Lexicalization patterns

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September 2015

Across languages, clauses containing descriptions of similar events are likely to include the same conceptual components, but these may be distributed differently across the constituents of the clause. Compare, for instance, the English description of a directed motion event in (1a) to its most natural French translation (1b). Both these sentences contain linguistic units expressing the conceptual components of path and manner, but in the French sentence the path of motion is expressed in the verb (*revînmes* 'returned'), while in the English sentence it is expressed in a particle (*back*). In contrast, the reverse holds for the manner of motion: it is expressed in the verb in English (*jog*) and in a PP in French (*au petit trot* 'at a jog').[1]

(1) a. We jogged back in the short winter twilight.

b. Nous revînmes au petit trot dans le court crépuscule d'hiver.
we returned at.the jog in the short twilight of.winter
'We came back at a jog in the short winter twilight.'

(Vinay and Darbelnet 1958:106)

Such differences between English and French are found consistently in descriptions of directed motion events. They are reflected in the way that an English speaker and a French speaker choose to relate the same scene in a picture book (Slobin 2004).

(2) a. An owl flew out of the hole in the tree. (Slobin 2000:111, (4a))

b. D'un trou de l'arbre sort un hibou.
of.a hole of the.tree exits an owl
'An owl came out of a hole in the tree.' (Slobin 2004:224, (4))

These general differences in the way conceptual components are expressed in the constituents of a clause give rise to distinct constructions, with the result that languages can differ systematically in the kinds of constructions used for descriptions of particular event types. Such systematic differences between French and English are apparent not only in the descriptions of motion events; similar systematic differences extend to the constructions French and English employ to describe change of state events. Compare English (3a) to its French counterpart (3b).

[1]Glosses of non-English examples are sometimes slightly modified from the original sources to clarify additional, relevant detail or to make them consistent with other examples. In those instances where glosses were lacking, they have been added.

(3) a. I kicked the door open.

b. J'ai ouvert la porte d'un coup de pied.
I opened the door of.a blow of foot
'I opened the door with a kick.'

Just as in the directed motion event description, the conceptual components expressed inside the verb in English are expressed outside the verb in French (the kicking in (3)), while those expressed outside the verb in English are expressed inside the verb in French (the opening in (3)). There appears to be a generalization which cuts across these two types of event description: the languages reverse the semantic content expressed inside and outside the verb. This phenomenon has been recognized in the translation stylistics literature, where it is known by the technical French term *chassé-croisé*, roughly 'coming and going' or 'crisscross'; see Vinay and Darbelnet (1958:105–107).

English and French, then, may be said to use distinct "lexicalization patterns". The term "lexicalization" is used here to refer to the encoding of conceptual components in a lexical unit, whether a word or a morpheme,[2] and the term "lexicalization pattern" refers to regularities in the way such components are encoded in lexical items and hence distributed across the constituents of the clause in particular languages. Since most work on lexicalization patterns deals with the conceptual components of event descriptions,[3] the basic research question we address concerns the options that are attested across languages for distributing the semantic components of various types of event descriptions across the constituents of a clause, with a special focus on the verb. This question itself is built on several assumptions. First, it presupposes that languages analyze parallel happenings in the world using similar types of conceptual components. This assumption is implicit in most current theories of event structure, which assume that event structures fall into a limited set of types, built from a limited inventory of components; see, for instance, Levin and Rappaport Hovav (2011) and Ramchand (this volume). Second, it also presupposes that languages differ only in the way these components are distributed across morphosyntactic constituents, as in the English and French examples (1)–(3).[4] A further assumption is that such crosslinguistic variation is constrained, so that it is possible to formulate a typology of languages with respect to the

[2]We consider only the synchronic dimension of lexicalization. For an overview of its diachronic dimension see Brinton and Traugott (2005).

[3]Patterns in the lexicalization of non-event related conceptual categories have received less attention. Lehmann (1990) presents case studies that demonstrate the divergent choices that languages make in the lexical category chosen to express such conceptual categories. The literature on languages without a productive adjective class is ultimately about the lexicalization of property concepts and the repercussions of various lexicalization choices; see Koontz-Garboden (2005, 2007) and Koontz-Garboden and Francez (2010). Nichols (2008) proposes that Zuni only lexicalizes natural kind and not artifact concepts as monomorphemic nouns, while Herslund and colleagues (Baron and Herslund 2005, Korzen 2005) posit a complementarity in the specificity of the conceptual notions lexicalized by the verbs and the nouns of a language; see also note 22.

[4]This assumption is often said to be challenged by the work of Sapir and Whorf on linguistic relativity, with some researchers attributing to this work the claim that languages conceptualize the same types of happenings in the world very differently. Crosslinguistic differences in lexicalization patterns could provide a fruitful testing ground for this claim, as pursued in work that explores a form of linguistic relativity known as "thinking for speaking" (Slobin 1987, 1991, 1996a, 2000). Most often lexicalization patterns are used to investigate a different facet of linguistic relativity: given that languages do distribute the conceptual constituents of motion events differently across lexical categories, do these differences correlate with differential performance on other

available lexicalization options. The study of the relation between conceptual components and event structure representations can deepen understanding of event structure as it can help us refine our understanding of the nature of event structure itself (see also Ramchand this volume) and it bears on how similar languages are with respect to the event structures they have available.

Data such as (1)–(3) suggest that certain properties of languages cluster together: that is, the fact that English and French make different choices about what to lexicalize in their verbs in descriptions of events of two types suggests that there may be a single account for both. In section 1, we review studies which seek to identify these interdependencies in the descriptions of event types in languages, starting with Leonard Talmy's seminal work. The observed patterns are often said to give rise to a two- or three-way language typology. However, further studies show that classifying languages according to a two- or three-way typology does not do justice to the empirical generalizations which emerge from a closer scrutiny of the linguistic landscape. Such observations suggest that instead of inventorying the attested language types, the research goal should be to determine the grammatical factors which give rise to the patterns attested in each language. Once the appropriate grammatical factors are identified, the most frequently encountered clusters of properties—and even the deviations from them—should be able to be tied back to these factors. In the current literature, attested lexicalization patterns are attributed to: (i) properties of a language's lexical items and generalizations concerning the structure of its lexicon and (ii) parametric differences among languages manifested in grammatical mechanisms available to some but not all languages. In section 2 we present three approaches to the grammatical factors responsible for observed lexicalization patterns. The approaches presented in sections 2.1 and 2.2 make critical use of specific grammatical operations, which are claimed to be available only to some languages, while the third approach, reviewed in section 2.3, takes lexicalization patterns to emerge from the properties of the lexical items available to each language. A comprehensive account of the complex array of attested lexicalization patterns is likely to require an understanding of the interaction between both types of factors. Section 3 considers a constraint on the events that can be named by monomorphemic verbs in the context of lexicalization patterns. Finally, section 4 offers a brief conclusion.

1 Patterns in event descriptions: Directed motion and beyond

Leonard Talmy is probably the first to suggest that there are generalizations about the ways in which conceptual categories are lexicalized by the words or morphemes of a language and that there are systematic differences among languages in terms of the options they typically employ, differences which give rise to divergent construction types. In his earliest work (1972, 1973, 1975, 1985), Talmy focuses on which conceptual components are lexicalized —or in Talmy's terms "conflated"—in the verb, where this choice determines facets of the construction used for the description of the event type. Although a language may have

cognitive tasks? There is mixed evidence and continuing debate about the answer to this question (e.g., Feist 2010, Finkbeiner et al. 2002, Gennari et al. 2002, Naigles and Terrazas 1998, Papafragou et al. 2002).

several constructions to describe a particular event type, Talmy notes that languages may strongly prefer to use one of them. Consequently, languages fall into types according to the constructions they typically use for the description of particular event types.[5] In later work (Talmy 1991, 2000), the question is formulated more broadly: the core conceptual components of a particular event type are identified and the question is formulated as which morphosyntactic constituents can be used to express the individual conceptual components in different languages; see Croft et al. (2010:202–205) and Matsumoto (2003:403–407) on this shift in perspective.

Talmy first makes these points using directed motion events, and the directed motion domain remains the most thoroughly explored. Talmy proposes that languages fall into two major types with respect to their directed motion event descriptions, and this typology has drawn the attention of many researchers, inspiring considerable further work on a range of languages, much of it receiving further impetus from explorations of the repercussion of this typology for narrative style and cognition by Slobin (1987, 1991, 1996a, 1996b, 2000, 2004, 2006) and colleagues. In section 1.1 we introduce the lexicalization choices in the domain of directed motion events, in section 1.2, we introduce the typology of languages that emerges from it, and then in section 1.3, we discuss problems confronting the generalizations underlying the typology.

1.1 The description of directed motion events: The basics

The conceptual components of directed motion events that Talmy identifies are the fact of motion itself, the moving entity, the path of motion, a reference object with respect to which the moving entity's path is described, the manner of motion, and the cause of motion. Talmy calls the moving entity the figure and the reference object the ground, adopting terms from Gestalt psychology. The figure corresponds to what is called a theme in localist and related approaches (Gruber 1965, 1976, Jackendoff 1976, 1983). The ground is not truly an independent component of a directed motion event since it is required in the definition of the path itself, though it may be expressed independently as a lexical unit in the sentence: the path that the figure traverses in a directed motion event is defined with respect to the ground. For instance, in both *Tracy ran into the room* and *The cat jumped out of the basket*, the path is built compositionally from the ground and the preposition: Tracy traverses a path which ends somewhere in the room and the cat traverses a path which begins in the basket and ends outside of it. The ground may be left unexpressed as in *I opened the closet door, and the cat jumped out*, but in such instances it is inferrable from context. The moving entity and the path are the required components the defining components - of a directed motion event description.

Although the verb in a directed motion event description could simply lexicalize the

[5]The differences between the Romance and Germanic languages that have motivated their assignment to distinct lexicalization types according to Talmy's typology have been previously recognized, for instance, in Bergh (1940, 1948), Sapir and Swadesh (1932:21–22), and Tesnière (1965:309-310), as well as in the literature on translation stylistics (Malblanc 1968, Vinay and Darbelnet 1958). However, it is Talmy who interprets these differences as a reflex of distinct lexicalization patterns and, thus, as reflective of a language's type.

fact of motion, as the verb *move* does, with the other components of the event being expressed outside the verb (e.g., *The spy moved stealthily into the courtyard*), most often the verb lexicalizes additional content. Among the possibilities are the path, figure, manner, and cause.[6] We do not distinguish between lexicalization of manner and cause. The lexicalization of cause as in *Sandy blew the napkin off the table* is essentially just a manner in a causing subevent, and such lexicalization is generally allowed when a language allows manner verbs in non-causative directed motion event descriptions. Thus, there are three possibilities for lexicalization (assuming that a verb only lexicalizes one other meaning component; see section 3): the verb can lexicalize the path (e.g., English *enter*, *descend*)[7], the manner (e.g., English *run*, *swim*), or the figure (e.g., English *rain*). Our focus is on the first two types of lexicalization since the figure-in-the-verb option rarely seems attested as a major lexicalization type.[8] Each of these two options anchors a distinct construction type which can be used to describe a directed motion event.

The conceptual component which is lexicalized in the verb can be identified by determining which facet of the event the verb restricts. The verb *move* can be used to describe the motion of any kind of figure along any kind of path in any kind of manner. Once a verb lexicalizes another conceptual component, the events that it can describe are accordingly restricted. If the verb lexicalizes the path, it imposes restrictions on the path of motion that can be described by the construction the verb is used in. In such instances, the manner of motion may be expressed outside the verb in a PP or adverbial phrase, but may also be omitted since the verb itself does not require its expression. The English sentences in (4) share the same path verb; concomitantly, they restrict the kinds of path they can describe in the same way: sentences with the verb *enter* must describe a path that ends in some (contextually specified) space. They are, however, compatible with different manners: in one instance running and the other walking.

(4) a. Kelly entered running.
b. Kelly entered walking.

The sentences in (5) differ in their path verbs; concomitantly, the paths described must be different, but the verbs are compatible with the same adverbial phrase, so the motion along these distinct paths can nevertheless be in the same manner.

(5) a. Kelly entered running.
b. Kelly left running.

[6] From now on we ignore the fact of motion, as is done in most of the literature.

[7] As pointed out in Rappaport Hovav (2014), often a verb does not fully lexicalize all facets of the path, leaving some to be expressed outside the verb

[8] Talmy illustrates the figure-in-the-verb lexicalization option with the Hokan language Atsugewi, which has verb roots like *–qput–* 'for dirtlike material to move/be located' (1975:191, (18); see also 2000:58, (35)). Although Talmy cites *rain* as a comparable English verb, the complex grammatical behavior of English metereological verbs (Krejci 2014) suggests that the viability of this analogy needs further investigation. Further, English metereological verbs cannot all be easily analyzed as verbs lexicalizing the figure and fact of motion (e.g., *thunder*).

In (4) and (5), the path is not fully specified by the verb itself: the ground must be contextually determined. In contrast, in *Kelly entered the room*, the explicit ground contributes to the full specification of the path: the figure traverses a path which ends inside this ground.

When the verb lexicalizes a manner it necessarily restricts the manner, but does not restrict the path of the event it can be used to describe. Thus, the sentences in (6), which share the same manner of motion verb, must describe events with the same manner, but are compatible with different paths. In contrast, the sentences in (7) differ in their verbs, but share the same PP; concomitantly, the path of motion is understood as the same and the manner as different.

(6) a. Kelly ran into the room.
b. Kelly ran out of the room.

(7) a. Kelly ran to the corner.
b. Kelly walked to the corner.

In summary, the moving entity, one of two obligatory components of a directed motion event, is always expressed outside the verb (as we are setting aside data in which facets of the figure are lexicalized in the verb); in contrast, the other obligatory component, the path, is at least partially lexicalized in the verb in one type of event description or completely outside of it in the other. Manner may be lexicalized in the verb if the path is not or expressed outside of the verb if the path is lexicalized in the verb; alternatively, it may be left unspecified. With these options set out, we consider the choices languages make in the description of directed motion events.

1.2 Crosslinguistic patterns in the description of events

As mentioned, Talmy observes that languages generally use only one of the two types of directed motion event description (1985:62–63, 2000:27). In English and other Germanic languages, the most common description involves a verb that lexicalizes the manner of motion, with the path expressed outside the verb, as in the English *Kelly ran into the room* or in the German (8).

(8) Hans lief/kroch zum Laden.
John ran/crawled to.the.DAT store
'John ran/crawled to the store.' (Son 2007:127, (2b))

Although English may lexicalize the path in the verb, most of its path verbs are of Latinate or other Romance origin (e.g., *arrive, ascend, enter*), and directed motion event descriptions with such verbs are taken to reflect Romance influence (Talmy 2000:52-53, Wienold 1995:323–325). Comparable verbs, for instance, are said to be unattested in Danish (Cadierno 2004:26) and German (Talmy 2000:53, Wienold 1995:324–325).

In contrast, in Romance languages, the default description of a directed motion event uses a verb that lexicalizes the path of motion, as in the French (1b) or the Spanish (9). The manner of motion may be expressed outside the verb in a PP or adverbial phrase.[9]

(9) La botella entró a la cueva (flotando).
the bottle moved-in at the cave (floating)
'The bottle floated into the cave.' (Talmy 1985:69, (15a))

Empirical studies show that information about manner is often omitted in descriptions of directed motion events with path verbs (Slobin 1996b:212–213; see also Papafragou et al. 2006 on Greek). Expressions of manner in PP and adverbial phrases are often considered heavy or unnatural (Talmy 1973:71); further, in many instances, the manner can be inferred from the context, including the nature of the theme, so such expressions do not contribute necessary information (Vinay and Darbelnet 1958:106–107; again see Papafragou et al. 2006).

While manner is only optionally expressed and often omitted in Romance languages, these languages are said to forbid directed motion event descriptions in which the verb lexicalizes manner (e.g., Carter 1988, Folli and Ramchand 2005, Higginbotham 2000, Levin and Rapoport 1988, Mateu 2012b, Zubizarreta and Oh 2007). English (10a) has two readings: *under the bridge* may be understood as the location of motion or as the direction or goal of motion. Its word-for-word Italian translation (10b) is unambiguous: only the locative interpretation is available for the PP.

(10) a. The boat floated under the bridge.

b. La barca galleggiò sotto il ponte.
the boat floated under the bridge
(Folli and Ramchand 2005:82, (2))

Thus, English much prefers the use of manner of motion verbs in directed motion event descriptions, while Romance languages almost exclusively use path verbs (Slobin 1996b, 2004), even though Romance langauges do have manner of motion verbs. Although manner of motion verbs are often said to be systematically excluded from such event descriptions in Romance languages, it is more accurate to say that their use is severely restricted in constructions expressing directed motion; see section 1.3.2.[10]

[9] Although in some work the Spanish preposition *a* in (9) and its Romance cognates are glossed as either 'at' or 'to' depending on context, we gloss them exclusively as 'at' following Beavers, Levin, and Tham (2010) and others. Section 2.3 reviews the motivation for this decision in the context of a larger discussion of the implications of this data for the understanding of the description of directed motion events in Romance languages.

[10] To preview, in section 1.3.2 we discuss the use of manner of motion verbs in directed motion event descriptions in Romance languages with certain, specific types of path expressions. In addition, a handful of Romance manner of motion verbs, typically including the translation equivalents of 'fly', 'run', and 'walk', can be found in directed motion descriptions with a wider range of path types, including those headed by the preposition *a*; see section 2.3 for discussion.

Comparable differences extend to the description of caused directed motion events. Again, English preferably describes such events with manner lexicalized in the verb, while Romance languages lack this option. Thus, (11b) is unacceptable as the French translation of (11a); it is only acceptable on the interpretation that John caused the dice that were located on the table to shake, say by doing something to the table.

(11) a. John shook the dice onto the table.

b. ∗Jean a secoué les dès sur la table.
John has shaken the dice on the table

(Jones 1996:394, (60b))

Instead, Romance languages must lexicalize the path in the verb; concomitantly, they have a set of causative verbs differentiated by the path (Talmy 2000:52). Compare Spanish (12a) to its most colloquial English translation (12b).

(12) a. Metí el barril a la bodega rodándolo.
I.put the keg at the storeroom rolling.it
'I put the keg into the storeroom by rolling it.'

b. I rolled the keg into the storeroom.

(Talmy 2000:51, (30a))

In fact, these patterns are instantiations of an even more general pattern. As foreshadowed in the introduction, there is a correlation between the constructions used in the description of directed motion events and those used in the description of change of state events. Talmy (1991, 2000) and others have pointed out that those languages which disallow path phrases with manner of motion verbs also cannot use resultative constructions in the description of change of state events (Aske 1989, Celle 2005, Folli 2002, Folli and Ramchand 2005, Green 1973, Merlo 1989, Mateu and Rigau 2010, Mateu 2012a, Melka 2003, Napoli 1992, Rodríguez Arrizabalaga 2002–2003:249, Snyder 1995, 2001, Song 1997, Washio 1997). As shown with (3b), French does not use resultative constructions where English does, and as illustrated with (13a) and (13b), neither does Spanish (Aske 1989:3, Mateu 2012a:258). Thus, Spanish (13b) is a possible translation of the English resultative construction (13a); it lexicalizes the result state in a change of state verb, rather than expressing it with a secondary predicate as in English.

(13) a. Maria hammered the metal flat.

b. María aplanó el metal ({con un martillo/ martilleándolo})
Maria flattened the metal with a hammer/ hammering.it
(Mateu 2012a:258, (10.12a))

As with directed motion event descriptions, this is more than a preference: resultative constructions are generally unavailable in Romance languages, as illustrated with Italian in (14) and Spanish in (15); see section 1.3.2 for further discussion.

(14) ∗Gianni ha martellato il metallo piatto.
Gianni has hammered the metal flat (Merlo 1989:30, (4a))

(15) ∗María martilleó el metal plano.
Maria hammered the metal flat (Mateu 2012a:258, (10.12a))

Further, where English uses a verb-particle construction, whether in the description of a change of state event or a directed motion event, a Romance language expresses the same content differently. (16b), the French translation of English (16a), avoids a verb-particle construction by lexicalizing the result rather than the manner in the verb.

(16) a. He filed the serial number off.

b. Il a enlevé à la lime le numéro de série.
He has removed with a file the serial number
'He removed the serial number with a file.'

(Green 1973:273, (61a))

The English resultative construction is analogous to a directed motion construction with a manner of motion verb: the verb in a resultative construction typically lexicalizes a manner component and the result phrase lexicalizes a result state. Thus, English in general has the often instantiated option of expressing manner in the verb and result outside the verb, with different types of results lexicalized in different types of syntactic constituents. AP resultatives express result states. PPs in directed motion events express a path with a goal, which can be considered a result location, making these PPs a subtype of result. Sometimes a PP lexicalizes a result state as in *She rocked the baby to sleep*, and sometimes particles or intransitive prepositions (Jackendoff 1973) lexicalize result locations or result states.

The question that arises is whether there are further properties of languages that cluster together with those reviewed so far. In fact, various other properties are said to correlate with a language's lexicalization type. These include the availability of double object constructions (Harley 2005, 2007, Snyder 1995, 2001), the form and availability of the locative alternation (Hirschbühler 2009, Lewandowski 2014), the availability of reaction objects and certain other types of effected objects (Folli and Harley 2015, Levin and Rapoport 1988, Martínez-Vázquez 1998), the availability of noun-noun compounding (Snyder 1995, 2001, 2012; see section 2.2), and the nature of the aspectual system (Horrocks and Stavrou 2003). The precise nature and strength of each of these purported correlations needs further investigation. We cannot discuss this topic further in this chapter, but the potential existence of larger clusters of properties underscores the importance of research into lexicalization patterns.

As mentioned early in section 1, the two types of languages that emerge from studies of directed motion and change of state event descriptions have been characterized in two ways (Talmy 2000:22, 224–225): in terms of which meaning component the verb lexicalizes or in terms of where the path of motion—or, generalizing, the result—is expressed. On

the first characterization, proposed in Talmy's early work, Romance-type languages are called path languages because the path is lexicalized in the verb, and they are contrasted with manner languages—that is, Germanic-type languages—which lexicalize the manner in the verb. Under the second characterization, which is emphasized in Talmy's later work, Romance-type languages are referred to as V(erb)-framed since the path is lexicalized in the verb, while English-type languages are referred to as S(atellite)-framed because the path is expressed outside the verb in what Talmy calls a "satellite" (1991:486, 2000:102, 222).[11] We use the second characterization as it is currently the most prevalent, reflecting a trend to focus on the expression of the path. If there is indeed a correlation between the way paths are typically expressed in languages and the way results are expressed, this further justifies the V-framed vs. S-framed characterization. In addition to characterizing languages as V-framed and S-framed, we use the terms V-framed and S-framed to refer to constructions with the path or result in the verb or outside the verb, respectively. The question, of course, is which basic component properties of a language determine the choice it makes in the expression of its directed motion and change of state events?

1.3 Refining the typological picture

Talmy's proposal that languages fall into two lexicalization types has evoked considerable interest. Since the mid-1970s, a plethora of studies of typologically diverse languages has provided general support for the V-framed vs. S-framed language dichotomy, demonstrating its crosslinguistic applicability.[12] Nevertheless, continuing investigations suggest that descriptively speaking languages to do not fall neatly into two clear categories, as discussed in Beavers, Levin and Tham (2010), Croft et al. (2010), Ibarretxe-Antuñano (2009), Imbert (2012), Goschler and Stefanowitsch (2013a), Szczeniak (2014), among others. First, we discuss research that posits a third lexicalization type and show that languages instantiating this type again show parallels in the description of directed motion and change of state

[11] Talmy uses the term "satellite" in a narrow sense to include verb particles but not PPs ("the grammatical category of any constituent other than a nominal or prepositional-phrase complement that is in a sister relation to the verb root"; 2000:102). This narrow use has provoked discussion (Croft et al. 2010:205–206, Imbert 2012:240–241): thus, Beavers, Levin, and Tham (2010:337–339), whose approach to lexicalization patterns is reviewed in section 2.3, use it more broadly to refer to any constituent which is a sister or adjunct to the verb as their focus is on which conceptual component is lexicalized inside the verb. Ultimately, the question is which types of constituents enter into the appropriate generalizations, a question which is partly empirical and partly theoretical in nature. For instance, according to Mateu (2012b), whose approach is reviewed in section 2.1, adjunct PPs should generally be available across languages, so what matters from the perspective of lexicalization patterns is the behavior of particles and PP complements vs. that of PP adjuncts; see also section 1.3.2.

[12] Other languages that have received attention include Amondawa (Sampaio et al. 2009), Basque (Ibarretxe-Antuñano 2004, 2006), Cebuano (Tanangkingsing 2004), Chantyal (Noonan 2003), Chinese (Chen and Guo 2009, Lu 1973, Tai 2003), Emai (Schaefer 1986a, 1986b), Fon (Lambert-Brétière 2009), Greek (Papafragou et al. 2006), Hindi (Narasimhan 2003), Indonesian (Son 2007:141–143), Japanese (Beavers 2008, Wienold 1995, Yoneyama 1986), Korean (Wechsler 2008, Wienold 1995, Zubizarreta and Oh 2007), Persian (Feiz 2011), Russian (Hasko 2010, Nikitina 2010, Talmy 1975), Saisiyat (Tanangkingsing 2004), Thai (Kessakul 2001, Wienold 1995, Zlatev and Yangklang 2004), Tsonga (Sitoe 1996), Tswana (Schaefer 1985), and Turkish (Özçališkan 2009). There are also surveys of African languages (Schaefer and Gaines 1997) and Austronesian languages (Huang and Tanangkingsing 2005). Due to space considerations, we only cite a sampling of studies for those languages which receive extensive attention in the literature.

events. Second, and perhaps more important, we present data which illustrate that the empirical landscape is more complex than any two- or three-way typology can capture. The conclusion drawn from these data is that a fuller understanding of attested lexicalization patterns requires the isolation of the basic linguistic components which give rise to these patterns and the development of analyses embedded in a theoretical framework. Specific analyses are reviewd in section 2.

1.3.1 Equipollently-framed languages

Slobin (2004:249) and Zlatev and Yangklang (2004) argue for a third lexicalization type—E(quipollently)-framed languages—in which both path and manner are expressed by the same type of morphosyntactic constituent in the description of a directed motion event. In serial verb languages, for instance, both are lexicalized as verbs, as they exemplify with Thai. Its directed motion event descriptions include serial verb constructions constituted of two verbs, a manner of motion verb and a path verb, as in (17).[13] A similar example is given in (18) from Emai.

(17) chán dɔɔn paj
I walk go
'I am walking away from DC [=deictic center], towards something'
(Zlatev and Yangklang 2004:165, (10))

(18) o̩li o̩mo̩he la o vbi oa
the man run enter at house
'The man ran into the house.' (Schaefer 1986a: 181)

Other types of E-framed constructions involve verbs constituted of two roots, a path and a manner root as in Klamath (DeLancey 2003) or verb-verb compounds as in Chinese (Lu 1973, 1977, Tai 2003, Thompson 1973) and Japanese (Matsumoto 1996). Chinese verb-verb compounds consisting of a manner of motion verb and a path verb are illustrated in (19)–(20).

(19) pingzi piao-jin le dongxue
bottle float-enter ASP cave
'The bottle floated into the cave.' (Tai 2003:310, (34))

(20) pingzi piao-chu le dongxue
bottle float-exit ASP cave
'The bottle floated out of the cave.' (Tai 2003:310, (35))

[13] (17) is only one of a range of Thai serial verb construction types. Such constructions can include more than two verbs, usually at most one of these is a manner verb; see Kessakul (2001), Muansuwan (2001), Sudmuk (2005), and Zlatev and Yangklang (2004). Chinese verb-verb compounds can also consist of more than two verbs; see Lu (1977) and Lin and Peck (2011).

These languages may also describe change of state events in an equipollent fashion, as in the Chinese (21), where the first verb in the compound lexicalizes manner and the second result; see also Thepkanjana (2008) on Thai.

(21) ta xi-ganjing le yifu
he wash-clean ASP clothes
'He washed the clothes clean.' (Lu 1977:277, (5a))

Talmy (2009) inserts a note of caution about the E-framed label. He points out that some purported E-framed languages are misclassified, as the two verbs in a compound or serial verb construction are not equal in status. The same caution applies to E-framed constructions. However, the significance of this fact can only be evaluated in the context of a theory of what gives rise to different lexicalization types.

1.3.2 The limits of a two- or three-way typology

As more languages are studied closely, a fuller picture of the options for the description of directed motion events in each one is emerging, and it appears that few, if any languages exclusively choose V-framed or S-framed constructions, as suggested by the papers in Goschler and Stefanowitsch (2013b) and by Beavers, Levin, and Tham (2010), Croft et al. (2010), Filipović (2007), Ibarretxe-Antuñano (2004), Kopecka (2006), Pedersen (2009:29–34), and Son (2007), among others. Although Talmy writes that "In most cases, a language uses only one of these [construction] types for the verb in its most characteristic expression of Motion" (2000:27), he himself posits three other patterns, what he calls "split", "parallel", and "intermixed" systems of conflation (2000:64–67); see also Imbert (2012). In split conflation, different event types show different lexicalization patterns; for instance, as discussed below, Spanish describes directed motion events which involve "boundary crossing" differently from those that do not. In parallel conflation, there are two equally colloquial lexicalization patterns for the same event type, while in intermixed conflation, different instances of a particular event type would show different lexicalization patterns without any principled basis.

Such observations suggest that it is more accurate to use V-framed, S-framed, and E-framed characterizations of constructions, rather than languages, in the analysis of lexicalization patterns (Croft et al. 2010). However, the terms V-framed, S-framed and E-framed, whether applied to constructions or languages, need to be defined with respect to an explicit theory of event structure—that is, a theory of the linguistic representation of event descriptions. In the absence of such a grounding, researchers can reach differing conclusions as to the status of languages—or even particular constructions—as V-, S-, or E- framed. Therefore, if the classification of languages or constructions is to provide more than a description, the distinctions among languages should be couched in terms that make reference to the primitives of an event structure and principles governing their morphosyntactic realization. In the remainder of this section we present some brief examples to illustrate this point; the next section introduces several existing accounts of lexicalization patterns.

One of the first and still much-referenced illustrations of apparently S-framed constructions in purportedly V-framed languages is presented by Aske (1989). He points out that Romance languages can describe certain directed motion events using a manner of motion verb, as in the Spanish (22), which contrasts with (10b), where a path cannot be expressed with a manner of motion verb.

(22) La botella flotó hacia la cueva.
The bottle floated towards the cave
'The bottle floated towards the cave.' (Aske 1989:3, (8))

Aske points out that such examples involve directed motion events that fail to describe actual arrival at a goal, and he proposes that constructions with "atelic" paths are irrelevant to Talmy's typology. Slobin and Hoiting "reinterpret this constraint in terms of a typological tendency or preference to use a verb, rather than some other form, to indicate entry into any state" (1994:508), what is known as "boundary crossing", a formulation that may have wider currency than Aske's. The question is why this kind of path is implicated in a basic split between languages. As we review in section 2.1, Mateu provides a possible answer to this question by suggesting that PPs encoding boundary crossing are syntactic complements, positing that Spanish simply does not permit path complements to manner of motion verbs. He takes examples like (22) to involve adjuncts (Mateu 2012b:345–346), which can be freely added to any verb.

However, Iacobini and Vergaro (2014) present a corpus study of Italian which suggests that the observational generalization itself may deserve a closer look. Although manner of motion verbs are used considerably less frequently in directed motion event descriptions in Italian than in English, as expected in a V-framed language, nevertheless, such verbs are found equally often with paths that do and do not specify boundary crossing. These data suggest that expression of boundary crossing by a constituent may not be sufficient alone for determining its status as a complement; rather, it is its status as a complement that may be significant.

Son and Svenonius (2008) present data that suggest a dissociation between the availability of resultative constructions as descriptions of change of state events and the availability of V-framed directed motion event descriptions contrary to the proposed generalizations introduced in section 1.2. However, whether or not the data which does not conform well to initial expectations truly thwart these generalizations depends on the analysis of specific constructions. Thus, Russian, which is considered to be S-framed in its directed motion event descriptions, lacks traditional resultative constructions (Snyder 2001:338); nevertheless, it has some resultative-like constructions in which prefixes are used to express results with manner verbs (Spencer and Zaretskaja 1998); see section 2.2 for further discussion. In contrast, Japanese, considered to be V-framed in its directed motion event descriptions, shows some resultative constructions (Washio 1997). In fact, Italian, another language with V-framed directed motion event descriptions, although said to lack resultative constructions, also shows them in limited circumstances (Folli 2002, Folli and Ramchand 2005, Napoli 1992), even once pseudo-resultative examples (Levinson 2010, Washio 1997:17–19) are

eliminated; the same holds of Spanish (Rodríguez Arrizabalaga 2002–2003:247).[14] Washio (1997) proposes that Japanese resultatives are "weak" resultatives in that the meaning of the verb and the result are not completely independent of each other (1997:7); that is, they often involve verb-result combinations where the "verb may have a disposition toward a certain result without lexically implying such a result" (Washio 1997:16). Building on this idea, Mateu (2012a:261–264, 2012b:348) proposes that apparent resultatives in Japanese and Italian have a different underlying syntactic structure than the true resultatives of canonical S-framed languages; for more on this analysis see section 2.1.[15]

This discussion underscores, that, as already mentioned, the notions of V- and S-framing as descriptions of surface generalizations are of limited use, and that the particular characterization of a language has theoretical significance only if such a characterization is embedded in a theory of what gives rise to the two patterns. The complexity of the descriptive picture can arise from the interaction among different underlying factors. We turn now to accounts of lexicalization patterns which attempt to isolate the underlying properties of different languages which give rise to the range of attested constructions in particular languages.

2 Sources of attested lexicalization patterns

As mentioned in the introduction, the intrinsic interest of a typology of event description types is derived from the observation that there are interdependencies among construction types, such that constructions of particular types tend to cluster together in languages. Typological studies in generative grammar typically seek to identify the grammatical properties which underlie and give rise to constructions in the hope of explaining such clustering. In this section, we first review representative attempts to explain the source of the distinction between V-framed languages and S-framed languages, which assume that despite the complex picture presented above, it is possible to isolate grammatical features which nonetheless make systematic distinctions among languages. In sections 2.1 and 2.2, we review two approaches that posit a parameter that serves this purpose. These approaches recognize that languages do not fall neatly into two types because a variety of other factors interact with the parameter distinguishing the language types—either other parameters or differences in lexical resources available. First, we review the work of Mateu and colleagues, which

[14] Similarly, the proposal that V-framed languages lack verb-particle constructions needs to be nuanced. In Italian, an apparent verb-particle construction seems to be increasingly used (Iacobini 2009, Iacobini and Masini 2006, Masini 2005). Spanish may have this construction, but in very limited conditions: Aske (1989:11) suggests path verbs may occur with particles that repeat the path lexicalized in the verb, although Gonzaléz Fernández (1997) claims the particles actually further specify the path. Mateu and Rigau (2009, 2010) argue that purported instances of the verb-particle construction in Romance languages do not instantiate the construction as found in Germanic languages; they provide it with a distinct analysis that builds on Aske's observation that the particle reiterates the path lexicalized by the verb.

[15] Nevertheless, resultatives merit further investigation. Croft et al. (2010), for instance, find a crosslinguistic cline in the acceptability of a set of resultative constructions chosen to represent lesser to greater degrees of "event integration"; these constructions all qualify as weak resultatives in Washio's sense. Washio's strong resultatives, then, could be seen as representing a further point along this cline.

posits a compounding process available only to S-framed languages. Next, we review the work of Snyder, which posits an interpretive rule available only to S-framed languages. In contrast, Beavers, Levin, and Tham (2010), reviewed in section 2.3, do not assume a parametric difference which attributes the distinction between languages to some basic underlying mechanism. Rather, they attribute crosslinguistic differences in the description of motion events only to differences in the morphosyntactic and lexical resources available to languages. For still other approaches that share the same goals, see Folli and Harley (2015), Folli and Ramchand (2005), Higginbotham (2000), Son and Svenonius (2008), and Zubizarreta and Oh (2007), among others.

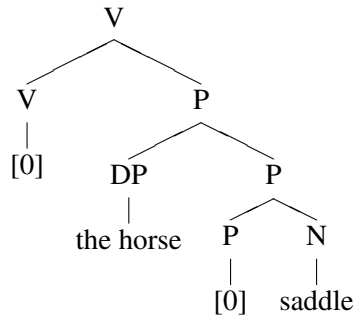
2.1 A compounding account

In a series of studies,[16] Mateu together with his colleagues provides a syntactic account of the distinction between V-framed and S-framed languages and the constellation of constructions which he claims is manifested by languages of each type. He ties the typological distinction to the (un)availability of a particular syntactic operation on syntacticized event structures, providing an account that describes the typological divide and explains why the constructions available to languages of each type cluster as they do.

Mateu adopts a clausal structure inspired by the work of Hale and Keyser (1993, 1997a, 1997b, 2002) in which the syntactic structure of a clause configurationally represents its event structure in a way that resembles a predicate decomposition. An important component of these syntactic structures is a "root" (Pesetsky 1995, Harley 2014), representing the phonological form and idiosyncratic meaning of the verb. The precise meaning of the verb in a sentence is determined by how and where the root is integrated into the syntactic structure. The position of DPs relative to the heads in such syntactic structures encodes their semantic relation to the verb in the sentence. For example, sentences with simple transitive uses of denominal locatum verbs such as *saddle* are represented as in (23). In (23), the null preposition is understood as a preposition of "central coincidence" in the sense of Hale and Keyser (1997a:36), which would correspond roughly to the *with* of *The pens are with the paper*.

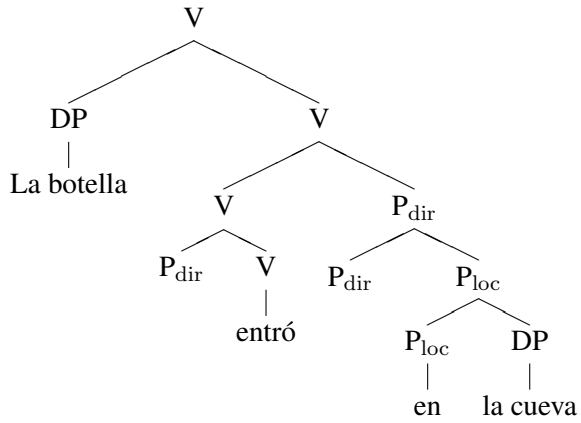
(23) saddle the horse (Mateu and Rigau 2010:250, (16b))

[16]This section presents the larger picture which emerges from a series of studies by Mateu, sometimes in conjunction with colleagues (e.g., Acedo-Matellán and Mateu 2013, Mateu 2010, 2012a, 2012b, Mateu and Rigau 2009, 2010). Each study has its own focus, but there is significant overlap among them because they build on and explore the same theoretical assumptions and interconnected sets of data. In this section, we generally attribute data and analyses only to those studies in which they figure most centrally.



A V-framed directed motion event description is represented as in (24). The notion of directed motion is conveyed in (24) by having a directional complement as a sister of a verb; the verb phrase itself is a sister of the DP understood as the theme of motion. Following Koopman (2000), Svenonius (2008), and others, Mateu (2012b:257) uses complex directional PPs consisting of a directional preposition with a locative PP sister.

(24) La botella entró en la cueva. 'The bottle entered the cave.'
(Mateu and Rigau 2010:256, (26))

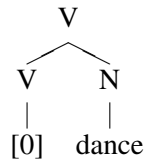


Mateu adopts Haugen's (2009) proposal that there are two operations through which a *v* is provided with phonological content from a root. One option involves Incorporation, which is an instantiation of head-movement (Baker 1988), implemented through the minimalist operation Copy. The second option is conflation, which is implemented via the minimalist operation of Merge. Conflation gives rise to what Mateu describes as a compound verb. The idea that *v* can get its phonological content from a root through one of two distinct operations along the lines of Mateu's incorporation and conflation has precursors in the work of Embick (2004) and Harley (2005), who use comparable operations to explain properties of English resultative participles and English denominal and deadjectival verbs, respectively. Mateu applies these operations to the domain of lexicalization patterns where he makes crucial use of the assumption that incorporation is available to all languages, but conflation is not.

Incorporation is used in (23) and (24). In (23) the nominal root *saddle* is first incorpo-

rated into the null P and then into the null V through what Hale and Keyser (1997b:205) describe as "successive incorporation into immediately governing heads" of the root. In (24) the P_{loc} head incorporates first into the P_{dir} head and then this complex element is incorporated into the verb which selects the directional complement, giving rise to sentences with path verbs like Spanish *entrar* and English *enter*, with the root providing the phonological content of the verb. Incorporation also derives unergative verbs like *dance*; such verbs are analyzed as denominal verbs by Hale and Keyser (1997a, 1997b, 2002), with a nominal root $\sqrt{\text{DANCE}}$ incorporated into a null verbal head, as in (25).

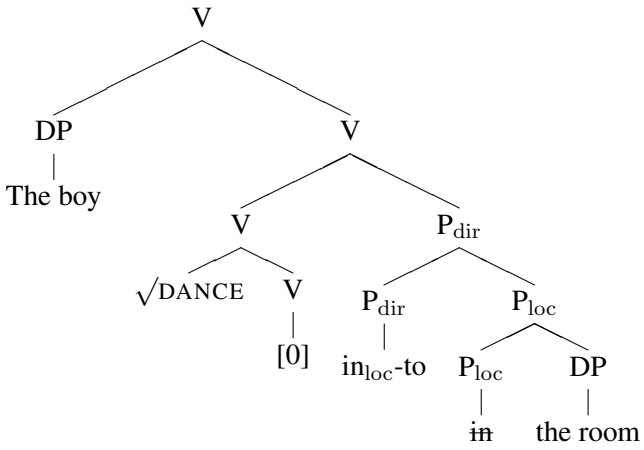
(25) Unergative verb (Mateu and Rigau 2010:250, (16a))



Incorporation gives rise to what might be termed "basic" uses of a verb, where it has what is taken to intuitively to be its own argument structure, such as unergative uses of *dance* or transitive uses of *saddle*.

Conflation, in contrast, allows a verb to augment its "basic" argument structure by allowing its root to be compounded with another argument-taking head, often an empty light verb; see McIntyre (2004:551) for a similar approach. Thus, not only can the verb *dance* be used as a simple manner verb derived by incorporation, as in *The couple danced*, but it also can be used as a path verb, as in *The boy danced into the room*. The root $\sqrt{\text{DANCE}}$ does not select a directional complement, but it may be conflated with a null verbal head which selects such a complement, forming a compound, as in (26). This verbal head is interpreted as GO, and the root $\sqrt{\text{DANCE}}$, as an adjunct of this head, is interpreted as a modifier (or manner) of the event. A similar analysis is presented in Zubizarreta and Oh (2007).

(26) The boy danced into the room. (Mateu 2012a:256, (10.7))



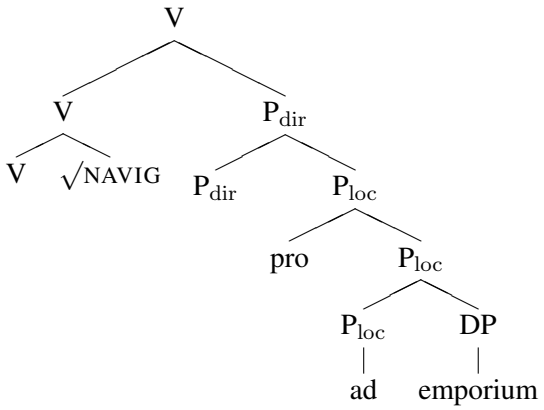
In some languages, including German, Latin, and Russian, the manner of motion verb in a directed motion event description often has a bound particle or prefix. Latin shows constructions analogous to English (26), where a manner of motion verb appears with a directional PP, as in (27); it also has constructions where the verb has a directional prefix, as in (28). Neither of these constructions is available to the modern Romance languages.

(27) Navigant diebus XL ad primum emporium Indiae.
sail.3PL day.ABL.P; 40 at first.ACC.N.SG emporium.(N)ACC.SG India.GEN
'They sail up to the first emporium in India in 40 days.' (Plin. *Nat.* 6, 104, 1; Acedo-Matellán and Mateu 2013:238, (28))

(28) Simulatque e navi e-gressus est dedit.
as.soon.as out ship.ABL out-walk.PRF.3SG give.PFV.3SG
'As soon as he walked out of the ship, he handed it over.' (Cic. *Verr.* 2, 2, 19; Acedo-Matellán and Mateu 2013:237, (24))

Acedo-Matellán and Mateu (2013:239) give (27) the analysis in (29), which is in many respects like (26). In (29), a null light verb takes a directional complement (P_{dir}), itself subsuming a locational complement (P_{loc}).[17] The element *ad* is first merged into the lowest P_{loc} and then conflated up into P_{dir} (cf. the treatment of *in* in (26)). In addition, the root $\sqrt{\text{NAVIG}}$ conflates with the null light verb.

(29) Navigant ad emporium (Acedo-Matellán and Mateu 2013:239, (30))



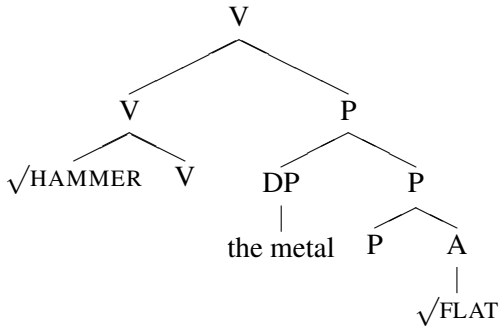
The analysis of the prefixed verb example (28) takes the analysis in (29) one step further: the element that started in P_{loc}, in this example *e*, moves first to P_{dir} and then moves once more to adjoin to the combination of the null light verb and root. (Acedo-Matellán and Mateu do not discuss how the directional phrase *e navi* 'out of the ship' in (27) is integrated into the configurational structure.)

As noted in section 1.2, languages which have constructions analogous to those in (26) and (27) also tend to have resultative constructions. Many instances of this construction

[17] The node labels in (29) have been changed from the original to make them consistent with those in (26).

involve a manner verb and a result XP which is not strictly selected by the verb, as in (30): hammering need not result in flatness. Once a null verb is compounded with a root, the null verb can add other nonselected complements and be interpreted according to the larger syntactic context. In (30) the V takes a PP complement interpreted as the coming about of a change of state. The verb itself is null, but is compounded with the root $\sqrt{\text{HAMMER}}$, which is interpreted as a manner modifier since it is compounded with the null verb.[18]

(30) hammer the metal flat (Mateu 2012b:348, (25a))



Mateu takes the key distinction between Romance languages and English to be that English verbs can rather freely add nonselected complements, a phenomenon which falls under the rubric of the "variable behavior" of English verbs in Rappaport Hovav and Levin (1998). The compounding process which according to his analysis allows this addition, is similar in scope to what Levin and Rapoport (1988) call "lexical subordination". Examples of other constructions which implicate this process are given in (31).

(31) She smiled her thanks. (Acedo-Matellán and Mateu 2013:213, n4)

(32) a. John danced the puppet across the stage.
b. They danced the night away.
c. John danced his feet sore.
(Mateu and Rigau 2009:230, (4c,d,g); 2010:257, (27c,d,g))

All these examples involve what Mateu (2012a:254–255) and Acedo-Matellán and Mateu (2013) analyze as the conflation of a root with a null verb in a structure which selects the argument not selected by the root itself. The syntactic structure of (31) is interpreted

[18]Mateu takes all resultative constructions to involve nonsubcategorized or, in his words, nonselected DPs, even in instances such as *Kim hammered the metal flat* where the postverbal DP appears to be an argument of the verb. There is continuing controversy as to whether all resultatives should receive a uniform analysis in which the postverbal NP is nonselected. T. Hoekstra (1988, 1992) is probably the first to argue strongly for this position, also advocated by den Dikken and E. Hoekstra (1994) and McIntyre (2004:542–547); more recently, Grône (2014) further supports this position on lexical semantic grounds drawing on extensive corpus data. Arguments for the other position are found in Carrier and Randall (1992) and Levin and Rappaport Hovav (1995).

as involving an event of creation (Mateu 2003:263, 2012a:274). (32a) has a caused motion structure with the root $\sqrt{\text{DANCE}}$ conflated with a null verb and, thus, modifying the action of the object (Mateu 2010:105), while (32c) has a structure analogous to (30). Mateu proposes that Romance languages lack conflation, predicting that they will systematically lack any constructions of the types illustrated in (31) and (32). He proposes the following parameter, whose unmarked value is "disallows".[19]

(33) The grammar [disallows, allows] compounding of root with a null light verb during the syntactic derivation. (Mateu 2012a:297, (10:37'), 2012b:345, (17))

In summary, Mateu takes the critical property which distinguishes between language types to be whether a language allows basic argument structures to be augmented via compounding of roots with a null verbal head—his conflation operation. Languages which allow such compounding may nevertheless differ strikingly because of their lexical properties. English, for example, does not permit any part of the complement of the empty verbal head to undergo head-movement, while in Latin, German, and Russian head-movement of a locational prefix is allowed, giving rise to prefixed verbs, as in (28). Furthermore, such prefixation is also attested in other instances with nonselected objects (Acedo-Matellán and Mateu 2013:235–237). The next section presents an account, which while similar in some respects to Mateu's, nevertheless differs as to which languages it groups together.

2.2 The Generalized Modification approach

Snyder also investigates linguistic phenomena that are correlated with each other in the lexicalization pattern literature, suggesting that they are the repercussion of a "Compounding Parameter", although his notion of compounding is somewhat different than Mateu's. In later work, he suggests that this parameter reflects whether a language has a particular interpretive process, Generalized Modification.

Snyder (1995, 2001) proposes the existence of a correlation between a language having a productive process of bare-root endocentric noun-noun compounding and the availability of bare resultatives and verb-particle constructions. English has a positive value for what Snyder calls the Compounding Parameter, allowing two nouns to form compounds productively, where the denotation of the compound is that of some pragmatically determined

[19] In unpublished work, Folli and Harley (2015) point out that syntactic operations such as conflation should in principle be available to all languages, rather than only to some languages. Instead of taking the difference between languages types to involve whether manner can be conflated with a verbal head, they propose that the difference involves whether languages do (Romance) or do not (Germanic) require the result to be lexicalized in the verb. They implement this idea by positing that Romance languages have an obligatory Res(ult)-to-*v* movement which is triggered by features on the flavors of little *v* which select Res(ult)P complements. This approach is consonant with efforts to reduce parametric variation to values of functional features which drive movement (Borer 1984). Folli and Harley still need to posit an operation analogous to conflation, which figures in the derivation of more or less the same English constructions as in Mateu's work. However, they take conflation in principle to be available to all languages, but obligatory Res-to-*v* movement essentially "bleeds" conflation making it unavailable to Romance languages.

subset of the denotation of its head noun. Snyder illustrates with the compound *frog chair*; although not a conventionalized compound, it is readily accepted and interpreted by English speakers. As support for the proposed correlation, Snyder cites a corpus study of American English-speaking children which shows they begin to productively use verb particles at the same time that they begin to produce novel endocentric noun-noun compounds. Further, via a crosslinguistic survey, Snyder finds that only languages with productive noun-noun compounding have resultative constructions.[20] Both share the ability to provide a contextually determined semantic relation which is not made explicit by any derivational morphology. The Compounding Parameter (34), then, distinguishes languages like English, which allow both productive compounding and resultatives, from the Romance languages, which allow neither. Snyder (2012) suggests that this parameter has its formal grounding in the interpretive process in (35).[21]

(34) The Compounding Parameter (TCP): The language (does/does not) permit Generalized Modification. (Snyder 2012:285, (11.4))

(35) Generalized Modification (GM): If α and β are syntactic sisters under the node γ, where α is the *head* of γ, and if α denotes a *kind*, then interpret γ semantically as a *subtype* of α's kind that stands in a pragmatically suitable *relation* to the denotation of β. (Snyder 2012:285, (11.5))

As Generalized Modification is at the heart of Snyder's analysis, we refer to a Generalized Modification Parameter instead of the Compounding Parameter to avoid confusion with Mateu's rather different notion of compounding.

Generalized Modification is invoked by Snyder for manner of motion verbs with directional complements as well.[22] Although Snyder ties the availability of resultative constructions to the availability of productive compounding, he does not take the basic distinction between language types to be the (un)availability of compounding, but rather the (un)availability of Generalized Modification. A language can freely generate any compound, but absent an interpretive rule such as (35), it will be uninterpretable. More important, the Generalized Modification parameter makes a different cut in the data than Mateu's

[20] Snyder (2001:329-330) cites Basque as an exception, which he later resolves (Snyder 2012:287). Snyder (2012:288) addresses criticisms in Son (2007) that the correlations do not hold in that there are languages with noun-noun compounding that lack resultatives. The idea is that Generalized Modification is necessary, but not sufficient, for resultatives; see, for instance, his extensive case study of Japanese (2012:293–297).

[21] Higginbotham (2000) proposes an alternative interpretive process which English-type languages have and Romance-type languages lack. He proposes that English-type languages have an event composition operation which forms a 'telic pair' from two events. This operation gives rise to the telic interpretation typically associated with resultative and verb-particle constructions, as well as to the directional interpretations found in certain sentences in which manner of motion verbs take locative PP complements, discussed in section 2.3.

[22] Snyder's proposal that V-framed languages have noun-noun compounds is interesting in light of Baron and Herslund's (2005) global take on lexicalization patterns. They propose that V-framed languages have more specific nouns and more general verbs, while S-framed languages have more specific verbs and more general nouns. They suggest that S-framed languages use noun-noun compounds to convey the meanings conveyed by the more specific nouns of V-framed languages.

compounding account. For instance, Snyder (2012:288–289) does not analyze English resultative constructions in terms of compounding; rather, they involve Generalized Modification with β as an AP, the result phrase, and not a word, and so γ is not a compound. Manner of motion verbs in directed motion event descriptions receive a comparable analysis.

Further, although both Mateu and Snyder take English and the Romance languages to represent different settings of the relevant parameter, Russian falls in with the Romance languages for Snyder, but with English for Mateu. We review their accounts of the critical data to underscore the key properties of each approach. Russian allows certain manner verbs with directional/aspectual prefixes to take nonselected complements, as in (36)–(37).

(36) Ona is-pisala svoju ručku.
she IZ-wrote her.ACC pen.ACC
'Her pen has run out of ink.' (lit. She has written her pen out (of ink))
(Spencer and Zaretskaja 1998:17, (51))

(37) Rebënok do-kričal-sja do xripoty.
baby DO-cried-REFL to hoarseness
'The baby cried itself hoarse.' (Spencer and Zaretskaja 1998:22, (83))

Mateu (2008:236–237, 2012a:273, n. 27) takes Russian to allow conflation—thus, treating it as an S-framed language—and analyzes such examples as involving the type of nonselected complements that conflation of a root with a null light verb makes possible. The light verb takes as its complement an XP headed by the prefix, which selects and, thus, licenses the nonselected complement (cf. Mateu's (2008:237–239) analysis of comparable German prefixed verbs). This analysis essentially parallels his analysis of resultative constructions. Snyder (2012:283–284), however, cannot assimilate the Russian construction to the resultative construction since Russian lacks productive noun-noun compounding, and, thus, must lack Generalized Modification. Rather, he proposes that the prefix is the main predicate, taking the verb it attaches to and the nonselected complement as arguments. As support for this approach, he notes Russian lacks analogues of English AP and PP resultative constructions—the constructions involving Generalized Modification. Russian for him, then, falls together with Romance languages. Nonetheless, since Romance languages lack the prefixes which Russian has, the lexical properties and the GM parameter together give rise to more than a two-way split between languages.

Both accounts relate the distinct lexicalization patterns found in English and Romance languages to English's ability to augment the basic argument structure of a verb, thus, allowing the licensing of nonselected constituents. In most languages whose verbs can take nonselected constituents, the verb carries some form of derivational morphology, but this is not the case in English—a fact that Snyder's account captures. Still further investigation is needed to determine whether the correlation between productive compounding and the ability to add nonselected consitituents without derivational morphology holds more generally. We leave further evaluation of Mateu's and Snyder's approaches to future research.

2.3 A nonparametric approach: lexical inventories as the source of constructional variation

Beavers, Levin, and Tham (henceforth BLT; 2010) take an alternative approach to accounting for Talmy's typology, although they illustrate their approach only with respect to directed motion events. They reduce the considerable variation in the description of such events to general constraints on how manner and path may be expressed in languages, interacting with the morphological, lexical, and syntactic resources a language has available for encoding manner and path of motion. On their account the source of the typological variation arises because the lexical category verb may encode either manner or path, but not both, so one of manner and path must be expressed outside of the verb. The result is either a V-framed or an S-framed construction. In addition, BLT suggest that even in languages with multiple options for expressing directed motion events, extragrammatical factors may result in one option being preferred. Thus, given that many languages prefer or only admit one option, two major types of languages emerge. On this approach, there is no need to posit a parameter that differentiates among languages.[23]

As just noted, the verb is required in a clause; however, given the constraint on the packaging of meaning in the verb to be discussed in section 3, it may lexicalize either manner or path, but not both. Given this, BLT set out the options for describing directed motion events that are available to languages in principle, while noting that the morphosyntactic properties or morpholexical inventories of individual languages may limit their availability.

Consider first when path is lexicalized in the verb. If manner is also expressed, then various types of manner adverbials may be used, such as the PP in French (1b) or the gerundive clause in Spanish (9). Furthermore, if the language allows multiverb constructions, whether serial verb constructions or verb-verb compounds, then manner may also be expressed in the verb—options illustrated by the Thai, Emai, and Chinese examples (17)–(20). Alternatively, manner may be lexicalized in the verb. Again, if the language permits multiverb constructions, path may also be expressed in a verb. In single verb clauses that option is lacking; rather, path must be encoded outside the verb, an option that is only viable if the language has an appropriate morphosyntactic device. The account assumes, as do those of Mateu and Snyder, that manner of motion verbs do not lexically select for a path like path verbs do. To be used in the expression of directed motion, they must combine with an explicit goal phrase. English has the goal preposition *to*, which makes this possible. Among the morphosyntactic devices which can license a goal complement are morphological cases or adpositions, directional verb prefixes as in Russian, or applicative verb affixes which can license a goal complement as in Tswana (Schaefer 1985). The use of an applicative affix *–el–*, which licenses a directional interpretation of what would otherwise be understood as a locational phrase, is illustrated in (38) with data from Tswana.

[23] Son and Svenonius (2008) and Son (2007, 2009) present another non-parametric account, which like Mateu's uses syntactically instantiated event structures, although theirs are inspired by Ramchand's (2008) First Phase Syntax. They reduce crosslinguistic differences in the description of directed motion and change of state events to allowable options for giving phonological expression to combinations of the abstract morphemes used in representing these event types—that is, to properties of the lexical inventories of languages. These options give rise to the attested patterns of event expression.

(38) mò-símàné ó-tábóg-**ẹ̀l**-à kwá-gòdímò gá-thàbà
CL.1-boy he-run-**to**-IMP DISTANT-top LOC-mountain
'The boy is running to the top of the mountain.'
(Tswana; Schaefer 1985:66, Table III, 1)

Particular languages choose among these options depending on the morphosyntactic and morpholexical resources they have available. Thus, English lacks multiverb constructions, but as noted its preposition *to* can be used with a manner of motion verb to yield an S-framed construction. It also has path verbs, as most languages do, so it can use these in V-framed constructions. However, BLT (2010:367) suggest that the S-framed option is preferred because it is less complex, obviating the need for a manner adverbial which accompanies the V-framed option. In contrast, French and Italian lack a lexical counterpart to English *to*,[24] which is needed to allow a goal phrase to combine with a manner of motion verb.[25] Although the preposition *a/à* is presented as the counterpart of *to*, it is not, but rather as proposed by BLT, Cummins (1996:19, 1998), Fábregas (2007), Folli (2002), Folli and Ramchand (2005:96), Jones (1983, 1996), Son (2009:218), and Song (1997), it simply indicates location and is best translated as 'at'. Thus, the relevant S-framed construction is precluded. Instead, path verbs are used in directed motion event descriptions, a V-framed option. Japanese, which like French and Italian, lacks an equivalent of English *to* (Beavers 2008, Kageyama 2003, Son 2007:150-152), allows verb-verb compounds, so it has an E-framed option for the description of directed motion events as well.

As noted in section 1.3.2, many V-framed languages may have apparently S-framed constructions. A crosslinguistically prevalent option involves the use of event modifiers comparable to English *until*. Such modifiers freely combine with many types of verbs, giving rise to goal interpretations with manner of motion verbs (Beavers 2008). However, researchers (e.g., Alonge 1997, Baicchi 2005, Folli and Ramchand 2005, Gehrke 2008, Kopecka 2009, Martínez Vázquez 2001, 2013) also point to examples where locative prepositions receive directional interpretations, instantiating an S-framed construction, as in the most accessible interpretation of English *The cat ran under the sofa* or in the Italian (39).

(39) La palla è rimbalzata sopra il tavolo.
the ball is bounce.PSTPRT on the table
'The ball bounced onto the table.' (Folli and Ramchand 2005:96, (31b))

Noting that few manner of motion verbs occur in such constructions, Alonge (1997), Fábregas (2007), Folli and Ramchand (2005:97), and Mateu (2012b:346–347), among others, propose that the relevant verbs, which include those meaning 'fly' and 'run', lexicalize direction as well as manner, despite the proposed restriction against such lexicalization; thus, they may occur in the same V-framed constructions as path verbs. BLT (2010:362–365) propose instead that in both the English and Romance instances, the directional interpretation of the locative phrase arises through a pragmatic inference. In support of this proposal,

[24]The situation in Spanish is somewhat more complicated; see BLT (2010:342, n. 7) and Fábregas (2007).

[25]Higginbotham (2000) suggests that there is a causal link between the existence of a preposition like English *to* and the availability of the operation which builds 'telic pairs' introduced in footnote 21.

they note that this interpretation arises precisely when it receives contextual support, as manifested in preferences for certain verbs and grounds in attested examples in English and other languages; see also Levin, Beavers, and Tham (2009), Nikitina (2008), and Tham (2013).

This work shares with other work the insight that unlike the Romance languages, English has a directional preposition used for marking goal complements. BLT's account assumes that nothing more needs to be said about the addition of a goal phrase to a manner verb—that is, that a language does not need anything special in addition to license a goal phrase with a manner verb. Moreover, they do not connect the ability of manner of motion verbs to take goal complements to the existence of other complement-augmenting constructions. An open question, therefore, is whether their approach can be extended to account for crosslinguistic differences in the description of events of other types, especially as they relate to resultative constructions. As noted earlier, many of the analyses of lexicalization patterns are motivated by the desire to account for the parallel strategies that languages employ for directed motion event descriptions and change of state event descriptions.

In summary, BLT's approach accommodates the numerous observations concerning languages that show a combination of V-, S-, and E-framed constructions. All that is necessary is that the relevant resources be available. However, there is a difference in the significance of the departures from the expected V- and S-framed patterns. A review of attested combinations of V- and S-framed behavior in languages, reveals that clearly V-framed languages lack manner verbs with goal PPs and manner verbs with resultative APs. If this generalization withstands further scrutiny, there appears to be a principled difference between having V-framed behavior in an S-framed language (such as having verbs like *ascend* or *enter* in English) and not having S-framed behavior in a V-framed language. There is no principled reason, for instance, why English shouldn't have the verb *enter*; this is just a matter of what simple verbs exist in English. But moving beyond a language's verb inventory, in order for manner verbs to appear with directional phrases, result phrases, and other nonselected complements, something more must be said. Much of the research on lexicalization patterns involves specifying what mechanisms are available for the augmentation of the "basic" argument structure of manner verbs.

3 Manner/result complementarity

An assumption shared in much of the literature on directed motion events is that the verbs—or more precisely roots or morphemes making up verbs—used in descriptions of such events lexicalize path or manner, but not both. In fact, this assumption is central to BLT's (2010) approach to lexicalization patterns. Many researchers generalize this further by assuming that morphemes can lexicalize either manner or result, with path being a kind of result. As mentioned in section 1.1 this assumption is already implicit in Talmy's earliest work on lexicalization patterns. Rappaport Hovav and Levin (2010) label this assumption manner/result complementarity (MRC).

(40) Manner/result complementarity: Manner and result meaning components are in complementary distribution: a verb lexicalizes only one. (Rappaport Hovav and Levin 2010:22)

This assumption has generated a fair amount of interest recently because it suggests there are constraints on how much meaning can be lexicalized in a verb. This section discusses the place of this assumption in various approaches to lexicalization patterns, proposals about the source of this assumption, and assessments of its viability.

Rappaport Hovav and Levin stress that a lexicalized meaning component is one which is entailed across all uses of a morpheme and should therefore be distinguished from elements of meaning that arise from the particular context the morpheme is used in. A careful study of the English verb lexicon reveals that within various semantic domains there are both verbs that describe bringing about results and those that describe carrying out activities—manners of doing. Often verbs specify results brought about using a conventionally associated manner, but do not strictly entail the manner. Thus, in *Tracy cleared the snowy driveway*, she might have used a broom, a shovel, or a snowblower depending on the amount of snow involved, but none of these methods is specifically entailed by this sentence. Similarly, the actions characterized by the particular manners denoted by other verbs are typically performed to bring about a conventionally associated result state, but the verbs do not entail this result. Consider the sentence *Tracy shoveled the snowy driveway*. Since shoveling is typically used to move stuff from one location to another, the assumption in this example is that the driveway becomes clear, but *Tracy shoveled the snowy driveway, but it is still not clear* does not involve a contradiction.

Rappaport Hovav and Levin (2010) propose that MRC can be derived from principles governing the way in which verb roots are associated with event schemas—predicate decomposition representations of verb meanings.[26] They assume that verb roots are associated with an ontological type such as manner or result, which determines the position of the roots in the event schemas and that a root can only be associated with a single position in an event schema; see (41), where roots are in capital italics and enclosed in angle brackets.

(41) a. [x ACT$_{<MANNER>}$]

b. [[x ACT] CAUSE [y BECOME <*RESULT*>]]

Since manner and result roots are associated with distinct positions in such schemas (a manner root is a modifier of the primitive predicate ACT, while a result root is a complement of the primitive predicate BECOME), manner/result complementarity ensues.

Rappaport Hovav and Levin (2010) further provide the notions of manner and result with an explicit semantic basis. Based on an inspection of the domains in which MRC is most clearly manifested, change of state and motion, they suggest that result roots specify

[26] See Embick (2009), a descendant of Embick (2004), for discussion that arrives at a similar result from a different perspective.

scalar changes and manner roots specify nonscalar changes, drawing on the notion of scalar change proposed in Kennedy and Levin (2008), itself building on the notion of scale discussed in Kennedy and McNally (2005). Both change of state verbs and path verbs involve change in the value of some scalar attribute, where being located at some point on a path is considered a scalar attribute. See Rappaport Hovav (2014), who details the way in which verbs encoding scalar change of both sorts are built in a parallel manner.

Mateu and Acedo-Matellán (2012) also argue that MRC emerges from the ways in which roots are associated with event structures. Like Rappaport Hovav and Levin (2010), they assume that manner roots and result roots are integrated differently in event structure. Unlike them, they assume that roots are not inherently classified as manner or result, but receive a manner or result interpretation when they are inserted in an appropriate syntactic configuration. A compounded root is understood as a manner, while a root that is in a position analogous to the predicate in a small clause is understood as a result. Roots of this second type may be incorporated into a head, but they cannot then also be compounded (2012:213). The syntactic inability of a root to be both incorporated and conflated yields MRC. Mateu and Acedo-Matellán argue their approach is to be preferred to Rappaport Hovav and Levin's since they find the prespecification of a root's type unnecessary, and, moreover, find that some roots allow a manner or a result interpretation, depending on their syntactic position. Rappaport Hovav and Levin (2010) and Levin and Rappaport Hovav (2013, 2014) also investigate roots which allow manner and result classifications, but they find that such roots typically have a basic classification and only under specific conditions do they allow the alternate classification.

Although there is little disagreement that MRC generally holds of the verb lexicon, various researchers have questioned its status as a principle governing verb meaning across the entire lexicon, citing a range of purported counterexamples (Beavers and Koontz-Garboden 2010, Cifuentes Ferez 2007:122, Goldberg 2010:48–49, Mateu and Acedo-Matellán 2012, Ramchand this volume, Zlatev and Yangklang 2004:167–168). Thus, they take the generalization to reflect a tendency involving the kinds of concepts that are preferentially lexicalized by verbs. We cannot address all these counterexamples here (see also Arsenijević 2010, Husband to appear), but underscore a few points. First, some counterexamples dissolve once lexicalized meaning is properly distinguished from other facets of meaning that are determined by context. Second, Levin and Rappaport Hovav (2013, 2014) argue that in some instances verbs are polysemous, in that there is no element of meaning that is constant across uses. Rather, they have both a manner meaning and a result meaning, as they show with in-depth case studies of the verbs *clean*, *climb*, and *cut*. They show each of these verbs has a manner use and a result use, showing the behavioral hallmarks of a manner verb precisely when it has a manner meaning and the behavioral hallmarks of a result verb precisely when it has a result meaning. Crucially, they show that when such verbs display manner behavior, the result-associated entailments disappear, and conversely, when they show result behavior, the manner-related entailments disappear. Mateu and Acedo-Matellán take this kind of behavior as evidence that verb roots are in principle insertable in both manner and result environments. Thus, both approaches agree that some roots show both kinds of behavior with concomitant differences in meaning. Rappaport Hovav and Levin's (2010) approach, which takes a root to have a basic association with a certain event structure po-

sition, predicts that this phenomenon should not be very widespread and that it should be possible to identify the circumstances under which these shifts take place.

As mentioned in section 2.3, some researchers propose that verbs like *fly* and *run* lexicalize a notion of direction (as do *scratch* and *wipe* (Mateu and Rigau 2010:262)) to explain why they show some properties of path (or result) verbs in Romance languages, although this phenomenon is not discussed under the MRC rubric. Under this proposal, these verbs violate MRC. Instead, we take these verbs to lexicalize a manner that strongly suggests the displacement of an entity; they are what Talmy (2000:261) calls "implied fulfillment verbs". They do not lexicalize direction—the meaning component associated with path verbs—per se: after all, they are compatible with movement in any direction. We believe that implicit or explicit contextual information allows a direction of motion to be inferred in certain uses of these verbs, although such inferences are more likely to be drawn with certain manners of motion than others; see (Levin, Beavers, and Tham (2009), Nikitina (2008), and Thomas (2004) on English, Iacobini and Vergaro (2014) on Italian, and Pedersen (2014) on Spanish.

4 Final words

In conclusion, there are striking crosslinguistic patterns in the constructions used to describe directed motion and change of state events—patterns that deserve an explanation even if they do not hold perfectly in every language which has received attention. A major insight that underlies these patterns is that in some languages manner verbs can take a wider range of complements than in others, allowing different types of complements that are not strictly selected by such verbs. Most existing accounts appeal to various compositional mechanisms—a compounding operation, an interpretive rule, or a lexical item with appropriate properties—in addition to various lexical properties of the languages themselves. These diverse analyses sometimes lead to different treatments of those languages that do not manifest the most pervasive pattern of correlation, suggesting that continued studies of such languages are warranted. The literature also points to a range of other phenomena that may fall under the larger umbrella, including verb-particle constructions, reaction objects (e.g., *smile one's approval*), the locative alternation, and double object constructions. Future investigations are needed to clarify whether all these phenomena indeed fall together, but to the extent that they do, their study is sure to contribute to our larger understanding of lexicalization patterns, as well as to their analysis.

Acknowledgments

We thank a reviewer for helpful comments on an earlier draft of this chapter. During the writing of this chapter, Rappaport Hovav was a fellow at the Mandel Scholion Interdisciplinary Research Center in the Humanities and Jewish Studies at the Hebrew University of Jerusalem.

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