric strategy is compounding, in which the two forms are morphologically bound or at least more tightly integrated than the serial strategy. An example of a compound strategy is illustrated in Kiowa for the combination of a path component ('reach') and a deictic component ('come'), both of which may occur as verbs in the language (Watkins 1984:179):

(27) ɔ́:pàl sép **cándé** -ə̀: nɔ̀ pàhɨ́: bà-thɨ́dáy
nearer rain reach -come and.DS clearly get.wet.PF
'The rain is coming closer and it is clear we will get wet.'

A third symmetric strategy for expressing complex events is coordination. For example, in Amele, a coordination construction can be used to express the combination of two components of a motion event (in this case, the deictic component 'go' and a path component 'back'/'return'; Roberts (1987: 102)):

(28) cois hina gad **cesel** -i **nu** -ug -a
OK 2SG may **return** -PRED(SS) **go** -2SG -IMP
'Alright you can go home [back] now.'

The medial verb form *cesel-i* is a 'stripped same-subject form with zero marking', used for coordination of any two events with the same subject in an appropriate context (Roberts 1987: 236, 273). Other examples of coordination will be discussed below.

Finally, there is another construction, a *double framing* construction, in which the path or framing expression is expressed twice, once as a detached satellite and once as part of the verb:

French (Aske 1989:14, from Eve Sweetser)

(29) **monter en haut/ descendre en bas**
go.up above/ descend below
'go up (above)/go down (below)'

Russian (Talmy 1985: 105)

(30) Ja **vy-** bežal **iz** doma.
I **out-** ran **from** house:GEN
'I ran out of the house.'

Bohnemeyer et al. also identify this type, and describe it as 'double marking' (Bohnemeyer et al. 2007: 512, 514). Talmy analyzes double framing as a combination of a satellite associated with the verb and a preposition associated with the noun denoting the ground (Talmy 1975: 231; 1985: 105). In our analysis, the double framing construction is not symmetrical, in that the complex event is encoded partly in the verb form and partly by a satellite. The French and Russian examples also differ in that the verb in French expresses the framing subevent, but the verb in Russian expresses the manner subevent.

In sum, Talmy's original typological classification of event constructions should be elaborated as in (31), including abbreviations for the different event construction types that will be used below:

(31) a. Verb framing (VF)
b. Symmetrical
i. Coordinate (CD)
ii. Serial
iii. Compounding (CP)
c. Satellite framing (SF)
d. Double framing (DF)

This is a classification of construction types. The construction types are defined by cross-linguistically valid criteria describing the mapping from meaning to grammatical form. The criteria are ultimately based on the semantics of the event component expressed by a form – using Levin and Rappaport Hovav's terms, MANNER or RESULT; occurrence of a form or forms as a main predicate or not; and for the

symmetrical types, degree of integration (separate clauses, co-predications in a single clause, or morphologically bound forms in a single clause).

Before investigating this typology further, we briefly compare our approach to that of Bohnemeyer et al. (2007). Bohnemeyer et al. examine the phenomenon of 'event segmentation' of motion events. They reject the Talmy typological classification as a basis for their analysis of event segmentation, because of the variation found across languages in terms of the expression of motion events and their semantic components. They argue that

> [a]s it stands, a typology of linguistic event segmentation based on verb phrases or clauses would at best be a typology of the semantics of verb phrases or clauses. It would not tell us directly about the constraints different languages impose on the segmentation of events of a certain kind. In the absence of a universal 'event phrase', the best we can aim for is a property of constructions that singles out those constructions in each language that package the information about an event in comparable ways. (Bohnemeyer et al. 2007: 502)

We basically agree with the view in the first sentence: as we noted above, in cross-linguistic comparison, we are not really comparing abstract linguistic categories across languages; we are comparing the constructions we use in the cross-linguistic comparison. However, Bohnemeyer et al. do not actually use the verb phrase or clausal construction in their cross-linguistic comparison. Instead, their strategy is essentially to use a different construction, namely the *time-positional adverbial construction*: a construction consisting of a time-positional adverbial such as *a moment later* or *at seven forty-five* combined with an expression which denotes the events under the scope of the time-positional adverbial. As a result, their analysis is essentially a typology of the semantics of the time-positional adverbial construction. This is of course of linguistic interest, but it does not mean that the study of the typology of the verb phrase or clause is not of linguistic interest, as Bohnemeyer et al. seem to imply.

Bohnemeyer et al.'s conclusion reflects what is described as methodological opportunism in Radical Construction Grammar (Croft 2001, Barðdal 2006): choose a constructional 'test' (in their case, the time-positional adverbial construction) and assume that it tells us something about a more general grammatical category than the construction itself (in their case, event segmentation). In Radical Construction Grammar, methodological opportunism is rejected, because constructions vary as to what grammatical categories they define; differences among constructions must be respected. For example, the time-positional adverbial construction does not match the verb phrase or clausal construction: for example, in some languages what appears to be a sequence of verb phrases must be under the scope of a single time-positional adverbial. Bohnemeyer et al. assume that the distribution of the time-positional adverbial construction is the only one of universal significance; and they describe the cross-linguistic variation in the encoding of event components as 'language-specific'. The only universals Bohnemeyer et al. identify are those which are found associated with the

time-positional construction in all the languages in their sample (Bohnemeyer et al. 2007: 517–23).

Bohnemeyer et al.'s approach however reflects an impoverished view of language universals, in which language universals are only unrestricted universals (that is, true of all languages). The strength of typological theory from Greenberg (1966) onward is that it reveals language universals that are constraints on cross-linguistic variation, which do not assume that all languages are identical in the relevant property. The cross-linguistic variation in the encoding of complex event components, as described by the extended Talmy typological classification, is 'language-specific' only in the sense that there is variation across languages, and no unrestricted universal governs the occurrence of the types across languages. But that does not imply that the cross-linguistic variation in the encoding of complex event components does not conform to universals of language. In §4, we argue that there appear to be implicational universals governing the encoding of complex event components.

3. Variation and universals of language types with respect to Talmy's typological classification

The second revision of the Talmy typological classification proposed in (2) above is to recognize that languages are not uniform in their constructional encoding of complex events. Our study is based on the native languages of the authors: English, Dutch, Icelandic, Bulgarian and Japanese. Talmy states that 'most Indo-European [languages] minus Romance' are satellite framing (Talmy 2000: 222); Dutch is also specifically mentioned (Talmy 2000: 249). Talmy states that Japanese, on the other hand, is verb framing (Talmy 2000: 222). In fact, however, none of these languages are consistently one type or another in the verbalization of events according to the Talmy typological classification.

Berman and Slobin also note this fact, and comment that 'as a general caveat, it should be remembered that typological characterizations often reflect tendencies rather than absolute differences between languages' (Berman & Slobin 1994:118, fn 4; emphasized in the original). However, Berman and Slobin's observation treats the intra-linguistic variation as a problem, namely a qualification to classifying a language as a whole as satellite framing, verb framing or whatever. Talmy (2000:64–67) defines 'split' and 'conflated' language types as ones which use more than one encoding type for different types of motion events or the same type of motion event respectively. But he still treats 'split' and 'conflated' as language types, rather than applying his typological classification to constructions (i.e. specific situation types) instead. It would be much more interesting if we could find cross-linguistic universals by examining the intra-linguistic variation in the encoding of complex events, instead of treating them as exceptions that reduce a "universal" to a "tendency".

For example, Aske notes that for the putatively verb framing language Spanish, if the path expression is atelic (i.e. does not imply arrival at the destination), then a satellite framing construction is acceptable (Aske 1989:3; Spanish also has the double framing construction like the French examples in (29)):

(32) El libro **deslizó** **hasta** el suelo.
the book **slide**:3SG.PST **towards** the floor
'The book slid down to the floor.'

Thus, one cannot say that Spanish is a verb framing language. However, if this pattern is general, then one could posit the implicational universal, 'If a telic path of motion is encoded by a satellite framing construction, then an atelic path of motion is also encoded by a satellite framing construction'. The universals are not about languages, but about how languages encode particular situation types in morpho-syntactic form; that is, the universals are about constructions. This is exactly the same as in the typology of other domains of grammar (Croft 2003).

In this section, we will illustrate the intra-linguistic and cross-linguistic variation in the encoding of complex events for English, Icelandic, Bulgarian and Japanese (Dutch is discussed in §5). We will use the equivalents of examples of directed motion with a telic path and non-motion resultative constructions that have been discussed frequently in the literature on the analysis of resultatives including telic directed motion. In the next section, we will suggest implicational relations between particular situation types and the type of construction according to the expanded Talmy typological classification. In the last section, we will propose a pair of parallel grammaticalization paths linking together Talmy's types.

3.1 English

English is generally taken to be a satellite framing language, and examples such as (33) appear to confirm this fact:

(33) I wiped the table **clean**.

However, the same situation type can be expressed by a verb framing construction:

(34) I **cleaned** the table (by wiping it).

As with verb framing constructions in so-called verb framing languages such as Spanish (Slobin 1996: 212), the manner component is optional and is often left out.

Other often-cited examples of resultative (satellite framed) constructions also have natural verb framed alternatives:

(35) a. The sheriff shot him **dead**.
b. The sheriff **killed** him (by shooting him).

(36) a. She hammered the metal **flat**.
b. She **flattened** the metal (by hammering it).

(37) a. He pounded the dough **flat**.
b. He **flattened** the dough (by pounding it).

(38) a. I pushed the door **open**.
b. I **opened** the door (by pushing on it).

However, other often-cited examples of resultative (satellite framed) constructions do not appear to have a natural verb framed alternative:

(39) a. They painted the barn **red**.
b. *They reddened the barn (by painting it).

(40) a. The pond froze **solid**.
b. *The pond solidified (by freezing).

Thus, non-motion complex events in English can be expressed by either satellite framed or verb framed constructions; but some non-motion complex events can only be expressed by satellite framed constructions. In contrast, motion events are exclusively expressed by satellite framed constructions, except for path verbs borrowed from Romance (*enter, exit, ascend, descend*); and these forms do not sound acceptable with satellite expressions indicating manner:

(41) a. The bottle floated into the cave.
b. *?The bottle entered the cave floating.

(42) a. He crawled to the door.
b. *?He approached the door crawling.

(43) a. She ran across the street.
b. ??She crossed the street running.

3.2 Icelandic

Icelandic is also said to be a satellite framing language. For telic directed motion, including complex motion such as caused motion and following motion, a satellite framing construction is used, indeed with two satellite expressions (for more details of the caused-motion construction in Icelandic, see Barðdal 2001: 151–156, 2003, 2008: 120–26):

(44) Flaskan flaut **inn í** hellinn.
bottle:the.NOM floated **into in** cave:the.ACC
'The bottle floated into the cave.'

(45) Ég rúllaði tunnunni **út úr** húsinu.
I.NOM rolled barrel:the.DAT **out of** house:the.DAT
'I rolled the barrel out of the house.'

(46) Vitringarnir þrír eltu stjörnuna **út úr** Betlehem.
wise.men:the.NOM three:NOM followed star:the.ACC **out of** Bethlehem
'The three wise men followed the star out of Bethlehem.'

A satellite framing expression can be used for the Icelandic equivalent of English *I danced across the street*:

(47) Ég dansaði **yfir** götuna.
I.NOM danced **across** street:the.ACC
'I danced across the street.'

However, since dancing is not a natural way of crossing streets, a different construction can be used:

(48) Ég **fór** dansandi **yfir** götuna.
I.NOM **went** dancing **across** street:the.ACC
'I went dancing across the street.'

In (48), neither manner nor path (frame) are expressed by the main verb, which is a neutral verb of motion. Talmy's original classification could accommodate this type, as one that is neither manner-incorporating nor path-incorporating. But in Talmy's newer typology, (48) is satellite-framing; Talmy's newer typology does not capture the distinction between the constructions in (47) and (48), nor does the extended typology in (31). Since (48) does not express manner in the verb, and the motion verb indicates directed motion, we will describe this construction as 'verb framing/double framing' (VFdf) in our typology, but we acknowledge that the construction in (48) may belong to a different type.

A satellite framing (resultative) construction is also used for certain non-motion complex events:

(49) Tjörnin fraus **í gegn.**
pond:the.NOM froze **in through**
'The pond froze solid.'

(50) Ég málaði hlöðuna **rauða.**
I.NOM painted barn:the.ACC **red.**ACC
'I painted the barn red.'

(51) Þeir lömdu hann **til óbóta.**
they.NOM hit him.ACC **to incurability**
'They beat him senseless.'

(52) Ég ruggaði barninu **í svefn.**
I.NOM rolled baby:the.DAT **in sleep**.ACC
'I rocked the baby to sleep.'

However, Examples (49)–(52) do not represent productive patterns. Instead, for most non-motion complex events, a verb framing construction is used:

(53) a. *Hann drakk flöskuna **tóma.**
he.NOM drank bottle:the.ACC **empty**.ACC
'He drank the bottle empty.'

b. Hann **tæmdi** flöskuna.
he.NOM **emptied** bottle:the.ACC
'He emptied the bottle.'

(54) Ég **flatti** deigið út.
I.NOM **flattened** dough:the.ACC out
'I pounded the dough flat.'

(55) Ég **þurrkaði** af borðinu.
I.NOM **dried** off table:the.ACC
'I wiped the table clean'

However, a particle may serve as a satellite-framing construction with a manner verb where an adjectival resultative is unacceptable, as in (56a–b); (56c), a verb-framing construction, can also be used to describe this situation:

(56) a. *Ég ýtti dyrunum **opnum.**
I.NOM pushed door:the.DAT **open**.DAT

b. Ég ýtti dyrunum **upp**.
I.NOM pushed door:the.DAT **up**
'I pushed the door open.'

c. Ég **opnaði** dyrnar með því að ýta á þær.
I.NOM **opened** door:the.ACC with it.DAT to push on them.ACC
'I opened the door by pushing it.'

Even a verb framed construction is unacceptable for the equivalent of English *I hammered the metal flat*. Instead, a coordination construction must be used:

(57) Ég barði stálið **þangað** til það varð flatt.
I.NOM hit steel:the.ACC **until** to it.NOM became flat.NOM
'I pounded the steel flat [lit. I pounded the steel until it became flat].'

3.3 Bulgarian

Bulgarian is also said to be a satellite framing language. In some cases, satellite framing is used, for both telic directed motion and for some non-motion complex events:

(58) Iz- tŭrkaljax varela **v** mazeto.
PF- roll.IMPF barrel:the **in** basement:the
'I rolled the barrel into the basement.'

(59) Te bojadisaxa plevnjata **červena.**
they paint:PF.AOR barn:the **red**
'They painted the barn red.'

More common is double framing, as in the Russian example (30) above:

(60) Ptičkata **ot**- letya **ot** gnezdoto.
bird:the **out**- fly:PF.AOR **out.of** nest:the
'The bird flew out of the nest.'

Double framing can also be used for some non-motion complex events, but these are specific conventionalized metaphorical expressions:

(61) Toj me **do**- kara **do** ludost/otčajanie.
he me PF- drive.AOR **to** madness/desperation
'He drove me to madness/desperation.'

(62) Toj me **iz**- vede **ot** zatrudnenieto.
he me PF- lead.AOR **out.of** difficulty:the
'He led me out of difficulty.'

For many complex events, the expression of the result is not through an independent satellite expression but via perfective aspect, expressed by a prefix on the verb. In the case of motion events, there is also a path expression separate from the verb (compare the difference between (63a) and (63b) to the Spanish telic and atelic path constructions):

(63) a. Toj **iz**- pŭlzja **do** vratata.
he PF- crawl.AOR **to** door:the
'He crawled to the door.' [completed]

b. Toj pŭlzeše **kŭm** vratata.
he crawl:IMPF **towards** door:the
'He was crawling towards the door.' [not completed]

In many cases of non-motion complex events, the result is not expressed by an independent satellite but implied by the perfective aspect prefix on the verb:

(64) a. **Iz**- bŭrsax masata.
PF- wipe.PF.AOR table:the
'I wiped the table [clean].' [i.e. perfective aspect implies clean table]

b. Bŭrsax masata pet minuti no ošte e mrŭsna.
wipe.PF.IMPRF table:the five minutes but still is dirty
'I wiped the table for five minutes but it is still dirty.'

(65) Ezeroto **za**- mrŭzna.
pond:the PF- freeze.AOR
'The pond froze [solid].'

(66) Te go **za**- streljaxa.
they him PF- shoot:AOR
'They shot him [dead].'

The Bulgarian perfective is technically satellite framed – the perfective aspect prefixes cannot be main predicates on their own. But the absence of any other expression of the result suggests that the Bulgarian perfective is perhaps not to be treated identically with, say, the English resultative expressions which are the translations of (64a), (65) and (66). They appear to resemble something more like compounding in that the main verb contains both the encoding of manner or process and the encoding of the result. We will return to this observation in §5, and for now describe it as 'aspectual compounding' (CPasp) in our typology.

Nevertheless, many of the situation types described in the sections on English and Icelandic are expressed by verb framing constructions in Bulgarian. For example, the most natural way to express the scene described by *The bottle floated into the cave* is by the verb framing construction in (67), in the perfective of course because the complex event is telic:

(67) Butilkata **vleze** v pešterata.
bottle:the **enter**.PF.AOR in cave:the
'The bottle entered the cave.'

A natural way to express the scene described by *I ran across the street* is (68), and natural ways to express flattening are in (68)–(70):

(68) **Presjakox** ulitsata na begom.
across.PF**:cut:**AOR.1SG street:the on running
'I crossed the street running.'

(69) Tja **spleska** željazoto s čuk.
she **flatten**:PF.AOR iron:the with hammer
'She hammered the metal flat.'

(70) Tja raz- **toči** testoto.
she PF- **press.dough.flat**:AOR dough:the
'She pounded the dough flat.'

As with Icelandic however, the most natural way to express certain complex events in Bulgarian that are typically resultative (satellite framed) in English, is with some sort of coordination construction (connective in boldface):

(71) Te sledvaha zvezdata **i** izljazoha ot Vitleem.
they followed:IMPF.IMPRF star:the **and** went.out:PF.AOR out.of Bethelehem
'They followed the star out of Bethlehem.'

Probably the most natural way of saying *I danced across the street* is (72):

(72) Tancuvax **dokato** presičax ulicata.
dance.IMPF.AOR **while** across:cut:IMPF.IMPERF.1SG street:the
'I danced while I was crossing the street.'

We will distinguish between coordination with *i* 'and' (CD) and a two-clause construction using the connective *dokato* 'until' (abbreviated CD*wh*). In other words, we are broadening the coordination type to include biclausal constructions which may involve subordination.

A fairly natural way to say *I pushed the door open* is (73):

(73) Butnax vratata **i** ja otvorix.
push:SMLF:PF.AOR.1SG door:the **and** it.F PF:open:AOR.1SG
'I pushed the door and opened it.'

However, the second clause is redundant in most contexts: it is not ungrammatical, but without the second clause, the perfective initial clause in (73) can be understood as conveying that I opened the door.

Finally, the most natural way to say *She rocked the baby to sleep* is (74):

(74) a. Tja ljulja bebe -to **i** go prispa.
she rock.PF.AOR baby -the **and** it send.to.sleep:PF.AOR
'She rocked the baby to sleep.'

b. Tja ljulja bebe -to dokato zaspi
she rock:PF.AOR baby -the until fall.asleep:PF.PRS.3SG
'She rocked the baby to sleep' [lit. '...until it fell asleep']

It is also possible to express this result with the conjunction *dokato* 'until'.

3.4 Japanese

Japanese is standardly said to be verb framing (e.g., Talmy 2000: 222). However, many non-motion complex events are expressed using a satellite framing construction (compare Washio 1997):

(75) kabe o **akaku** nuru
wall ACC **red** paint
'paint the wall red'

(76) teeburu o **kireini** huku
table ACC **clean** wipe
'wipe the table clean'

(77) Ike wa **kachikachini** kootta.
pond TOP hard/solid freeze:PST
'The pond froze solid.'

(78) ringo o **hutatsu ni** kiru
apple ACC **two** **to** cut
'cut the apple in half'

One of the most common constructions for complex events in Japanese is the symmetric strategy of compounding. There are two types of verbal compounding constructions, the *i*-compound (sometimes realized as *-e*), and the *te*-compound. The two types are illustrated in (79a–b), with a telic directed motion event:

(79) a. Watashi wa ie ni **kake- -konda.**
I TOP house to **run- -go.into**:PST (*i*-compound)
'I ran into the house.'

b. Watashi wa ie ni **hashitte- -haitta.**
I TOP house to **run- -go.into**:PST (*te*-compound)
'I ran into the house.'

For this type of event, the *i*-compound form in (79a) is more pervasive and more natural than the *te*-compound construction in (79b); see §5 for further discussion. However, only the *te*-compound can be a natural translation equivalent of *The bottle floated into the cave*:

(80) a. Bin ga doukutsu no naka ni **ukande- -itta.**
bottle NOM cave GEN inside to **float- -go**:PST
'The bottle floated to the inside of the cave.' (*te*-compound)

Many of the often-cited English non-motion resultative forms are most naturally rendered with *i*-compounds in Japanese:

(81) Watashi wa sara o teeburu kara **oshi- -noketa.**
I TOP dish ACC table from **push- -put.aside**:PST
'I pushed a dish off the table.'

(82) kuma o **uchi- -korosu**
bear ACC **shoot- -kill**
'shoot the bear dead'

(83) to o **oshi- -akeru**
door ACC **push- -open**
'push the door open'

(84) kinzoku o **tataki- -nobasu**
metal ACC **pound- -extend**
'pound the metal flat'

(85) kiji o **uchi-/tataki- -nobasu**
dough ACC **pound-/hit- -spread/-flatten**
'pound the dough flat'

Further examples of Japanese *i*-compounds are given in (86) (examples from Matsumoto 1996):

(86) *yake-shinu* (burn-die) burn to death
obore-shinu (be.drowned-die) drown "to death"
yake-ochiru (burn-fall) burn down
hashiri-tsukareru (run-get.tired) run until tired
mochi-komu (have-go.in) bring in
naguri-korosu (strike-kill) kill by striking
mushiri-toru (pluck-take) pluck off

These compounds are extremely frequent in Japanese and in some cases do not translate into simple resultative expressions in English (for example, one cannot say **I ran tired* – cf. *hashiri-tsukareru* – but must use the reflexive pseudo-resultative *I ran myself tired*). In our typology, we will distinguish these two types of compounding as *i*-compounds (CP*i*) and *te*-compounding (CP*te*).

Nevertheless, there are a number of complex events that must be expressed in Japanese by a different symmetric strategy, namely coordination. These include the caused motion event in (87) and the following motion event in (88), as well as the non-motion event in (89):

(87) Watashi wa taru o korogashi **-te** chikashitsu ni ireta.
I TOP barrel ACC roll **-and** basement to put.into:PST
'I rolled the barrel into the basement.'

(88) Sanhakase wa hoshi ni shitagat **-te** besturehemu o deta.
three.doctor TOP star to follow **-and** Bethlehem ACC go.out:PST
'The wise men followed the star out of Bethlehem.'

(89) Kanojo wa akanbo o yusut **-te** nemur -aseta.
she TOP baby ACC rock **-and** sleep -CAUS:PST
'She rocked the baby to sleep.'

The motion events in (90)–(91) also require two clauses, although they could be analyzed as verb framing. However, coordination with the *-te* form is impossible in these cases.

(90) Kanojo wa odori **-nagara** douro o watatta.
she TOP dance **-while** street ACC cross:PST
'She danced (her way) across the street [lit. She crossed the street, dancing].'

(91) Kanojo wa shaberi **-nagara** douro o watatta.
she TOP talk **-while** street ACC cross:PST
'She talked her way across the street [lit. She crossed the street, talking].'

In our typology, we distinguish coordination with *te* (CD*te*) from coordination with the adverbial subordinate *nagara* (CD*wh*).

4. Universals in linguistic variation: The coding of complex events

The data presented in §3 of this chapter, classified according to the typology in §2 (with the modifications mentioned in §3), falls into a pattern that represents constraints on how event structures of different kinds are expressed in constructions within and across languages. There are no unrestricted universals, such that all languages express certain event structures with the same syntactic construction. In fact, the data demonstrates variation in constructions used for different events within a language, and variation in constructions used for the same event across different languages.

Table 1 summarizes the intra-linguistic and cross-linguistic variation we have described in §3 (for the Dutch data, which is unusually uniform, see §5). The coding of construction by typeface is explained below the table.

Although the data is complex and somewhat messy, universal patterns can be discerned here. They follow the same structure as Givón's binding hierarchy of sentential complement constructions (Givón 1980). The binding hierarchy of sentential complement constructions follows two implicational scales, one for the form of the construction, and the other for the semantic complement relation. Givón's scale for the form of the construction is a scale of degree of morpho-syntactic integration of the matrix clause and complement clause, from two distinct finite clauses down to compounding of matrix predicate and complement predicate in a single clause. Givón's scale for the semantics represented a degree of semantic integration of the matrix clause event and the complement clause event. The typological universal for the binding hierarchy is: if a semantic complement type uses a particular morpho-syntactic construction, then a semantic complement type higher on the semantic scale uses a construction as high or higher on the formal scale, and a semantic complement type lower on the semantic scale uses a construction as low or lower on the formal scale.

The data in Table 1 support a similar analysis for the integration of event and result. There is a formal scale of degree of morpho-syntactic integration, and a semantic scale of event + result type, or more precisely, two separate semantic scales, one for motion events and one for non-motion events. The formal scale of degree of morpho-syntactic integration is given in (92):

(92) **double framing, satellite framing** < verb framing, compounding < *coordination*

The relative position of the syntactic constructions expressing those event types on the formal scale is indicated in Table 1 by typeface (bold = higher, roman = intermediate, italic = lower).

The implicational scale of syntactic structures given in (92) and suggested by the data in this chapter appears to be best explained in terms of a scale representing degree of integration or cohesiveness of the construction, illustrated in Figure 1.

Table 1. The relationship between complex event types and syntactic strategies

	Bulgarian	Japanese	Icelandic	Dutch	English
Motion					
'run out of'	**DF**	*CPi/te*	**SF**	**SF**/CPsat	**SF**
'run into'	**SF (deic)**	*CPi/te*	**SF**	**SF**/CPsat	**SF**
'crawl to'	**SF (deic)**	*CPte*	**SF**	**SF**/CPsat	**SF**
'float into'	VF	*CPte*	**SF**	**SF**/CPsat	**SF**
'run across'	VF	*CDte/CPte*	**SF**	**SF**/CPsat	**SF**
'follow X out of'	*CD*	*CDte*	**SF**	**SF**/CPsat	**SF**
'dance across'	*CDwh*	*CDwh*	**SF**/VFdf	**SF**/CPsat	**SF**
'roll X into'	**SF**	*CDte*	**SF**	**SF**/CPsat	**SF**
Change of State					
'paint X red'	**SF**	**SF**	**(SF)**	**SF**/CPsat	**SF**
'freeze solid'	CPasp	SF	**(SF)**	**SF**/CPsat	**SF**
'shoot X to death'	CPasp	CPi	**(SF)**	**SF**/CPsat	**SF**/VF
'wipe table clean'	CPasp	**SF**	VFdf	**SF**/CPsat	**SF**/VF
'push door open'	CPasp/*CD*	CP*i*	**SF**/VFdf	**SF**/CPsat	**SF**/VF
'pound dough flat'	VF	CP*i*	VFdf	**SF**/CPsat	**SF**/VF
'hammer metal flat'	VF	CP*i*	CD	**SF**/CPsat	**SF**/VF
'rock X to sleep'	CD	CD	**(SF)**	**SF**/CPsat	**SF**

DF - double framing
SF - satellite framing
(SF) - this construction (with prepositional satellite) is not productive in Icelandic
VF - verb framing
VFdf - verb framing "double framing": Icelandic framing verb plus framing particle
CP - compounding (Japanese te-/i-compounds differentiated)
CPasp - Bulgarian perfective aspect (expressed by prefix compounded with verb) used for framing event
CPsat - Dutch satellite expression affixed to verb (see below)
CD - coordination
CDwh - coordination with 'while' conjunction
(deic) - deictic use of Bulgarian aspectual prefix

In coordination, there are two independent clauses, each containing a main verb predicate. This construction type provides the least syntactic integration of the MANNER and RESULT event components. In verb framing and compounding, the MANNER event component is expressed by a form which cannot stand alone, because it is adverbial in form or it always occurs bound to another verb form. This form may be derived from a verb. These constructions provide an intermediate degree of syntactic integration: the adverbial form is not an independent finite main clause, but a subordinate form to the main verb expressing the RESULT event component. In satellite framing and double framing, the main verb encodes the MANNER event component, and the

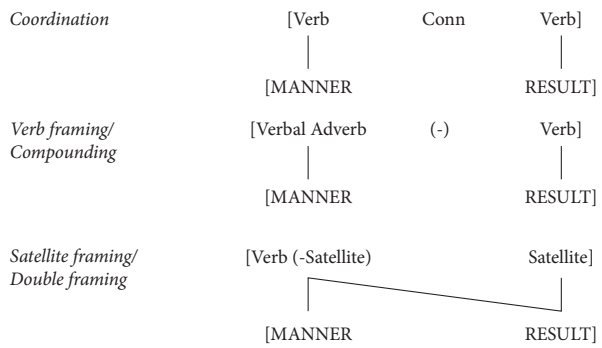

Figure 1. Degree of integration of complex event constructions

RESULT component is expressed by a satellite which is typically a minimally inflected and paradigmatically restricted form, and often syntactically closely associated with the object argument of the main verb (e.g. as an adposition or secondary predicate), or also as an affix on the main verb (in double framing). These constructions are the most highly integrated, in that the satellite is least like a separate clause. The degree of syntactic integration which appears to motivate the implicational scale of event structure constructions in turn results from two grammaticalization processes leading from complex sentence (multi-clausal) constructions to simple sentence (monoclausal) constructions. This scale and grammaticalization process will be discussed further in §5.

As noted above, in order to make the scale of constructions in Table 1 easier to observe, the constructions in the leftmost part of the scale are in boldface in Table 1 and in the scale in (92), and the constructions in the rightmost part of the scale are in italics in both places. It can be observed that with the ranking of situation types for motion situations and change of state situations, for each language, the constructions used for each situation type at the top of Table 1 are higher on the construction scale in (92), and as one goes down the columns of Table 1, situations lower in the column may use constructions lower on the scale in (92); the few exceptions will be discussed below under the conceptual implicational scale.

The data presented in this chapter allows us to induce a parallel implicational scale of conceptual situation types. These conceptual situation types are universal, that is, they are equivalent across the languages compared (for more discussion of the comparability of situation types across languages, see Croft 2001, Chapter 3, and Croft 2003, §1.4). The data are best understood by separating motion situations and non-motion situations, that is, by comparing motion situations to each other and non-motion situations to each other.

The implicational scale of conceptual (semantic) situation types for complex motion events is given in (93) ('roll X into' is not included for reasons given below):

(93) 'run out of' < 'run into' < 'crawl to' < 'float into' < 'run across' < 'follow X out of' < 'dance across'

The evidence for the conceptual scale in (93) can be observed in the Motion half of Table 1: in each language (column), for a given situation type represented by the gloss and the construction type used for it, the situation types above it in the table use a construction as high or higher on the formal scale, and the situation types below it in the table use a construction as low or lower on the formal scale.

Most of the evidence for this scale is based on the intralinguistic variation in Bulgarian and Japanese, since the Germanic languages are largely uniform in their encoding of the complex motion events examined by us. The one anomalous case is 'roll X into'. This is possibly because 'roll X into' is caused motion, not self-agentive motion, unlike the other situation types examined in this chapter. 'Follow X into' is semantically peculiar in that it is self-agentive motion, but relative to another moving entity. It does fit in the conceptual scale along with the other self-agentive motion verbs.

The implicational scale for complex non-motion change of state events is given in (94):

(94) 'paint X red' < 'freeze solid' < 'shoot X dead'?< 'wipe table clean'?< 'push door open' < 'pound dough flat' < 'hammer metal flat'?< 'rock X to sleep'

The evidence for the conceptual scale in (94) can be observed in the Change of State half of Table 1: in each language (column), for a given situation type represented by the gloss and the construction type used for it, the situation types above it in the table use a construction as high or higher on the formal scale, and the situation types below it in the table use a construction as low or lower on the formal scale.

The exact position of 'wipe clean' and 'push open' on the hierarchy is unclear, since the languages rank them differently, although it is clear that they are somewhere in the middle of the hierarchy. The most anomalous situation type is 'rock X to sleep', which largely uses a satellite framing construction in the Germanic languages but a complex sentence construction in the other two languages.

Although the sample is small, both in terms of number of situation types and number of languages, it appears that there is a pattern that roughly forms an implicational scale in the data presented in this chapter. The conceptual scales in (93) and (94) appear to be sensitive to several different factors. The first is that the difference between motion and non-motion change of state events. Motion is distinctive for a number of reasons, in particular that the incremental theme associated with motion events is a path rather than a property or state of the object; and that motion events are 'simple events' in some sense of that term (except for externally caused motion, as in 'roll X into').

A second factor in the case of motion events is the nature of the path. Certain paths appear to be construed as conceptually more common, or at least more commonly conceptualized, than others. The implicational scale in (93) places 'into'/'out of' in more integrated syntactic constructions than 'across', which is in turn higher on the

scale than 'follow' (for 'dance across', see below). 'Into' and 'out of' are paths defined in terms of a simple path relative to the ground, either towards or away from. Such paths are also cross-linguistically more likely to be expressed as a simple directional or adposition than paths defined in terms of a more complex relationship to the ground. 'Across' is an example of the latter: the path describes motion towards, crossing and then away from the ground. Finally, 'follow' differs from the preceding path expressions in that the path is defined with respect to a moving ground object (the thing being followed) rather than a stationary one. Hence complexity of the path's relation to the ground object appears to be a factor accounting for much of the implicational scale in (93).

A third factor that applies to both motion and non-motion events is the typicality or naturalness of the process leading to the result. For example, running into a space is a more typical manner of movement into something than crawling into that space, from the perspective of human beings. Crawling is in turn a more typical manner of movement into a space than floating, for land-dwelling creatures such as human language speakers. Likewise, running across the street is a more typical manner of movement across a street than dancing across the street. This relationship between manners of motion appears to account for the ranking 'run' < 'crawl' < 'float' in (93), where all of these manners of motion result in the same path of motion. It also appears to account for the ranking 'run' < 'dance' for the 'across' path.

In the case of non-motion events, it is not clear to what extent the typicality or naturalness of the manner-result combinations plays a role in the implicational scale. This is probably because the examples that are found in the syntactic literature, at least the ones we have sampled here, are all examples of fairly typical or natural manner-result combinations. As Boas (2003) has clearly shown, these resultative expressions are not nearly as productive as these examples might indicate: many examples that are syntactically and otherwise semantically equivalent are unacceptable. Nevertheless, our cross-linguistic comparison of these natural-sounding English resultative constructions indicates that these situation types can be ranked on an implicational scale; that is, they are not all equal in their linguistic expressibility across languages. The evidence suggests that the situations that are higher in the implicational scale are more typical than those lower on the scale, in that the higher events in the scale are those in which overt expression of the result is considered redundant (if possible at all) in languages such as Bulgarian, and a perfective aspect marker is sufficient to indicate the resulting state from the process. For the situation types lower in the implicational scale in (94), a case can be made that they are less typical or natural: one might normally hammer metal into shapes other than flat; pushing a door open is not the typical manner of opening a door; and rocking a baby to sleep is not the only common way to put a baby to sleep.

Another semantic factor that may be involved concerns the degree of resistance put up by the theme or patient argument to the action described by the predicate. Consider for example the different positions on the scale occupied by 'pound the dough flat' as against 'hammer the metal flat': dough is much easier to shape than metal. The expression

push the door open is usually reserved for cases where the agent has their hands full and needs to use their elbow or shoulder, or for contexts where the door is especially heavy; compare *open the door*, which is the preferred option in more normal situations. Rocking a baby to sleep, finally, is often not easy to do either, and is in fact a method that parents typically resort to when the baby appears to want to stay awake. The lower degree of syntactic integration towards the bottom of the scale may thus reflect a lower degree of semantic integration of the causing event and the result, in that it is increasingly difficult for the agent to establish control over the theme/patient. Concerning the higher positions on the scale in (94), a high degree control is clearly present. When a person with a gun uses it to kill someone else, any resistance is usually easily overcome. In the case of 'paint X red' and 'wipe table clean' the themes are virtually by definition unable to put up any resistance, and in 'freeze solid' the change of state is construed as happening 'from within', i.e. without any external agency which might be resisted. The higher degree of control and relative absence of resistance on this end of the implicational scale in (94) is reflected by the higher degree of syntactic integration (see Hollmann 2004, 2005 and Broccias and Hollmann 2007 for similar suggestions concerning iconic effects of control on the syntax of periphrastic causative constructions).

The non-motion situation types in our examples are much more varied and unique than the motion examples, which are semantically a more coherent set, and where path and manner are independently varied in the example sentences used here. Thus our analysis of the factors influencing the constructional expression of motion events is better supported by the evidence we have offered. Nevertheless, naturalness/typicality, in essentially the same form as we suggest, has been proposed by Washio (1997) to account for the more restricted use of the satellite-framing resultative construction in Japanese in contrast to English. The same factor has been proposed as an explanation for which event types are more likely to have a more basic causative (transitive) or noncausative (intransitive) form by Croft (1990) and Haspelmath (1993), and which event types are likely to occur in a serial verb construction as opposed to a coordinate construction (Bruce 1988; Aikhenvald 2006: 10–11). Further support for the role of naturalness in defining position on the implicational scale is the use of the perfective aspect form in Bulgarian for resultatives with an implied result state (cf. Washio 1997): the resulting state is such a natural outcome of the process that it is not specified apart from perfective aspect (see also Iwata 2006).

These initial observations regarding the conceptual scales are tentative, and should be investigated in more detail, with the employment of more sophisticated analytical techniques such as multidimensional scaling to the larger array of data that will emerge. Nevertheless, the patterns in the data investigated here suggest that the intra-linguistic and cross-linguistic variation conforms to universal constraints on variation, which may be broadly described as: more typical or natural process + result combinations in complex events will be encoded in more highly integrated morpho-syntactic constructions, where degree of morpho-syntactic integration is defined by the constructional scale in (92).

5. Event integration and grammaticalization in the Talmy typological classification

The pattern of formal expression represented by the grammatical hierarchy of the Talmy typological classification in (92) appears to represent a grammaticalization path of morpho-syntactic integration which iconically reflects event integration. In the preceding section, we argued that more typical or natural combinations of event + frame (including manner + path and process + result) are expressed in more highly integrated constructions. In addition, there is some evidence of two grammaticalization paths that ultimately end in univerbation of the event and frame morphemes (V = verb, AV = adverbial verb form, ST = satellite, ev = event, fr = frame):

(95) Coordination > Serialization > Satellite framing > Verb-Satellite fusion
V/ev & V/fr > V/ev V/fr > V/ev ST/fr > V/ev-ST/fr

(96) Coordination > Verb framing > Verb-Adverb fusion
V/ev & V/fr > V/fr AV/ev > V/fr-AV/ev

5.1 From coordination to verb-satellite fusion

The first step in the grammaticalization path in (95) involves coordination > serialization. A serial verb construction is a symmetric strategy for encoding event and frame, illustrated in §2 with Mandarin Chinese and Lahu. A serial verb construction appears to be a more highly integrated type of coordination construction, sharing participants and verbal semantic dimensions (tense, aspect, modality). Serial constructions probably arose via the grammaticalization of asyndetic coordination. However, there are even examples of syndetic serial verb constructions, as in Mooré (Schiller 1990: 38; see Croft 2001: 353), which suggests that the semantic and grammatical integration of serial verb constructions may occur even in syndetic coordination.

A verb in a serial verb construction may become specialized in meaning and syntactic distribution, in which case it can be described as a satellite. For example, the positions of the manner, path and deictic verbs in Mandarin serial verb constructions are fixed. Although the path and deictic morphemes continue to be used as verbs in Mandarin, other serial "verbs" no longer can function as independent predicates, including at least one directional (path) form, *wàng* 'toward' (Li and Thompson 1981: 361, from a verb formerly meaning 'go').

Although we will probably never know whether the familiar directional satellites of Indo-European were originally serial verbs, other satellite forms in Indo-European are historically resultative verbal forms, such as *dead* in *shoot dead*, or stative, such as *solid* in *freeze solid.* There is a grammaticalization process evident in Indo-European languages in which satellites are attracted to the verb, leading to a fused expression of

both event and frame in a single predicate. This was observed above for Bulgarian. As with other Slavic languages, Bulgarian prefixes path morphemes to manner verbs (combined with expression of the path as a preposition governing the ground expression). In addition, the path prefixes are used to encode the framing subevent, so that for example 'freeze solid' and 'wipe clean' do not require further specification of the framing subevent with an independent satellite expression.

In Germanic languages including Dutch, the so-called separable prefix constructions represent an intermediate stage in the grammaticalization process. English on the other hand consistently expresses the satellite as a separate element. In Dutch, the path morpheme is a classic satellite in the simple past or present of a main clause without an auxiliary, as in (97):

(97) De fles dreef de grot **in**.
the bottle floated the cave **in**
'The bottle floated into the cave.'

Contrast ?**De fles dreef in de grot*, with the satellite functioning as a preposition: it is very awkward with this interpretation, and is almost completely restricted to location (i.e., the bottle was floating around in the cave; the word order *in de grot* is presumably the original one, and the difference between caused-motion and location was generally expressed with dative vs. accusative with motion verbs in the Indo-European languages, cf. Barðdal 2001: 151).

In all other grammatical contexts – with an auxiliary (98–99), and in balanced or deranked subordinate clause constructions (100–101) – the path expression is prefixed to the manner verb:

(98) De fles is de grot **in- gedreven.**
the bottle is the cave **in- floated**
'The bottle has floated into the cave.'

(99) De fles zal waarschijnlijk zo de grot **in- drijven.**
the bottle will probably soon the cave **in- float:**INF
'The bottle will probably float into the cave soon.'

(100) Ik zag hoe de fles de grot **in- dreef.**
I saw how the bottle the cave **in- floated**
'I saw how the bottle floated into the cave.'

(101) De grot **in- drijvend** verdween de fles uit het zicht.
the cave **in- floating** disappeared the bottle out the sight
'Floating into the cave the bottle disappeared out of sight.'

The same grammatical behavior is found with resultative constructions (i.e., non-motion framing events):

(102) Ze schoten hem **dood**.
they shot him **dead**
'They shot him to death/dead.'

(103) Ze hebben hem **dood-geschoten.**
they have him **dead-shot**
'They have shot him to death.'

(104) Ze willen hem **dood-schieten**.
they will him **dead-shoot**:INF
'They want to shoot him to death.'

(105) Ik zag hoe ze hem vervolgens **dood-schoten**.
I saw how they him then **dead-shot**
'I saw how they then shot him to death.'

Other examples of non-motion resultative constructions that behave in the same way are given in (106):

(106)

schoon-vegen	'wipe clean'
plat-slaan	'pound flat'
kapot-vriezen	'freeze broken' (e.g. a pipe line)
glad-wrijven	'rub smooth'
vast-nieten	'staple attached/fixed'
vol-stouwen	'squeeze full' (as with a suitcase or the trunk of a car)
bloot-woelen	'toss naked' (as when people who toss a lot in their sleep may end up without any blanket)

There is one event + frame construction that is always fused, even in the simple past or present:

(107) Zij **vieren-** **-delen** hem.
they **four.parts-** **-divide** him
'They quartered him.' [medieval execution technique]

However, this is the lone example in *Het Elektronische Groene Boekje* (2006), and the phenomenon described here may represent a grammaticalization process going from satellite framing constructions to verb-satellite fused constructions in an earlier stage of Dutch that later halted.

5.2 From coordination to verbal compounding

The other grammaticalization process leads via verb framing constructions to verbal compound constructions. Japanese appears to be an example of a language in which coordination leads directly to compounding, that is, there is no intermediate stage at which the manner or process subevent is expressed by an adverbial verb form as in the classic verb framing examples from Spanish illustrated in (8) and (14)–(16) in §1. This is perhaps because Japanese employs a deranking construction for coordination: the first clause(s) in a coordination construction are expressed in a special form (this is common for coordination constructions in verb-final languages). As noted in §3.4, some events are apparently not sufficiently conceptually integrated to be expressed by anything other than a coordinate construction using the *-te* verb form:

(108) akanbo o yusut **-te** nemur -ase -ru
baby ACC rock **-and** sleep -CAUS -INF
'rock a baby to sleep' [*te* coordination]

In the case of typical manner + path events, a more grammaticalized version of the *te* coordination construction, the *te*-compound construction, indicates a higher degree of conceptual integration of the event, as indicated by the verb + satellite translation in English for (109b):

(109) a. Kanojo wa arui **-te** douro o yokogitta.
she TOP walk **-and** street ACC cross:PST
'She walked and crossed the street.' [*te* coordination]

b. Kanojo wa douro o aruit**e**- -yokogitta.
she TOP street ACC walk- -cross:PST
'She walked across the street.' [*te*-compound]

Another compound construction, the *i*-compound, appears to encode events that are at least as conceptually integrated as the *te*-compound. In Examples (110)–(112), the *i*-compound and *te*-compound constructions are compared to the *te* coordination construction. The natural English translations of the (a) and (b) sentences indicate the difference in conceptual integration of the two events in the different constructions:

(110) a. Chichi wa shorui o mot **-te** ie ni kaetta.
father TOP document ACC have **-and** house to return: PST
'Having the document with him, Father came back home.' [*te* coordination]

b. Chichi wa shorui o ie ni **mochi- kaetta.**
father TOP document ACC house to **have- -return**:PST
'Father brought the document home.' [*i*-compound]

(111) a. Watashi wa hana o kat **-te** yuujintaku ni itta.
I TOP flower ACC buy **-and** friend.house to go: PST
'Having bought flowers, I went to my friend's house.' [*te* coordination]

b. Watashi wa yuujintaku ni hana o **katte- -itta.**
I TOP friend.house to flower ACC **buy- -go**:PST
'I bought flowers for my friend's house.' [*te*-compound]

(112) a. Watashitachi wa non **-de** sono ichiya o akashita.
we TOP drink **-and** that night ACC spend:PST
'We drank and spent the night.' [*te* coordination]

b. Watashitachi wa sono ichiya o **nomi- -akashita.**
we TOP that night ACC **drink- -spend**:PST
'We drank that night away.' [*i*-compound]

In some cases, the two verbs in the compound construction rarely if ever occur independently. For example, 'run out' is expressed by the *i*-compound *hashiri-deru* (run-exit), but one cannot express 'run into' by **hashiri-hairu* (run-enter). Instead, one must either use the *te*-compound *hashitte-hairu* or more commonly a compound construction using two entirely different lexemes, *kake-komu*:

(113) Watashi wa ie ni **kake- -konda**.
I TOP house to **run- -go.into**:PST
'I ran into the house.' [*i*-compound]

However, *kakeru* almost never occurs alone, and *komu* never occurs alone. This fact represents a further step in the grammaticalization path towards univerbation of the manner + path motion conceptualization.

An example of grammaticalization from what appears to be some sort of adverbial manner to compounding is found in Nez Perce. Talmy discusses a Nez Perce example as a manner satellite fused onto a verb (Talmy 1985:110):

(114) /hi- **quqú.- láhsa** -e / (= hiqqoláhsaya)
3SG- **galloping- go.up** -PST
'He galloped uphill.'

The manner of motion forms are described by Aoki (1970: 84) as adverbial prefixes, which do not occur as independent verbs. Aoki lists 167 adverbial prefixes, many of which are probably not verbal in origin (e.g. *him* 'with mouth', *sepé:* 'wind, air'). While examples like (114) are clearly examples of a manner form compounded with a verbal path, one can express manner of motion without a path by using a general verb of locomotion (Aoki 1970: 87):

(115) **/wîlé:- ke?y** -k -se /(= wilé:ke?ykse)
running- move -? -PRS.IND:SG
'I am running.'

In other words, although manner of motion is not expressed by a verbal predication in Nez Perce, one can express manner of motion by compounding the manner of motion adverb form with a semantically highly general locomotion verb. That is, all motion expressions are expressed in a single lexical predicate form.

6. Conclusions

In this chapter, we have argued that Talmy's typology of complex event constructions should be expanded. It should include three symmetrical construction types – coordination, serialization and compounding – only one of which (serialization) has been previously discussed in the literature on the Talmy typology. It should also include the double framing construction type represented by Bulgarian and Icelandic in the languages investigated here.

More important, the Talmy typology is not a typology of how a language encodes complex events in general, but rather a typology of how particular complex event types are encoded by different constructions in a language. Languages make use of multiple strategies to encode complex events, depending on the type of complex event involved. This follows the more general trend in typological research away from typologizing languages as a whole – which usually leads to declaring that all languages are a "mixed" type – to typologizing particular situation types expressed in a language.

The value of refining the typological classification is that there are patterns in the complex event types encoded by different constructional types in Talmy's typological classification. One can define a morpho-syntactic scale of the different constructions in the Talmy classification; the morpho-syntactic scale is paralleled by a semantic or conceptual scale of how typically or naturally the subevents of the complex event go together. Finally, there is evidence that the different types in the Talmy classification can be placed into two more or less parallel grammaticalization paths that end with the univerbation of the event and frame expressions in a single morphologically bound predicate form.

The sort of constructional analysis presented in this chapter has important consequences for construction grammar, and also for typological theory. Construction grammar and typological theory have a basic starting point in common: pairings of form and meaning, including the pairing of complex morpho-syntactic structures with complex semantic situation types. This starting point represents something that emerges from the careful analysis of language-internal data in construction grammar, and from methodological necessity in dealing with cross-linguistic diversity in typology. Typology brings in a word of caution for construction grammar, namely that the detailed analysis of a range of examples in one language may not, in fact usually does not, carry over into another language. As we have seen, the constructions used for complex event types vary even in a sample biased towards Germanic languages and European languages. Construction grammar can benefit from the theoretical tools developed in typology to handle cross-linguistic variation. In our study, implicational scales inductively derived from cross-linguistic data provide universals that constrain language variation in the pairing of form and meaning in complex event constructions. The employment of these typological tools is essential as construction grammar expands to encompass contrastive construction grammar, exactly like typology can benefit from construction grammar (cf. Barðdal, Kristoffersen and Sveen, to appear).

Abbreviations

1,2,3	1st, 2nd, 3rd person	INF	infinitive
ACC	accusative	NOM	nominative
AOR	aorist	NR	nominalizer
CAUS	causative	PF	perfective
DAT	dative	PRED	predicate marker
DS	different subject	PRS	present
GEN	genitive	PST	past
IMP	imperative	SG	singular
IMPF	imperfective	SMLF	semelfactive
IMPRF	imperfect	SS	same subject
IND	indicative	TOP	topic

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