Revising Talmy's typological classification of complex events

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1. Introduction

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

Talmy's typological classification of complex events 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 parallel with the research of others. This is our first revision of Talmy's typological classification (a brief outline is found in Croft 2003:220-24):

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

A second feature of Talmy's typological classification must also be critically reexamined, and this point has rarely been made in the literature on his classification. Talmy's classification has generally been taken as a typological classification of languages: that is, languages encode different complex events consistently with the same morphosyntactic 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 of certain widely cited examples in the resultatives literature in Icelandic, Dutch, Bulgarian and Japanese. We demonstrate that all of these languages use more than one of Talmy's types to encode complex events. 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. Finally, we argue that the revised version of

Talmy's typology of complex events represents stages in two parallel grammaticalization paths leading to the univerbation of commonly occurrring or "natural" complex events.

1.1. Motion events: manner-incorporating and path-incorporating

Talmy's original typological classification was applied only to motion verbs (Talmy 1972, 1974, 1985). Talmy developed an analysis of motion events with four basic semantic components:

> **Figure**: the entity that is moving or located
> **Ground**: the entity which acts as a spatial reference point for the motion/location of the figure
> **Path**: the path of motion of the figure
> **Manner**: the manner of motion by which the figure moves along the path

Talmy compared the coding 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 in his terms incorporated, 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:

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

In (3)-(6), 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).

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):

(7)

Entró	*corriendo*	a	la	cueva
enter.3SG.PST	*running*	to	the	cave

'He ran into the cave.'

In (7), the path is expressed by the main verb (in boldface), while the manner is expressed optionally in a participial, i.e. not main verb, form (in italics). 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):

(8) '- 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.'

1.2. Complex events: satellite framing and verb framing

In more recent publications, Talmy has broadened his original classification to include 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. 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. In addition to the motion examples given above, the resultative examples in (9)-(12) show that English is a satellite framing language according to Talmy:

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

Conversely, Spanish is a verb framing language. The motion event example in (7) uses a path as the framing subevent, expressed in the verb. The examples describing events with resulting states in (13)-(15) also show that Spanish is a verb framing language according to Talmy (Talmy 2000:240, 243, 247—compare the satellite framing English translations):

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

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

(15) 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 morphosyntactic element is the framing semantic component expressed by, the verb or a satellite?

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, to appear). 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 crosslinguistically comparable, in that they employ language-specific constructions.

The solution to this problem is to employ the same criteria, and hence crosslinguistically valid criteria, to define categories across languages. As Croft has argued, this means two things. First, crosslinguistically valid criteria are ultimately based in function, or more precisely, in function and how that function is expressed in morphosyntactic 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 crosslinguistically valid criteria.

In the case of Talmy's definition, we will thus define a morphosyntactic element as a 'verb root' if it can occur as a predicate on its own with the same meaning. Thus, English

path particles and resultative expressions are satellites because they cannot occur as predicates on their own:

(16) *The bottle *into* the cave.
(17) *The barn *red*.
(18) *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:

(19) *La botella *flotando*
the bottle *floating*

This criterion 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)

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

Lahu (Matisoff 1969:82, 70)

(21) 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.

This fact has also been observed by others, including Talmy himself, and a third, serial strategy has been added to the existing two, as proposed in the original presentation of this work in 2002 (see also Zlatev and Yangklang 2004; Bohnemeyer et al. 2007:509). But the serial strategy is not the only symmetric strategy. 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 1984:178):

(22) ɔ:pàl sép **cándé -ạ̀:** nɔ̀ pàhi̱: bà-th:ídáy
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):

(23) 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)

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

Russian (Talmy 1985:105)

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

Bohnemeyer et al. 2007 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 should be elaborated as follows:

(26) a. Verb framing
b. Symmetrical
(i) Coordinate
(ii) Serial
(iii) Compounding
c. Satellite framing
d. Double framing

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 crosslinguistic comparison, the constructions we use for comparison are what we are really comparing across languages, not abstract linguistic categories. However, Bohnemeyer et al.'s 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. So the result of 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.

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. therefore describe the crosslinguistic 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 (true of all languages). The strength of typological theory from Greenberg (1966) onward is that it

reveals language universals which are constraints on crosslinguistic variation, which nevertheless do not entail that all languages are identical in the relevant property. The crosslinguistic 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 crosslinguistic 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 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 intralinguistic 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 crosslinguistic universals by examining the intralinguistic 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 (24)):

(27)

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 morphosyntactic form. This is exactly the same as in the typology of other domains of grammar (Croft 2003).

In this section, we will illustrate the intralinguistic and crosslinguistic 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 (28) appear to confirm this fact:

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

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

(29) 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 often left out.

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

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

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

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

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

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

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

(35) a. The pond froze **solid**.
b. *The pond solidifed (by freezing).

Thus, non-motion complex events in English can be expressed by either satellite framed or verb framed constructions; but not all non-motion complex events can be expressed by verb 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:

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

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

(38) 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, to appear):

(39)
Flaskan flaut **inn** **í** hellinn
bottle:the.NOM floated **inside** **in** cave:ACC.the
'The bottle floated into the cave.'

(40)
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.'

(41)
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*:

(42)
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:

(43)
Ég **fór** dansandi **yfir** götuna
I.NOM **went** dancing **across** street:the.ACC
'I went dancing across the street.'

According to Talmy's newer typological classification, this is also a satellite framing construction. But 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 the change in the formulation of the typology prevents even the expanded typology in §2 from capturing the distinction between the constructions in (42) and (43). For us, the salient point about this construction is that it involves two verbal forms, a main verb ('went') and an adverbial verb form for the manner ('dancing').

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

(44)
Tjörnin fraus **í** **gegn**
pond:the.NOM froze **in** **through**
'The pond froze solid.'

(45)
Ég málaði hlöðuna **rauða**
I.NOM painted barn:the.ACC **red.**ACC
'I painted the barn red.'

(46)
Þeir lömdu hann **til** **óbóta**
they.NOM hit him.ACC **to** **incurability**
'They beat him senseless.'

(47)
Ég ruggaði barninu **í** **svefn**
I.NOM rolled baby:the.DAT **in** **sleep**.ACC
'I rocked the baby to sleep.'

However, examples (44)-(47) do not represent productive patterns. Instead, for most non-motion complex events, a verb framing construction is used:

(48) 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.'

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

b. Ég ýtti á dyrnar
I.NOM pushed on door:ACC
'I pushed (on) the door.'

c. Ég **opnaði** dymar 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.'

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

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

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

(52) 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:

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

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

More common is double framing, as in the Russian example (25) above:

(55) Ptičkata **ot**- letja **ot** gnezdoto
bird:the **out**- fly:PERF.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:

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

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

For many non-motion 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 (58a) and (58b) to the Spanish telic and atelic path constructions):

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

b. Toj pŭlzeše **kŭm** vratata
he crawl:IMPF **towards** door:the
'He crawled 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:

(59) 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.IMPF table:the five mintues but still is dirty
'I wiped the table for five minutes but it is still dirty.'

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

(61) 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 (59a), (60) and (61). 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.

Nevertheless, many of the situation types described in the sections on English and Icelandic are expressed in 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 (62), in the perfective of course because the complex event is telic:

(62)
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 (63), and natural ways to express flattening are in (64)-(65):

(63)
presjakox ulitsata na begom
across.PF:cut:AOR.1SG street:the on running
'I crossed the street running.'

(64)
Tja **spleska** željazoto s čuk
she **flatten**:PF.AOR iron:the with hammer
'She hammered the metal flat.'

(65)
Tja raz- **toči** testoto
she PF- **press.dough.flat**:AOR dough:the
'She pounded the dough flat.'

As with Icelandic however, and even more so, 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:

(66)
te sledvaha zvezda -ta **i** izljazoha ot vitleem
they followed star -the **and** went.out out.of Bethlehem
'They followed the star out of Bethlehem.'

Probably the most natural way of saying *I danced across the street* is (67):

(67)
tancuvax **dokato** presičax ulicata
dance:IMPF.AOR **while** across:cut:IMPF.IMPERF.1SG street:the
'I danced while I was crossing the street.'

A fairly natural way to say *I pushed the door open* is (68):

(68) 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 (68) can be understood as conveying that I opened the door.

Finally, the most natural way to say *She rocked the baby to sleep* is (69):

(69) tja ljulja bebe -to **i** go prispa
she rocked baby -the **and** it send.to.sleep
'She rocked the baby to sleep.'

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:

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

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

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

(73) 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 (74a-b), with a telic directed motion event:

(74) 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 (74a) is more pervasive and more natural than the *te*-compound construction in (74b); see §5 for further discussion. However, either compound can be a natural translation equivalent of *The bottle floated into the cave*:

(75) a. bin ga doukutsu no naka ni **nagarete- -itta**
bottle NOM cave GEN inside to **flow- -go**:PST
'The bottle flowed to the inside of the cave.' (*te*-compound)

b. bin ga doukutsu ni **nagare- -tsuita**
bottle NOM cave to **flow- -get.to**:PST
'The bottle flowed and reached the cave.' (*i*-compound)

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

(76) 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.'

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

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

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

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

Further examples of Japanese *i*-compounds are given in (81) (examples from Matsumoto 1996):

(81)	*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 resultative *I ran myself tired*).

Nevertheless, there are a number of complex events that must be expressed in Japanese by the less grammaticalized symmetric strategy of coordination. These include the caused motion event in (82) and the following motion event in (83), as well as the non-motion event in (84):

(82) 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.'

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

(84) 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 (85)-(86) also require two clauses, although they could be analyzed as verb framing. However, coordination with the *-te* form is impossible in these cases.

(85) 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].'

(86) 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].'

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

Table 1 summarizes the intralinguistic and crosslinguistic variation we have described in §3 (for the Dutch data, which is unusually uniform, see §5):

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

	Bulgarian	Japanese	Icelandic	Dutch	English
MOTION					
'run out of'	**DF**	CP*i*/*te*	**SF**	**SF**/CPsat	**SF**
'run into'	**SF (deic)**	CP*i*/*te*	**SF**	**SF**/CPsat	**SF**
'crawl to'	**SF (deic)**	CP*te*	**SF**	**SF**/CPsat	**SF**
'float into'	VF	CP*te*/*i*	**SF**	**SF**/CPsat	**SF**
'run across'	VF	*CDte*/CP*te*	**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	CP*i*	**(SF)**	**SF**/CPsat	**SF**/VF
'wipe table clean'	CPasp	**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
'push door open'	*CD*(?)	CP*i*	VFdf	**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

The data in Table 1 allows us to propose some tentative implicational universal scales for the constructions used for complex events (that is, the expanded Talmy typological classification) and for the situation types they represent. It is largely possible to place the motion situations and (separately) the non-motion telic change of state situations in parallel formal and semantic scales such that the constructions used in a particular language conform to a parallel scale of construction types.

The constructions in the expanded Talmy typological classification appear to be best understood as forming a scale of possibilities beginning with satellite framing, moving to compounding and verb framing, and finally to biclausal (coordinate or 'while' complex sentences), as in (87):

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

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 (87), 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 (87), and as one goes down the columns of Table 1, situations lower in the column may use constructions lower on the scale in (87) with few exceptions.

The syntactic scale/space encodes degree of integration or cohesiveness of the complex event, from more to less integrated. This scale will be discussed further in §5.

The ranking of the constructions allows us to simultaneously induce a ranking of the situation types. The data are best understood by comparing motion situations to each other and non-motion situations to each other. The conceptual (semantic) scale for complex motion events is given in (88):

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

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 others. '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 conceptual scale for complex non-motion change of state events is given in (89):

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

For 'wipe clean' and 'shoot dead', Japanese suggests one order, Icelandic the opposite, so it may be that there is no universal ranking of these situation types, although data from other languages might show otherwise overall. Likewise, for 'hammer metal flat' and 'push door open', Bulgarian suggests one order and Icelandic the opposite, so we have treated them as a single point on the scale. The most anomalous situation type is 'rock X to sleep', which largely uses a satellite framing construction in the Germanic languages but a biclausal construction in the other two languages.

Although the sample is small, both in terms of number of situation types and number of languages, the results are suggestive. The conceptual scales in (88) and (89) appear to be sensitive to the factors in (90):

(90) a. type of event: motion (self- or externally-caused) vs. change of state (many types)
b. typicality/naturalness of the path: in/out vs. across vs. following
c. typicality/naturalness of the process leading to the result: run into vs. float into; run across the street vs. dance across the street vs. talk one's way across the street
d. typicality/naturalness of the resulting outcome: push door open, kill him dead, etc.

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 intralinguistic and crosslinguistic 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 morphosyntactic constructions, where degree of morphosyntactic integration is defined by the constructional scale in (87).

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 (87) appears to represent a grammaticalization path of morphosyntactic 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):

(91)	Coordination	>	Serialization	>	Satellite framing	>	Satellite compounding
	V/ev & V/fr	>	V/ev V/fr	>	V/ev ST/fr	>	V/ev-ST/fr

(92)	Coordination	>	Verb framing	>	Verb-Adverb compounding
	V/ev & V/fr	>	V/fr AV/ev	>	V/fr-AV/ev

5.1. From coordination to satellite framing compounding

The first step in the grammaticalization path in (91) involves coordination > serialization. Serialization is a symmetric strategy for encoding event and frame, illustrated in §2 with Mandarin Chinese and Lahu. Serialization 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').

It is of course lost to history whether the familiar directional satellites of Indo-European were originally serial verbs, though it is a plausible hypothesis. Other satellite forms 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 compounded 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 prefixes represent an intermediate stage in the grammaticalization process. (English 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 (93):

(93) 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 (94-95), and in balanced or deranked subordinate clauses (96-97)—the path expression is prefixed to the manner verb:

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

(95) 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.'

(96) 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.'

(97) 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 expressions (i.e., non-motion framing events):

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

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

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

(101) 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 expressions that behave in the same way are given in (102):

(102) *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 expression of an event + frame expression that is always compounded, even in the simple past or present:

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

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

5.2. From coordination to verb-framing compounding

The other grammaticalization process leads via verb framing to compounding. 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 (7) and (13-(15) 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 in verb-final languages). As noted in §3.4, some events are not sufficiently conceptually integrated to be expressed by anything other than a coordinate construction using the *-te* verb form:

(104) 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 (105b):

(105) 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 arui**te-** -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 (106)-(108), the *i*-compound and *te*-compound is compared to *te* coordination. The natural English translations of the (a) and (b) sentences indicate the difference in conceptual integration of the two events in the different constructions:

(106) 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]

(107) 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]

(108) a. Watashitachi wa non -**de** sono ichiya o akashi-ta.
we TOP drink -**and** that night ACC spend:PST
'We drank and spent that 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 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 form using two entirely different lexemes, *kake-komu*:

(109) 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):

(110) /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 (110) 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):

(111) **/wîlé:-** **ke?y** -k -se / (= wilé:ke?ykse)
running- **mov**e -? -PRES.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 the Talmy typology of encoding complex events should be expanded. It should include three symmetrical 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 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 a language. Languages make use of multiple strategies to encode complex events, depending of 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 morphosyntactic scale of the different constructions in the Talmy classification; the morphosyntactic scale corresponds to a semantic 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.

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