

Verb classes within and across languages

Beth Levin

Stanford University

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Any attempt to characterize valency patterns within and across languages confronts the phenomenon of verb or valency classes: sets of semantically-related verbs sharing a range of linguistic properties, such as the possible realizations of their arguments and the particular interpretation associated with each possible argument realization. The Leipzig Valency Classes Project provides an excellent context for deepening our understanding of verb classes and, specifically, investigating a big question raised by efforts to classify verbs: which facets of verb classification are universal and which language particular?

I begin this paper by reviewing the motivations for recognizing verb classes. With this background, I introduce a broad semantic dichotomy that encompasses many existing verb classes and show its grammatical relevance. I then consider its implications for crosslinguistic studies of verb classes, such as the ones that are being carried out by the Valency Classes Project, through a case study of the argument realization options of hitting verbs.

1 Introduction: The appeal of verb–or valency–classes

In his paper “The Grammar of *Hitting* and *Breaking*” (1970), Fillmore presents a compelling case study that underscores the importance of verb classes. He shows that verb classes provide a device for capturing patterns of shared verb behavior, including possible realizations of arguments and their associated interpretations. Thus, verb classes prove to be both a means of investigating the organization of the verb lexicon and a means of identifying grammatically relevant elements of meaning.

Fillmore begins his study by comparing the grammatical behavior of the English verbs *break* and *hit*. Both have transitive uses and may optionally be found with an instrumental *with* phrase, as in (1).

- (1) a. The boy broke the window (with a ball).
b. The boy hit the window (with a ball).

However, the similarities between the two verbs end there: they actually show considerable divergences in their argument realization options. As Fillmore notes, *break* but not *hit* shows the causative alternation. That is, *break* has intransitive as well as transitive uses, with the transitive use roughly paraphrasable as ‘cause to *break*-intransitive’, while *hit* lacks such an intransitive use.

- (2) a. The boy broke the window./The window broke.
b. The boy hit the window./*The window hit.

The two verbs also differ in the interpretations available to their passive participles: *The window was broken* allows both a stative and an eventive reading, but *The window was hit* allows only an eventive reading. Furthermore, *hit* differs from *break* in allowing “possessor raising” in those instances where the surface contacted–henceforth simply the surface–is inalienably possessed, giving rise to the alternation in (3).

- (3) a. I broke his leg./*I broke him on the leg.
 b. I hit his leg./I hit him on the leg.
 (Fillmore 1970:126, (23)–(26))

In the first sentence with each verb, the surface—here a body part—is the object, while in the second sentence, the possessor of the body part is the object and the body part is expressed in a PP, instantiating what is often called “external possession”.

Less often discussed is that hitting verbs show an object alternation, as in (4), which Levin (1993) labels the *with/against* alternation (Fillmore 1977: 74–78; see also Fillmore 1970: 133, note 11). In this alternation, the variants are paraphrases, apparently simply providing different realizations of the same arguments.

- (4) a. Perry hit the fence with the stick.
 b. Perry hit the stick against/on the fence.

Although *break* can be found in the same syntactic environments, as in (5), such paired sentences are not paraphrases: the fence is understood to break in the (a) sentence, while the stick does in the (b) sentence.

- (5) a. Perry broke the fence with the stick.
 b. Perry broke the stick against/on the fence.

Stepping back, Fillmore points out that *break* and *hit* are each representative of larger classes of verbs (1970: 125, (15)–(16)), whose members share comparable patterns of behavior.

- (6) a. **Breaking verbs:** bend, **break**, crack, fold, shatter, split, snap, . . .
 b. **Hitting verbs:** bash, beat, bump, **hit**, kick, pound, punch, slap, strike, tap, thump, whack, . . .

Furthermore, the members of each class fall under the same broad semantic characterization. Breaking verbs are change of state verbs, describing a change of state in an entity. In contrast, hitting verbs are surface contact verbs, describing often forceful contact with an entity, without entailing a change in its state. Evidence that breaking, but not hitting verbs lexicalize a change of state comes from the pair of sentences in (7), which shows that denying the change of state leads to a contradiction with *break*, but with not *hit*.

- (7) a. # The rocks broke the windshield, but luckily it wasn’t damaged.
 b. The rocks hit the windshield, but luckily it wasn’t damaged.

Thus, these distinctive behavioral patterns provide support for recognizing classes of hitting and breaking verbs. More generally, they suggest the descriptive importance of recognizing classes of semantically similar verbs whose members show shared grammatical behavior—what I refer to here for convenience as **Fillmorean verb classes** in acknowledgement of Fillmore’s seminal work.

2 Moving beyond Fillmore's "The Grammar of *Hitting and Breaking*"

That members of a Fillmorean verb class show a characteristic argument realization pattern suggests that such patterns follow from facets of meaning common to class members. In fact, many studies—both large- and small-scale—have confirmed and extended Fillmore's findings (e.g., Apresjan 1967; Dixon 1991; Faber & Mairal Usón 1999; Green 1974; Gruber 1967; Jackendoff 1990; Levin & Rappaport Hovav 1991; Willems 1981; Zwicky 1971). For example, my book *English Verb Classes and Alternations* (Levin 1993) classifies English verbs that do not (exclusively) take sentential complements in two ways.¹

First, verbs are classified according to their semantic content, giving rise to classes such as manner of motion verbs, directed motion verbs, light emission verbs, change of state verbs, perception verbs, verbs of gestures and signs, and weather verbs. Such a classification is fairly fine-grained, with 48 broad classes or 192 smaller classes identified in Levin (1993) according to Kipper et al. (2008). The largest of the broad classes are change of state verbs, manner of motion verbs, sound emission verbs, and experiencer object psych-verbs. Second, each argument alternation, such as the causative alternation, conative alternation, dative alternation, or locative alternation, defines a verb class: the set of verbs participating in that alternation. This classification is coarser-grained, with 79 alternations—and, thus, classes—identified according to Kipper et al. (2008).²

The two dimensions of lexical classification—in terms of semantic similarity and in terms of shared participation in an argument alternation—lead to distinct and different-sized verb classes. The class of verbs showing a certain argument alternation often includes members of several Fillmorean verb classes. For example, the much studied English dative alternation illustrated in (8) encompasses a range of verb classes, including those in (9); for simplicity, this list excludes communication verbs.

- (8) a. Pat gave Sam a pear. (Double object variant)
b. Pat gave a pear to Sam. (*to* variant)
- (9) a. **give verbs:** give, pass, hand, sell, pay, trade, lend, loan
b. **Verbs of future having:** advance, allocate, allot, allow, assign, award, bequeath, forward, grant, guarantee, leave, offer, promise
c. **send verbs:** mail, send, ship

¹See Baker & Ruppenhofer (2002) and Faulhaber (2011) for arguments that identifying semantically coherent classes of verbs with similar behavior meets with limited success because there are a variety of idiosyncrasies shown by members of any particular class. Although there may be some differences among class members, I believe that there are still shared properties which make it instructive to investigate such classes to get a sense of which meaning components may be relevant to argument realization. Further, even if some members of such classes apparently show a narrower range of properties than others, they often have the potential to show the full range of properties, as Levin (2010) shows via a closer examination of the subclasses of manner of motion verbs posited by Boas (2006, 2008).

²Logically, all verbs could be grouped in terms of similar behavior with respect to all of the alternations available to them. (Certain alternations might be precluded for an individual verb due to particular verb-specific properties, such as the number of arguments selected.) Such a classification would give rise to a myriad of very fine-grained verb classes. Such classes might not be useful for crosslinguistic investigations of verb valency in the way that the medium-grained Fillmorean verb classes are, as this paper hopes to show through a case study of hitting verbs.

- d. **throw verbs:** fling, flip, kick, lob, shoot, slap, throw, toss
- e. **Verbs of continuous causation of accompanied motion in a deictically specified direction:** bring, take

(Based on Gropen et al. 1989: 243–244)

A question that arises for this and other alternations is whether all the verb classes showing a particular alternation have the same status. For instance, there is an intuition that not all the classes listed in (9) have the same status, and specifically that one class—the *give* verbs in (9a)—represents the “core” dative alternation verbs.³ In fact, in the construction grammar literature the meaning of the verb *give* is said to mirror the meaning of the double object variant (Goldberg 1995). The intuition of a core dative alternation verb class is reflected, for instance, in the observation that the translation equivalents of the members of this class are found in the English double object construction or its analogues across languages, while verbs outside this class need not be (Croft et al. 2001; see also Kittilä 2006).

Most important, the observation that the class of verbs showing a particular alternation is not necessarily coextensive with a Fillmorean verb class means that there are generalizations which cannot be stated in terms of notions such as “change of state verb” or “manner of motion verb”. Rather, the generalizations must make reference to elements of meaning that are common across sets of Fillmorean verb classes. Therefore, the Fillmorean verb classes cannot themselves be primitive, and verb class effects must be in some sense derived; see also Levin & Rappaport Hovav (2005: 16–18) for discussion.

3 Hitting and breaking beyond English

The notion of verb class receives support from other languages. Semantic classes of verbs, again with distinctive behavioral patterns, often paralleling those of their English counterparts, have been identified in other languages, although such studies have often focused on a few classes rather than confronting the entire verb inventory (e.g., DeLancey 1995, 2000 on Lhasa Tibetan; Guerssel et al. 1985 on Berber, Warlpiri, and Winnebago; Kroeger 2010 on Kimaragang Dusun; Vogel 2005 on Jarawara).

Again, such classes of verbs can be identified on the basis of shared morphosyntactic patterning, although the relevant morphosyntactic phenomena may vary somewhat across languages. For example, body-part possessor ascension (or external possession) takes alternate forms in different languages (e.g., Gerdts 1993; König & Haspelmath 1998); further, the English conative alternation lacks a counterpart in many languages (Bohnenmeyer 2007), as does the English resultative construction (e.g., Green 1973; Snyder 2001; Son & Svenonius 2008; Washio 1997), while the locative alternation is found with larger groups of verbs in some languages than others (e.g., Hunter 2008; Kim 1999). Such variation is not surprising since these phenomena depend on a language’s morphosyntactic type and, hence, resources (e.g., Gerdts 1993). Precisely what the correlations are between morphosyntactic resources and the availability and form of particular alternations is a subject for further

³The intuition that not all English dative alternation verbs have the same status also manifests itself in disagreements concerning whether some verbs outside the classes listed in (9) such as continuous transfer verbs like *push* and *pull* are found in the double object variant. Work by Bresnan and colleagues has established that continuous transfer verbs are indeed found in this variant (Bresnan & Nikitina 2009), suggesting there may be individual variation; further, Ford & Bresnan (2013) document cross-dialect preferences.

study, but see Beavers et al. (2010) for some discussion with respect to the crosslinguistic encoding of motion events.

The presence of Fillmorean verb classes across languages is illustrated by Kroeger’s study of hitting and breaking verbs in Kimaragang Dusun, a language of northern Borneo, which is summarized here. This language, like English, makes a clear distinction between the verbs *hit* and *break*, but this distinction manifests itself in the context of the type of “voice” system characteristic of Philippine languages. Specifically, as in other such languages, the semantic role of the “nominative” noun phrase in a Kimaragang Dusun sentence—and every sentence has such a noun phrase—is indicated by a voice affix on the verb (root). For a given verb, the arguments that may be chosen as nominative noun phrase, as well as the voice affixes that indicate the argument chosen, depend on the verb’s semantic class.

Roots of breaking verbs have both transitive and intransitive forms, paralleling the English causative alternation, although the forms have distinct voice affixes, while roots of hitting verbs generally only have a transitive form.

Table 1. Breaking verbs (excerpted from Kroeger 2010: 4, Table 1)

Root	Gloss	Intransitive	Transitive
babak	‘shatter’	mabak	mamabak
kinis	‘tear (e.g., cloth)’	kuminis	monginis
lapak	‘split’	lumapak	mangalapak
lupi	‘fold (e.g., cloth)’	lumupi	mongolupi
putut	‘break (rope etc.)’	mutut	momutut
tipu	‘break (stick etc.)’	tumipu	monipu
uyas	‘pull apart’	muyas	monguyas

Table 2. Hitting verbs (excerpted from Kroeger 2010: 4, Table 1)

Root	Gloss	Intransitive	Transitive
bobog	‘beat (w. stick)’	*mobog	momobog
duntuk	‘bump, knock’	*dumuntuk	mongoduntuk
duntung	‘punch (w. fist)’	*dumuntung	mongoduntung
lapis	‘slap’	*lumapis	mangalapis
pasut	‘cane’	*masut	mamasut
sudsur	‘poke’	*sumudsur	monudsur

As noted, the choice of nominative noun phrase is indicated by the verb’s voice form. Normally, instruments can be expressed as nominative noun phrases in sentences where the verb consists of the verb root together with the transitive prefix *poN-* and the zero allomorph of the instrument voice (IV) affix. The *poN-* + instrument voice form is available to verbs generally, including breaking verbs, as in (10), and hitting verbs, as in (11).

- (10) Dunsul ot pinangababak dilot pampang.
 <in>0-poN-babak
 hammer NOM <PST>IV-TR-shatter that rock
 ‘It was a hammer that that rock was broken up/shattered with.’
 (Kroeger 2010: 10, (17b))

- (11) Gibang nopo ot pongoduntung ku dialo, aba no.
 0-poN-duntung
 left only REL IV-TR-punch 1SG.GEN 3SG faint PRTCL
 ‘Even if it is only my left (hand) that I hit him with, he will pass out.’
 (Kroeger 2010: 10, (20b))

However, some hitting verbs can also express an instrument as nominative noun phrase when the verb consists simply of the root together with the *i-* allomorph of the instrument voice—a combination that Kroeger refers to as the bare instrument voice form—as in (12). In such instances, there is a change in the realization of the surface argument: it is now marked with dative case.

- (12) N-i-duntung dialo sid tobon a tonggom yo
 PST-IV-punch 3SG DAT wall NOM fist 3SG.GEN
 ‘He punched his fist against the wall.’ (Kroeger 2010: 10, (20a))

In contrast, breaking verbs lack bare instrument voice forms.

- (13) *i-babak ‘IV-shatter’, *i-putut ‘IV-break’, *i-lupi ‘IV-fold’, *i-uyas ‘IV-pull.apart’,
 ... (Kroeger 2010: 10, (17a))

Sentences such as (12) with the bare instrument voice form could be viewed as analogues of the *against* variant of the English *with/against* alternation illustrated in (4), which has the surface in an oblique form. In fact, Kroeger (2010: 9) analogizes the two instrument voice forms to the English *with/against* alternation.

Kroeger (2010: 5–6) argues that as in English, Kimaragang Dusun breaking verbs entail a result, but hitting verbs do not. He makes this point based on the available interpretations of the volitive form of the verb, which differ for breaking verbs and hitting verbs. The volitive form asserts that an action was intentional, but does not assert that the intended result was achieved, although this is typically implicated, while the nonvolitive form indicates that the result has taken place. As a consequence, a sentence such as (14), where the breaking verb is used to assert an action via its volitive form and deny its result via its nonvolitive form, is not a contradiction; however, the comparable sentence with a hitting verb is impossible because the verb does not lexicalize a result.

- (14) Minomutut oku do wakaw nga’, amu n-o-putut.
 PST.AV.TR.break 1SG.NOM ACC rattan but not PST-NVOL-break
 ‘I (tried to) break some rattan, but it didn’t break.’ (Kroeger 2010: 6, (7c))
- (15) *Minamasut oku do karabaw nga’, amu n-a-pasut-0.
 PST.AV.TR.whip 1SG.NOM ACC buffalo but not PST-NVOL-whip-OV
 ‘I (tried to) whip a buffalo, but it didn’t whip/get whipped.’
 (intended meaning; Kroeger 2010: 6, (8c))

Finally, Kroeger (2010: 4) points out that breaking verbs—or more precisely their roots—specify properties of the entity that changes state—the patient; in contrast, hitting verbs—or their roots—specify properties of their instrument. That is, in describing a certain situation, which breaking verb is chosen depends on the change of state, which may be determined

by properties of the patient. For example, sticks and ropes break in different ways, so they may require different breaking verbs in a language like Kimaragang Dusun where there are verbs specific to these two ways of breaking. In contrast, which hitting verb is chosen in describing a certain situation of surface contact depends on precisely how the action is carried out and, particularly, on the choice of instrument, with different verbs being required, say, if the instrument is a cane or a hand.

Kroeger's study, then, shows not only that the notion of Fillmorean verb class is useful beyond English, but that the same classes may be both identifiable and relevant across languages. Further, it reveals some similarity in the properties shown by English and Kimaragang Dusun, such as the availability of alternate realizations of the surface argument of hitting verbs. However, as Kroeger's study demonstrates, the morphosyntactic character of a language also shapes the properties that its verbs show, giving rise to differences among languages, as in the differential distribution of the bare instrument voice form of the verb across the hitting and breaking verb classes in Kimaragang Dusun.

This brief comparative discussion of English and Kimaragang Dusun raises two questions. First, are there expectations about the constellations of properties that members of a particular verb class could in principle show across languages? If there are, are these properties modulated in some way by each language's morphosyntactic profile? I believe that the answers to both these questions is "yes", as I strive to show in the remainder of the paper by focusing primarily on hitting verbs and to a lesser extent on breaking verbs. To begin, in §4 I place the hitting and breaking verb classes within a broader dichotomy applicable to the verb inventory of English and other languages. Next, in §5 I propose that there are constraints on the realization of the arguments of hitting and breaking verbs in English. Assuming that these constraints are applicable beyond English, then they should delimit the possible argument realization options of these verbs crosslinguistically, as I suggest they do through a case study of hitting verbs in several languages presented in §6.1. In §6.2 I suggest that the attested variety in the argument realization options of hitting verbs may be tied to properties of the languages under study.

4 Behind hitting and breaking: The manner/result verb distinction

Nonstative verbs largely fall into two major groups with respect to meaning and behavior, referred to as manner and result verbs by Rappaport Hovav and Levin (1998, 2010). To introduce these two types of verbs and the relation between them, I revisit the verbs *hit* and *break* asking why this pair of verbs allowed for an effective case study.

4.1 Hitting and breaking revisited

The verbs *hit* and *break* jointly make for a compelling case study because certain events involving damage to a physical object could be described by either verb, yet the choice of one verb or the other has significance. For instance, if a vandal throws a rock at a store window and the window breaks, what happens can be described by either of these two verbs, as in (16), although different facets of the event are highlighted.

- (16) a. The vandal broke the window with a rock.
b. The vandal hit the window with a rock.

The (a) sentence asserts that the window comes to be no longer intact, but it is silent about how it happened: the window could have been hit, kicked, punched, or pounded and a variety of instruments could have been used, including rocks, hammers, fists, sticks, and balls. The reason is that *break* is a change of state verb and simply specifies the state change. In contrast, the (b) sentence asserts that something forcefully came into contact with the window, but it is silent as to whether this contact had any effect on the window. It does not entail that the window broke (Fillmore 1970: 125), as (17) shows, although it does not preclude the possibility that the window may have broken.

(17) The rock that the vandal threw hit the window, but luckily it wasn't damaged.

The reason is that *hit* is a surface contact verb and simply specifies the mode of surface contact; however, since the contact may involve the application of force, such an action may result in a change of state to the surface.

Generalizing, verbs that can be used in English to describe events in which physical objects are damaged fall into two classes. One class includes *crack*, *shatter*, *splinter*, and *split*—all verbs which like *break* describe changes in an object's "material integrity" (Hale & Keyser 1987). Each of these **result** verbs describes a specific type of damage that can be inflicted on a physical object which often, although not always results from forceful impact with it. The other class includes *kick*, *punch*, *slap*, and *whack*—all verbs which like *hit* describe making surface contact with an object in a way that involves the application of a force. Due to the forceful impact, these **manner** verbs describe ways of potentially damaging physical objects.⁴ Thus, in English, just as in Kimaragang Dusun, a breaking verb is chosen to describe a situation based on properties of the patient, while a hitting verb is chosen depending on the nature of the contact made with this entity.

4.2 Beyond hitting and breaking: The pervasiveness of the dichotomy

The bifurcation in what might be described as a class of "verbs of damaging" comprised of the hitting and breaking verbs is representative of a more pervasive split in the English non-stative verb inventory (Levin & Rappaport Hovav 1991; Rappaport Hovav & Levin 1998, 2010). Other apparently semantically coherent verb classes of English can be similarly subdivided, giving rise to lexical domains with two subclasses of verbs: (1) a set of manner verbs which specify the manner of carrying out an action and (2) a set of result verbs which specify the coming about of a result, as shown in Table 3.⁵

⁴A hitting verb could be used in the description of an event in which damage is inflicted on a physical object (e.g., *The vandal hit the window and it broke*). In most circumstances, however, such a verb may be dispreferred as the sole verb in such an event description since such a description does not entail that damage necessarily occurred and, thus, omits potentially important information.

⁵More precisely, the manner/result distinction applies not to verbs, but to verb "roots"—the semantic core of verbs (Rappaport Hovav and Levin 2010: 26). Given the impoverished morphology of English, most verbs, as they are morphologically simple, consist of nothing more than their roots. (Two sets of apparently morphologically simple verbs that may be the exception are denominal verbs (e.g., *staple*, *butter*) and deadjectival verbs (e.g. *cool*, *dim*), which require further study.) The manner/result distinction might well also be applicable to stative verbs, especially when it is reformulated as a distinction between verbs that lexicalize a scalar change and those that do not. Scalar change can be defined over a spatial as well as a temporal dimension (Gawron 2009, Koontz-Garboden 2010), with some stative verbs—or verbs in their stative use—instantiating changes in the spatial dimension, as in *The river widens as it flows towards the sea*, thus qualifying as result verbs. Other stative verbs that do not lexicalize such changes would qualify as manner verbs. I leave this issue aside here.

Table 3. Manner and result verbs across lexical domains

	Manner verbs	Result verbs
Verbs of damaging:	<i>hit</i>	<i>break</i>
Verbs of putting – 2-dimensional:	<i>smear</i>	<i>cover</i>
Verbs of putting – 3-dimensional:	<i>pour</i>	<i>fill</i>
Verbs of removal:	<i>scrub</i>	<i>clean</i>
Verbs of combining:	<i>shake</i>	<i>combine</i>
Verbs of killing:	<i>stab</i>	<i>kill</i>

Thus, just as the verbs of damaging include both manner *hit* and result *break*, so too do the verbs of putting include manner *smear* and *pour* and result *cover* and *fill*. In each domain, the manner verbs describe actions used to bring about the types of results associated with the paired result verbs. The claim, then, is that verbs in the Manner column of the table share meaning components of the same type, as do those in the Result column. That is, the class of verbs defined by the Manner column is grammatically relevant despite the apparent semantic diversity of its members; the same holds of the class defined by the Result column (Levin 1999).

The perceived semantic classes represented by the rows in the table are not grammatically relevant. Such classes arise since certain manner verbs and certain result verbs can sometimes be used to describe the same event in the world, just as *break* and *hit* or *smear* and *cover* can. Pairs such as these emerge because many result verbs lexicalize results that are conventionally associated with particular manners. For example, *clean* and *clear* lexicalize states that may result from removing stuff from a surface, and for many surfaces there is a prototypical manner in which such a state is achieved: floors are cleaned by sweeping or mopping, counters by wiping, carpets by vacuuming. Comparably, many manner verbs lexicalize manners that are conventionally used to bring about particular results (Talmy 2000: 261–268; see also Goddard this volume). Thus, *wipe* and *scrub* describe actions involving surface contact and motion which are often used to remove stuff from a surface. However, result verbs do not entail a manner—not even a manner conventionally associated with bringing about that result; further, manner verbs do not entail a result—not even a conventionally associated result—as (18) shows.

- (18) a. I just wiped the counter, but it’s still dirty/sticky/covered in crumbs.
b. I cleaned the silver bracelet by wiping it with a soft cloth/rubbing it with toothpaste/dipping it in a special solution/saying “abracadabra”.

The manner/result dichotomy extends to the motion domain, as reflected in Talmy’s classification of motion verbs in terms of what meaning components they “conflate” (1975, 1985, 2000). His motion and path conflating verbs (e.g., *arrive*, *ascend*, *descend*, *enter*) are result verbs, while his motion and manner conflating verbs (e.g., *amble*, *fly*, *jog*, *run*, *swim*) are manner verbs. Thus, *ascend* specifies a direction of motion, but not the manner in which the motion is effected, while *jog* specifies a manner of motion, but is neutral as to the specific direction of motion. Furthermore, the notions of manner and result apply to verbs such as those in (19) that do not easily fit into larger lexical domains spanning manner and result verbs of the type illustrated in the table above.

- (19) a. **Manner verbs:** cry, eat, exercise, flap, honk, mutter, scribble, shout, sleep, smile, squeak, waltz, wave, . . .

- b. **Result verbs:** dim, dry, faint, gladden, melt, scare, widen, . . .

This dichotomy also crosscuts the transitive/intransitive verb divide of a language; thus, Levin (1999) shows argument realization properties are shared by both transitive and intransitive manner verbs; see also §5. §5.3 considers Fillmorean verb classes in light of the manner/result verb dichotomy.

Rappaport Hovav & Levin (2010) propose that the manner/result verb dichotomy arises from a constraint on the meaning that a verb can lexicalize, that is, a constraint on those meaning components that are specified and entailed in all uses of the verb, regardless of context.⁶

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

A verb's lexicalized meaning, then, is distinct from the meaning elements that can be inferred from its use in a particular context. Rappaport Hovav & Levin further propose that this distinction is rooted in the notion of scalar change (Hay et al. 1999; McClure 1994; Rappaport Hovav 2008), which is a descendant of aspectual notions such as “measure” (Tenny 1994) and “incremental theme” (Dowty 1991). The claim is that result verbs are verbs of scalar change, while manner verbs are not. That is, a result verb describes a change along a scale of change related to its lexicalized result. For instance, the verb *brighten* describes a change along a scale constituted of degrees of brightness, organized in increasing order.⁷ In contrast, manner verbs are not inherently associated with a single scale of change.

4.3 Identifying manner and result verbs

A critical question is how a verb's classification as manner or result can be determined. The patterns of linguistic behavior to be presented in §5.1 and §5.2 provide a way of determining whether an English verb is a manner verb or a result verb; they can also be used in other languages with comparable phenomena. Ultimately, however, a verb's classification as manner or result should be based on whether it lexicalizes a scalar change—the property underlying this classification. Yet in some instances a verb's classification may not be obvious. Levin & Rappaport Hovav (2013) elaborate on why deciding whether a verb is a result verb or a manner verb might be difficult. When a verb is used in a sentence to describe an event, inferences that arise from the larger context in which the sentence is uttered may sometimes

⁶Following up on note 5, more accurately manner/result complementarity constrains lexicalized material (Rappaport Hovav & Levin 2010: 26). In English, where most words are morphologically simple, complementarity holds of words; however, in so-called bipartite verb languages such as Lakhota (Foley & Van Valin 1984: 40–45) and Washo (Jacobsen 1980: 91), where verbs are constituted of stems and affixes, it holds of the pieces of verbs.

⁷Despite what is suggested in Rappaport Hovav & Levin (1998), the manner/result distinction does not map cleanly onto traditional aspectual classes because the notion of scalar change does not, as discussed in Rappaport Hovav (2008, in press). Manner verbs in their basic uses are atelic: most often they are durative and, thus, activities (e.g., *pound*, *sweep*); however, some are unspecified for durativity and may have semelfactive or activity uses (e.g., *hit*, *beep*). Result verbs may be basically telic or unspecified for telicity (Rappaport Hovav & Levin 2005). Thus, verbs like *cool* or *dim*—so-called degree achievements (Dowty 1979)—which lexicalize a multi-valued scale are unspecified for telicity and may show either telic or atelic uses, while verbs like *break* and *arrive* which lexicalize a two-valued scale (Beavers 2008) are basically achievements.

be mistaken for components of meaning lexicalized by its verb. As noted, many manners are conventionally used to bring about certain results, such as wiping a physical object in order to clean it. As a consequence, often when a wiping event takes place, a cleaning event is also taking place. Especially when associations between certain manners and results are particularly strong, the wrong meaning component could be attributed to a verb.

Further insight into how best to determine a verb's classification can be found in Levin & Rappaport Hovav (2013, in press). These papers present case studies of three verbs whose classification is problematic: *clean*, *climb*, and *cut*. Koontz-Garboden & Beavers (2012), in presenting a critique of manner/result complementarity, propose a range of diagnostics for manner and result verbs, although these diagnostics are not all equally effective. As with all diagnostics, the most effective diagnostics are those rooted in the nature of the phenomenon under study, in this instance scalar change. A further complication is that the class of scalar change verbs includes durative verbs—those associated with multi-point scales—and punctual verbs—those associated with two-point scales—and these two subclasses might be picked out by distinct diagnostics. Perhaps the best diagnostic for a result verb is that the argument undergoing the change is necessarily different at the end of the event, although even this diagnostic must be used with care to avoid mistaking contextually derived inferences for lexicalized meaning.

5 The grammatical relevance of the manner/result verb dichotomy

Not only do manner and result verbs differ systematically in meaning, but they also differ in their argument realization options (Rappaport Hovav & Levin 1998, 2005), as discussed in §5.1 and §5.2. This discussion provides necessary background for revisiting the value of Fillmorean verb classes in §5.3 and then considering the value of verb classes from a crosslinguistic perspective in §6.

5.1 The basic differences in argument realization

Many of the differences in argument realization between the hitting verbs and breaking verbs discussed in §1 are manifestations of a more fundamental constraint on the argument realization options available to change of state verbs.⁸ As succinctly stated by Rappaport Hovav & Levin (2005), the primary characteristic of change of state verbs such as *break* is that they must realize their patient argument, and they must realize it as a direct object in their transitive uses (and as a subject in their intransitive uses; see Levin & Rappaport Hovav 2011). In fact, this generalization can be extended to result verbs in general: the argument that the scalar change they lexicalize is predicated of must be realized as a direct object if the verb is transitive (and as a subject if it is intransitive). Thus, a verb like *put* or

⁸One exception is the causative alternation. Fillmore (1970) takes this alternation to be a key property of breaking verbs, and it is often considered to be a hallmark of change of state verbs in general. However, the set of verbs showing the causative alternation crosscuts the manner/result divide. Although change of state verbs—a prominent subset of result verbs—are considered to be the prototypical causative alternation verbs of English and other languages, some manner verbs, including *bounce*, *roll*, and *spin*, show the alternation and some result verbs, including *create*, *insert*, and *put*, do not. Consistent with this dissociation, the theoretical accounts delineated in this section do not offer insight into the causative alternation, although they explain other important argument realization properties characteristic of manner and result verbs.

bring must have its theme argument as the object (**put the shelf with the books/*put at the lid on the pot*). The surface argument of hitting verbs and the non-agent argument of other two-argument manner verbs are not subject to this restriction. This difference underlies the divergences in argument realization options that manner and result verbs show, such as those noted by Rappaport Hovav & Levin (1998), which are pursued by Levin (1999, 2006); see also the discussion of hitting and breaking verbs in Dowty (1991: 594–597).

Consistent with this generalization, not only do hitting verbs show multiple options for realizing their surface arguments, but they show other forms of flexibility in the realization of their arguments. Thus, the surface need not be expressed as an object, as when *hit* is found in the conative alternation, an alternation that breaking verbs do not display since it precludes the object expression of the patient argument.

- (21) a. Carla hit the door./Carla hit at the door.
 b. Janet broke the vase./*Janet broke at the vase.

More generally, this constraint on argument realization means that manner verbs show considerably more and different argument realization options than result verbs. Manner verbs but not result verbs are found with unspecified objects without recourse to generic or repetitive contexts, as in (22) (Rappaport Hovav & Levin 1998; Wright & Levin 2000; notwithstanding potential counterexamples cited by Goldberg 2001, 2005, 2010; Mittwoch 2005; T. Tsunoda p.c.), and manner verbs but not result verbs are found with nonsubcategorized objects, as in (23) and (24).⁹

- (22) a. Leslie swept (the floor) this morning.
 b. * Kelly broke again tonight when she did the dishes.
- (23) a. The child rubbed the tiredness out of his eyes.
 b. Cinderella scrubbed her hands raw.
- (24) a. * The clumsy child broke the beauty out of the vase.
 b. * The clumsy child broke his knuckles raw.

Rappaport Hovav & Levin (1998) attribute these differences among manner and result verbs to their associated event structures: manner verbs are basically associated with simple event structures as in (25), while result verbs are basically associated with maximally complex, causative event structures as in (26). (The parentheses around “y” in (25) recognize that there are both one-argument manner verbs such as *laugh* and *run* and two-argument manner verbs such as *hit* and *wipe*; see Levin (1999).)

- (25) [x ACT<MANNER> (y)]

⁹As with many argument alternations, there are both necessary and sufficient conditions governing the availability of unspecified objects with a given verb. Being a manner verb is necessary for allowing unspecified objects, but not sufficient. Unspecified objects must be recoverable from context (Brisson 1994; Rappaport Hovav & Levin 1998), explaining why some manner verbs require some degree of contextual support with such objects, while others fail to allow them altogether. Thus, in the absence of context, *Tracy swept* is fine, but *Tracy scrubbed/wiped* is somewhat odd because the unspecified object is understood to be the floor with *sweep*, but it is not clear what it should be with *scrub* or *wipe*. It is for this reason that the availability of unspecified objects with manner verbs is not illustrated with a hitting verb in (22).

(26) [[x ACT<MANNER> (y)] CAUSE [BECOME [z <STATE>]]]

The simple event structure of a manner verb can be “augmented” via the addition of a result to give the type of complex event structure basically associated with a result verb. In English, this option is reflected in resultative constructions headed by manner verbs, such as *Cinderella scrubbed the floor clean*, which has the event structure in (27)—an instantiation of (26), in which “y” and “z” have the same referent.

(27) [[x ACT<SCRUB> y] CAUSE [BECOME [y <CLEAN>]]]

Furthermore, as Levin (1999) argues, two-argument manner verbs have simple event structures that only require their actor participant (the “x” in (25)) to be expressed. The other participant (the “y” in (25)) need not be realized, if recoverable from context. Thus, manner verbs may be found in resultative constructions which have a result predicated of a non-argument as in (23). Thus in (23b), *Cinderella scrubbed her hands raw*, what is scrubbed is not Cinderella’s hands, the apparent object of *scrub*, but some unexpressed entity. Such resultatives have the event structure in (28); this event structure is also an instantiation of (26), but here the “y” and “z” indeed have distinct referents.

(28) [[x ACT<SCRUB> y] CAUSE [BECOME [z <RAW>]]]

Rappaport Hovav & Levin (1998) propose that, in contrast, result verbs require both their agent/causer and patient arguments to be expressed so that there is one argument representing each of the subevents in their basic, complex event structure in (26). This property is reflected in the unacceptability of the resultative constructions headed by result verbs in (24), in which the result phrase is predicated of a non-argument. That is, the result verb *break* cannot be found in (24b), **The clumsy child broke his knuckles raw*, with the intended meaning that the clumsy child broke many things, thus causing injury to his knuckles. Rappaport Hovav & Levin (1998) further posit that a result verb has the maximally complex event structure and, thus, does not allow its event structure to be further augmented.

Rappaport Hovav (2008) and Rappaport Hovav & Levin (2010) take a somewhat different perspective on these argument realization facts. They suggest that an argument which has a scalar change predicated of it must be lexically expressed. Since result verbs lexicalize such a scale, their patient argument, as the argument undergoing the scalar change, must be expressed. The unacceptability of unspecified and nonsubcategorized objects with such verbs follows, as in such instances the patient argument is not expressed. Manner verbs have no comparable requirement since they do not lexicalize a scalar change. Thus, they have more argument realization options, including cooccurrence with nonsubcategorized objects. If a scale is externally introduced with a manner verb, say via a result predicate, then the argument this result is predicated of must be expressed. Compare the optionality of the surface argument in *Casey swept (the floor)* to its obligatoriness in *Casey swept *(the floor) clean*, where it has a result predicated of it.

5.2 Further differences: Object alternations

The constraint on the object of result verbs has yet another repercussion: object alternations are predicted to be found with manner but not result verbs (Levin 2006). Object alternations are argument alternations involving a verb which has two arguments available within the

verb phrase, where either of these arguments can be expressed as the object, with the other argument usually expressed as an oblique, but sometimes left unexpressed. (Thus, verbs maintain the same association of argument with subject in both variants of these alternations.) This prediction arises because only manner verbs and not result verbs have flexibility in object choice. Examples of some well-known English object alternations follow together with a selection of verbs attested in each alternation according to Levin (1993).¹⁰

- (29) Locative alternation – putting subtype: dab, smear, splash, spray, sprinkle, ...
- a. Jill sprayed paint on the wall.
 - b. Jill sprayed the wall with paint.
- (30) Locative alternation – removing subtype: rake, scrub, shovel, sweep, wipe, ...
- a. Jack wiped crumbs off the counter.
 - b. Jack wiped the counter.
- (31) Material/product alternation: carve, knit, sculpt, sew, weave, whittle, ...
- a. Martha carved a toy out of the piece of wood.
 - b. Martha carved the piece of wood into a toy.
- (32) Image impression alternation: emboss, embroider, engrave, paint, ...
- a. Taylor embroidered peonies on the jacket.
 - b. Taylor embroidered the jacket with peonies.
- (33) *Withlagainst* alternation: beat, hit, pound, tap, whack, ...
- a. Sam hit the fence with a stick.
 - b. Sam hit a stick against the fence.

The verbs showing these alternations are indeed manner verbs. They describe actions that involve a variety of changes, none along a single specified dimension, as result verbs do; nor do they entail a particular result. And, as expected given such a classification, they show the relevant argument realization properties, as shown for representative verbs showing each alternation in (34)–(38). For instance, they allow unspecified objects and nonsubcategorized objects, as shown in the (a) and (b) sentences, respectively, in each set.

- (34) Locative alternation – removing subtype:
- a. Shelly swept/scrubbed.
 - b. Cinderella swept and scrubbed herself into catatonia.

¹⁰I assume following Rappaport Hovav & Levin (2008) that the dative alternation is not an object alternation in that the first object in the double object construction is not a true “object,” as argued by Baker (1997), Hudson (1992), Maling (2001), Marantz (1993), and Postal (2011). It is possible that further investigation may reveal that there are other purported object alternations that have been misidentified.

- (35) Locative alternation – putting subtype:
- a. Shelly sprayed/splashed.
 - b. With great difficulty, he and the other two men **splashed** and forced their way through the rusted, barnacle-encrusted supports of the pier. (A. Lurie. 1998. *The Last Resort*. New York: Henry Holt, 211)
- (36) Image impression alternation:
- a. Shelly embroidered.
 - b. She **embroidered** her fingers to the bone for the wedding. (mylittlestitches.wordpress.com/2009/05/29/)
- (37) Material/product alternation:
- a. Shelly sewed/knit/carved.
 - b. Maybe she wants to **sew** her fingers numb in a poorly lit basement or wash dishes 16 hours a day. (<http://forum.baby-gaga.com/about790609-11.html>)
- (38) *With/against* alternation:
- a. Shelly kicked/punched.
 - b. And **kicked** himself into contention for the league’s Most Valuable Player honor. (J. Duarte. Goal-oriented: Rested Dougherty has hotshots ready for the title run. Sports Section, *The Houston Chronicle*, 8/8/1997: 6)

Absent from the verbs showing these object alternations are verbs from semantic classes whose members are result verbs, including change of state verbs (e.g., *break*, *crack*, *dim*, *widen*), verbs of putting (e.g., *insert*, *put*), and verbs of taking (e.g., *take*, *obtain*). These verbs all inherently describe events that involve a scale of change: either a scale with multiple values, as with *dim* or *widen*, or a scale with only two values, as with *break* or *take*. More specifically, as noted in §1 change of state verbs do not show the *with/against* alternation, as in (39), nor do they show the removing form of the locative alternation, as in (40). Further, although verbs of putting and verbs of taking may express their arguments as in one variant of the locative alternation, they do not show the alternation, as in (41) and (42).

- (39) a. Lee broke the fence with the stick.
 b. Lee broke the stick against the fence. (does not mean ‘Lee broke the fence.’)
- (40) a. Corey shortened the dress.
 b. *Corey shortened the elegance out of the dress.
- (41) a. Shannon put the groceries into the bag.
 b. *Shannon put the bag with the groceries.
- (42) a. Alex obtained the rare metal from Transylvania.
 b. *Alex obtained Transylvania (of the rare metal).

Again, these verbs demonstrate other properties of result verbs: they do not allow unspecified objects, as in (43), nor nonsubcategorized objects, as in (44).

(43) * Kelly broke/dimmed/covered/inserted/obtained.

- (44) a. * My kids broke me into the poorhouse.
b. * The stagehand dimmed the scene dark.
c. * Sam inserted the door open (with a doorstep).
d. * The robber obtained the bank vault empty.

5.3 Fillmorean verb classes revisited

A natural question is how Fillmorean verb classes relate to the manner/result dichotomy. Do members of a given Fillmorean class all fall into either the manner class or the result class or do some members of a Fillmorean class fall into the result class and others into the manner class? Studies to date suggest that the members of a given Fillmorean class are either all manner verbs, as the English hitting verbs are, or all result verbs, as the English breaking verbs are. This distribution is not unexpected since the meaning components that bring together the members of a given Fillmorean class are grammatically relevant—that is, they have implications for a verb’s argument realization potential—and as §5.1 and §5.2 show the notions of manner and result play an important role in determining argument realization. However, it is still possible that a grammatically relevant meaning component that characterizes a particular Fillmorean class could crosscut the manner/result dichotomy, but I leave this question for further investigation.

To the extent that Fillmorean verb classes are subsumed under either the manner class or the result class, a second question arises: Does recognizing the manner/result dichotomy obviate the need to recognize Fillmorean classes in the first place, especially as they pertain to argument realization? The discussion in §5.1 and §5.2 bears on this question. As shown, argument realization options can be tied to the manner/result dichotomy: there are argument realization properties that are hallmarks of result verbs and others that are hallmarks of manner verbs, with manner verbs show considerably more flexibility in their argument realization options than result verbs, particularly with respect to object types and object alternations. Membership in a particular Fillmorean class determines more specific argument realization options within those allowed to the manner—or result—verb class that the members of this class belong to, such as participation in specific object alternations for manner verbs. Thus, in order to show an object alternation, a verb must be a manner verb, as argued in §5.2. The actual object alternations that a manner verb shows depends on the specific type of manner it lexicalizes—a property that may place a verb in a particular Fillmorean class. Thus, *wring*, a verb which lexicalizes a manner of twisting or otherwise manipulating a physical object to remove liquid from it, shows the removing form of the locative alternation but not the *with/against* alternation, while *hit*, a verb which lexicalizes forceful contact with a surface, shows the *with/against* alternation but not the locative alternation.¹¹ Thus,

¹¹See Boas (2006, 2008) who questions the value of Fillmorean verb classes by arguing that even finer-grained verb classes need to be recognized, and Levin (2010) for discussion of why Fillmorean classes are still valuable.

Fillmorean classes, which arise from further specifics of the lexicalized meaning elements, continue to be valuable.

6 Implications of the manner/result dichotomy for crosslinguistic investigations

Given that the manner/result dichotomy provides insight into the argument realization options of English verbs, the question arises whether this dichotomy plays a role in understanding the argument alternations and other verb-related phenomena of languages beyond English? Drawing on the observations made for English, several more specific questions can be asked: (1) In other languages are manner and result verbs different in their argument realization patterns? (2) Specifically, in a given language do manner verbs show more flexibility in their object choices than result verbs, as they do in English? (3) Across languages is the flexibility in object choice open to manner verbs manifested in the availability of a variety of argument realization options attested with such manner verbs? That is, even if a given language does not show multiple argument realization options for its manner verbs, is a diverse set of argument realization patterns observed for these verbs across a range of languages, as might be expected given the lack of constraints on object choice? Further, this would be expected to contrast with expected uniformity in the argument realization options available to result verbs.

The answer to the three questions above, I believe, is “yes”. Although I cannot present a thorough investigation of all manner verbs, there is suggestive evidence to this effect that comes from examining the argument realization options of the counterparts of *hit* and related verbs such as *beat*, *kick*, *punch*, *slap*, *tap*, and *whack* within and across several languages. Hitting verbs are a subclass of surface contact verbs, a larger set which also includes verbs like *rake*, *smear*, *sweep*, and *wipe*; however, hitting verbs lexicalize the application of a force at some point on a surface, rather than contact and motion with respect to a surface as some other surface contact verbs such as *sweep* and *wipe* do.¹² In §6.1 I show that hitting verbs show a diversity of argument realization options across languages that largely reflects one or more of the options witnessed in English with such verbs. Then in §6.2 I identify what these options have in common and offer some comments as to why these options might be attested.

If the observations made for English do indeed carry over to other languages, then in contrast to manner verbs, result verbs would not only be expected to show similar argument realization options across languages, but to show little flexibility in the options available to them. These predictions for result verbs should be verified too; however, I have chosen

¹² The precise set of verbs that falls under the notion of surface contact needs further investigation. For instance, some studies cited in §6.1 note that translation equivalents of *bite*, *pat*, *peck*, *poke*, *scratch*, *shoot*, and *stab* pattern like hitting verbs in some languages, and although I mention such verbs, it is not clear that they all belong to the class of surface contact verbs. In fact, T. Tsunoda (p.c.) informs me that he has considered positing a class of verbs between change of state verbs and surface contact verbs in his transitivity hierarchy (see §6.2) for verbs such as *bite*, *scratch*, *shoot*, and *stab* because semantically they seem to involve a notion of change of state, yet they pattern like surface contact verbs in terms of argument realization. Koontz-Garboden & Beavers (2012) characterize *stab* and *shoot* as manner of killing verbs, a set of verbs whose members, according to them, show properties of both manner and result verbs. My own initial investigations of some of these verbs with M. Rapaport Hovav suggests that *stab* and *shoot* are best classified as manner verbs, but establishing the correct analysis goes beyond the scope of this paper.

to focus on manner verbs—and specifically on hitting verbs—in the remainder of this paper because I know of no systematic study of these verbs and their behavior is predicted to be more varied. I provide a few brief mentions of breaking verbs as representatives of the result verb class where relevant data are available, just to show that they indeed contrast in their behavior with hitting verbs.¹³

6.1 The data

As already discussed, in English hitting verbs are basically transitive verbs, but they allow for alternative realizations of the argument denoting the surface: although it may be the object, it may also be expressed in a PP. In fact, it is precisely in the realization of this argument that variation is observed across languages. However, as this study is based primarily on secondary sources, the sample of languages considered is opportunistically rather than systematically chosen, and the range of data available for each one varies. Thus, this study can establish an interesting handful of attested strategies for expressing the surface, but given the incomplete nature of the data, it is not able to address conclusively how many of these strategies are found in each of the languages being discussed, nor can it identify the factors that determine the choice among them.

Ulwa, a Misumalpan language of Nicaragua, expresses the surface, whether animate or inanimate, in a PP headed by the locative preposition *kau*, as in (45) and (46) (A. Koontz-Garboden p.c.).¹⁴

(45) M raudi L *(kau) bau-t-ida.
 M SUBJ L at hit-TA-3s
 ‘M hit L.’ (Koontz-Garboden field notes: 0405-1024)

(46) Andrew raudi Ulwa uuka *(kau) bau-t-i tung ka.
 Andrew SUBJ Ulwa house at hit-TA-PROG walk EVID-KA
 ‘Andrew is walking around hitting the Ulwa house.’
 (Koontz-Garboden field notes: 0405-1025)

This pattern holds of the verb *baunaka*, which is used to describe a range of surface contact events, including those falling under English *hit*, *kick*, and *beat*, as well as the verb *tisnaka* ‘slap’. These verbs contrast with change of state verbs such as *bahnaka* ‘break’, *dapinnaka* ‘straighten/bend’, and *warinnaka* ‘bend’ in their transitive uses: their patient argument does not appear with *kau*.

¹³As discussed in note 8, the causative alternation does not figure among the argument realization properties that follow from the manner/result dichotomy, even if Fillmore (1970) cites it as distinguishing between hitting and breaking verbs. Thus, since this section focuses on implications of the manner/result dichotomy for argument realization beyond English, I do not consider the causative alternation in this section. Nevertheless, it is worth noting that as documented in crosslinguistic studies such as Haspelmath (1993), Nedjalkov (1969), and Nichols et al. (2004), causative alternations are attested across languages, even if the morphological relation between the variants can vary. Further, the sets of verbs showing each language’s instantiation of the alternation overlap significantly and always include the counterpart of the English verb *break*. In contrast, the counterparts of the English verb *hit* are not considered in these crosslinguistic studies presumably because they fall outside the potential domain of the alternation. Further, to the extent that this information is available, it appears that the counterparts of *hit* do not show the causative alternation in the languages cited in §6.1 (e.g., Hebrew (Halevy 2008: 87), Portuguese, Russian, Ulwa (A. Koontz-Garboden p.c.)).

¹⁴Ulwa verbs consist of a root (e.g., *bau-* ‘hit’, *bah-* ‘break’) together with a transitive or intransitive class marker (Koontz-Garboden 2009). The examples cited here include the transitive class marker *ta*, glossed TA.

- (47) Aaka bakaka ulni-ki panka (*kau) bah-t-ida.
 this child writing-1s stick at break-TA-3s
 ‘This kid broke my pen.’ (Koontz-Garboden field notes: 0405-1030)

In Hebrew, with some hitting verbs, including those in (48), the surface—whether animate or inanimate—is expressed in a PP headed by the locative preposition *be*.¹⁵

- (48) *ba’at* ‘kick’, *dafaq* ‘knock (on the door), beat’, *halam* ‘beat/hit’, *hitslif* ‘whip (a horse)’, *naga* ‘touch’, *paga* ‘hit/collide’, *xavat* ‘swat’, ... (Botwinik-Rotem 2003: 10, Halevy 2008: 63, 87)

- (49) Ha-sus ba’at be Dina/ ba dli.
 the-horse kick.PST.3sm in Dina/ in.the pail
 ‘The horse kicked Dina/the pail.’

The verbs *hirbits* ‘hit’—perhaps the verb most frequently used to describe hitting in colloquial speech—and *satar* ‘slap’ take animate surfaces only, and then only if expressed in the dative.

In a discussion of hitting and breaking events in Lhasa Tibetan, DeLancey (2000) notes that the counterpart of English *hit* must use a locative marker to express the surface, as shown in (50) with an animate and in (51) with an inanimate.

- (50) thub=bstan-gyis blo=bzang-la gzhus-song.
 Thubten-ERG Lobsang-LOC hit-PERF
 ‘Thubten hit Lobsang.’ (DeLancey 2000: 6, (18))

- (51) shing-la sta=re gzhus-pa
 tree-LOC axe hit
 ‘hit the tree with an axe’ (DeLancey 2000: 13, (61))

Lhasa Tibetan shows an ergative case marking system, and (51) includes an absolutive—i.e. morphologically unmarked—noun phrase expressing the instrument used; thus, the form of this sentence is reminiscent of the English *against* construction, i.e. *hit the axe against the tree*. As in English, the Lhasa Tibetan counterparts of *hit* and *break* differ in their argument realization properties. Locative case is not found on the patient argument of change of state verbs, as shown in (52).¹⁶

- (52) thub=bstan-gyis dkar-yol cig bcag-song
 Thubten-ERG cup a break-PERF
 ‘Thubten broke a cup.’ (DeLancey 1982: 23, (6))

There is more to be said about Lhasa Tibetan. Concepts expressed by many English surface contact verbs may be expressed via verb-noun combinations in Lhasa Tibetan (DeLancey 1995, 2000: 13). In these combinations, the verb is fairly unspecific, with the noun used to specify the type of hitting event, for instance, by indicating the instrument or body part used. The surface continues to be expressed in the locative case.

¹⁵The verb *hika* ‘beat/hit’ takes the surface in the accusative if animate, but expresses it in a PP if inanimate. The verb *dafaq* ‘knock (on the door), beat’ takes an accusative noun phrase when it takes on a change of state meaning, roughly comparable to English *dent*. The verb *hilqa* ‘hit with an instrument (usually a lash)’ also takes an accusative complement.

¹⁶The orthography has been modified in (52) to make it consistent with the other Lhasa Tibetan examples.

- (53) nga-s blo=bzang=la rdog=rdyag gzhus-pa yin
 I-ERG Lobsang-LOC kick_N hit/throw-PERF/CONJUNCT
 ‘I kicked Lobsang’ (DeLancey 1995: (20))
- (54) thub=bstan-gyis blo=bzang-la mur=rdzog gzhus-song
 Thubten-ERG Lobsang-LOC fist hit-PERF
 ‘Thubten punched Lobsang’ (DeLancey 2000: 13, (64))

Examples such as (53) might be compared to the English light verb construction *give a kick*, which roughly paraphrases the verb *kick*. In fact, Ulwa also uses verb-noun combinations headed by *baunaka* to express certain more specific manners of contact that might be lexicalized as individual verbs in English (A. Koontz-Garboden p.c.).

In Ingush, which also has an ergative case marking system, the surface with a hitting verb is expressed with an oblique case—the dative—and the instrument with the nominative (i.e. absolutive) case (Nichols 1984: 188, 2011: 467–470, 746), as in (55) with an animate surface and (56) with an inanimate surface.

- (55) Da:s woʃa: bi: bi-ett.
 father-ERG son-DAT fist-NOM beats
 ‘(The) father beats (his) son.’ (Nichols 1984: 188, (8))
- (56) Cuo mashienaa ghadzh tiexar.
 3s.ERG car-DAT stick-NOM strike
 ‘He hit the car with a stick.’ (Nichols 2011: 340, (47))

This case marking pattern is common across Caucasian languages according to Nichols (1984: 188), with languages varying as to whether the oblique case is dative as in Ingush or locative as in some Daghestanian languages.¹⁷

Besides the verb *d-ietta* ‘strike (repeatedly), beat’ in (55) and *tuoxan* ‘strike’ in (56), other verbs showing this pattern are *haqan* ‘cut, slice, rub (and other lateral motions)’ and *quossan* ‘throw, shoot’ (Nichols 1984: 188–189, 2011: 470). Ingush’s hitting verbs have fairly general meanings, and as in Lhasa Tibetan, particular verb-noun combinations correspond to particular English verbs (Nichols 1982: 447, 1984: 188). Thus, *urs tuoxan*, literally ‘knife strike’, means ‘stab’, not ‘hit with a knife’ and, similarly, *tuop tuoxan*, literally ‘rifle strike’, means ‘shoot’, not ‘beat with a rifle’ (Nichols 1984: 189). Other examples include *kur tuoxan*, literally ‘horn hit’, which means ‘butt’ (Nichols 2011: 341) and *cerjg tuoxan* ‘tooth strike’, which means ‘bite’ (Nichols 2011: 468).

In European Portuguese, happenings described by many English surface contact verbs are only expressible via light verb-noun combinations, with the surface expressed in a PP (Baptista 2004), although in some instances there are verbs corresponding to the light verb-noun combinations.¹⁸ The Portuguese light verb-noun examples differ somewhat from the

¹⁷Nichols (1984: 189) notes that some hitting verbs allow the surface to be in the nominative for certain choices of objects, as in *gorgali biettan* ‘ring a bell’ and *njeʃ jiettan* ‘knock at a door’, both based on *d-ietta* ‘strike (repeatedly), beat’.

¹⁸Actual Portuguese hitting verbs show several patterns of argument realization (P. Amaral p.c.). Some verbs, like the denominal verb *chicotear* ‘whip’, can only take an animate surface, which they express as the object, as in (63). In contrast, *bater* ‘hit’ expresses the surface as the object of the dative preposition *a*, if animate, and as the object of the locative preposition *em*, if inanimate.

Lhasa Tibetan and Ingush ones. First, the verb used is usually *dar* ‘give’ rather than a general hitting verb as in Ingush and Lhasa Tibetan.¹⁹ Second, although some simple nouns such as *pontapé* ‘kick’ and *murro* ‘punch’ can enter into these verb-noun combinations, the noun is often what Baptista (2004) calls a “predicative violent action noun”. Such nouns are formed by adding the suffix *-ada* to a concrete noun denoting an instrument or body part that can be used to hit or hurt: *bengala* ‘cane’ + *-ada* in (57).

- (57) O João deu uma bengalada ao Pedro.
 the John give.PERFPST3s a caning to.the Peter
 ‘John gave a cane-*ada*, i.e., a caning, to Peter.’ (Baptista 2004: 36, (18c))

In (57) the surface is again expressed as an oblique, while the predicative violent action noun is the object of the verb. Once the difference in case marking systems is abstracted away from, this pattern largely parallels those observed in Lhasa Tibetan and Ingush. The surface is expressed as a noun phrase with dative case, like a recipient, rather than as the object of a locative preposition, most likely, reflecting the use of *dar* ‘give’ as a light verb. The locative preposition *em* is found when the surface is an inanimate, as in (58), or a body part, as in (59) and (60). In (59) the locative PP contains a body part with the possessor as part of this noun phrase. In (60) the possessor of the body part is expressed in the dative case external to the body part; thus, it instantiates external possession.

- (58) O João deu uma bengalada no carro.
 the John give.PERFPST3s a caning in.the car
 ‘John hit the car.’
- (59) O João deu [um pontapé] [na perna do Pedro].
 the John give.PERFPST3s a kick in.the leg of.the Peter
 ‘John gave a kick in the leg of Peter.’ (Baptista 2004: 32, (2a))
- (60) O João deu [um pontapé] [ao Pedro] [na perna].
 the John give.PERFPST3s a kick to.the Peter in.the leg
 ‘John gave a kick to Peter in the leg.’ (Baptista 2004: 32, (2b))

Baptista lists over 40 violent action nouns in *-ada*, and notes that such nouns are productively formed, with nonce instances being encountered, such as *sapatada* ‘shoe-*ada*’ and *cadeirada* ‘chair-*ada*’. Further examples of bases that give rise to violent action nouns are given in (61). There are denominal verbs related to a small number of these nouns, as in (62), but apparently the inventory of actual hitting verbs in Portuguese is small compared to English.

- (61) *bastão* ‘club, staff’, *bengala* ‘cane’, *bordão* ‘staff’, *chibata* ‘switch, rod’, *pau* ‘stick’, *porra* ‘club’, *taco* ‘club/cue’, *tranca* ‘bar’, ... (from Baptista 2004: 39–40)

¹⁹In some languages, then, the content of English hitting verbs is expressed with light verb-noun combinations headed by verbs like Portuguese *dar* ‘give’, which as A. Malchukov (p.c.) points out presumably have a complex event structure, yet manner verbs, including hitting verbs, have a simple event structure, as discussed in §5.1. This mismatch deserves further consideration, but its resolution goes beyond the scope of this paper. A potentially fruitful line of investigation might be the following: the light verb-noun combination may not inherit the verb’s event structure, but rather the verb contributes the grammatical scaffolding needed for argument realization, with the event structure coming from the noun.

(62) *chicotear* ‘whip_V’ (cf. *chicote* ‘whip_N’), *martelar* ‘hammer_V’ (cf. *martelo* ‘hammer_N’),
mocar ‘club_V’ (cf. *moca* ‘club_N’) (from Baptista 2004: 39–40)

(63) O João chicoteou o Pedro.
 the John whip.PERFPST3s the Peter
 ‘John whipped Peter.’ (Baptista 2004: 36, (17b))

Palancar (1999) makes similar points about Spanish, identifying what he calls the “hitting” construction which is the analogue of the Portuguese construction illustrated in (57); it is found not just with the Spanish verb *dar* ‘give’, but also with other verbs including *pegar* ‘stick to’ and *arrear* ‘harness’ (1999: 71). An example is given in (64).

(64) Maria le dio a Juan una patada.
 Mary DAT3s give.PST3s to John a kick
 ‘Mary gave John a kick.’ (Palancar 1999: 68, (32))

As in other Romance languages, in Portuguese and Spanish *break* and other change of state verbs in their causative uses are clear transitive verbs; their meanings are not expressed with a comparable light verb strategy. Hebrew also can describe hitting events via a light verb strategy by making use of the verbs *natan* ‘give’ or *hevi* ‘bring’, as in (65).

(65) Sus hevi beita la-oto šeli.
 horse bring.PST3s kick to.the-car of.1s
 ‘A horse kicked my car.’ (<http://www.elsf.net/showthread.php?t=908903>)

Vietnamese illustrates yet other options. Hitting verbs may express the surface—whether an animate or inanimate entity—as an object as in English, as in (66); however, they may also take a cognate object, with the surface optionally expressed in a PP, as in (67) and (68).²⁰

(66) Ti đá tôi.
 Ti kicked me
 ‘Ti kicked me.’ (Pham 1999: 232, (10a))

(67) Ti đá một đá.
 Ti kicked a kick
 ‘Ti kicked a kick.’ (Pham 1999: 233, (10b))

(68) Ti đá [một đá] [vào tôi.]
 Ti kicked a kick on me
 ‘Ti kicked me a kick.’ (Pham 1999: 233, (10c))

This data is cited in a paper on cognate objects in Vietnamese, where one of the subclasses of cognate object verbs identified, the class which includes the verbs listed in (69), is described as having members which “usually involve physical movement of instruments, which can be either body parts or physical objects towards someone or something” (Pham 1999: 233). This particular subgroup has thirty-two verbs; sixteen of them are listed here.

²⁰The Vietnamese examples cited in Pham (1999) lack diacritics; these have been added here. I thank B. Comrie for his help with this.

- (69) *đá* ‘kick’, *đấm* ‘punch’, *thụi* ‘punch’, *cạo* ‘scratch’, *cấu* ‘pinch/nip’, *nện* ‘beat’, *quai* ‘beat’, *cắn* ‘bite’, *đánh* ‘hit’, *tát* ‘slap’, *vuốt* ‘stroke/fondle’, *liếm* ‘lick’, *hôn* ‘kiss’, *cù* ‘tickle’, *phang* ‘strike with a stick’, *quất* ‘strike’, ... (Pham 1999: 233)

Even across Germanic languages, there is variation in the argument realization options of surface contact verbs, and in fact, some of these languages instantiate yet another option: a sensitivity to the animacy of the surface. Lundquist & Ramchand (2012) show that in Swedish and German, the surface must be expressed in a PP when inanimate as in (70), but it may be an object when animate, as in (71); the (a) sentences are Swedish, the (b) sentences German.²¹ (See de Swart 2010 for comparable facts in Dutch.)

- (70) a. Jag sparkade *(på) bordet (flera gånger).
I kicked (on) table.DEF (many times)
‘I kicked (on) the table many times.’ (Lundquist & Ramchand 2012: 224, (2a))
- b. Ich habe *(gegen) den Tisch getreten.
I have *(against) the table PERF.kick.PART
‘I kicked (against) the table.’ (Lundquist & Ramchand 2012: 224, (2b))
- c. I kicked (on/against) the table (many times). (English)
- (71) a. Jag sparkade (på) honom (flera gånger).
I kicked (on) him (many times)
‘I kicked him many times.’ (Lundquist & Ramchand 2012, 224, (1a))
- b. Ich habe ihn (oft) getreten.
I have him (often) PERF.kick.PART
‘I kicked him many times.’ (Lundquist & Ramchand 2012: 224, (1b))
- c. I kicked him (many times). (English)
- (72) *sparka* ‘kick’, *slå* ‘hit’, *bita* ‘bite’, *slicka* ‘lick’, *hugga* ‘chop’ (Lundquist & Ramchand 2012: 228)

Lundquist & Ramchand point out that with these verbs an inanimate direct object is possible in two instances: if a resultative phrase is predicated of it or if the object is understood as being set in motion due to the force imparted as part of the action denoted by the hitting verb, as in (73).²²

²¹Viberg (2004: 337–338) also makes this point about Swedish in a case study of the Swedish verb *slå*, which based on corpus data he finds to be the central member of the set of hitting verbs in Swedish. The study shows the meaning of *slå* to be broader than that of English *hit*: its meaning also encompasses ground covered in English by *strike*, *beat* and, *knock*, as well as some other verbs (2004: 329).

²²A similar observation has been made about other languages in which hitting verbs take oblique complements. Thus, in Hebrew the verbs *ba’at* ‘kick’, shows a transitive use if the surface is a physical object, such as a ball, which is set in motion as a result of having a force exerted on it via the contact. As discussed below, Russian also shows animacy effects, but when an entity is set in motion, as when a ball is kicked, it is expressed via the accusative case rather than as the object of a preposition. A. Anttila (p.c.) tells me that in Finnish too, where hitting verbs generally take partitive rather than accusative nominal complements, the complement can be accusative when it denotes an entity set in motion; in such instances a path phrase is also expressed.

Other exceptions to the Swedish pattern are the verbs *buckla* ‘dent’, *repa* ‘scratch’, *märka* ‘mark’, *skada* ‘injure’ allow an inanimate surface to be the direct object. With these verbs, the contact “entails a visible surface change on the inanimate object” (Lundquist & Ramchand 2012: 229); that is, perhaps they should be analyzed as change of state verbs, with the surface actually being a patient. At the very least, these verbs should probably be subsumed under the problematic set of verbs mentioned in note 12.

- (73) Jag sparkade bollen i må.
 I kicked ball.DEF in goal
 ‘I kicked the ball into the goal.’ (Lundquist & Ramchand 2012: 229, (15))

There is a further repercussion of the animacy restriction: although in English the verb *scratch* can take either animates or their body parts as direct objects, its Swedish counterpart can only felicitously take animates, as in (74).

- (74) a. Kan inte du klia mig (på ryggen)?
 can not you scratch me (on back.DEF)
 ‘Can’t you scratch me on the back?’ (Lundquist & Ramchand 2012: 228, (12))
- b. ?? Kan inte du klia (på) min rygg?
 can not you scratch (on) my back
 ‘Can’t you scratch my back?’ (Lundquist & Ramchand 2012: 228, (13))

Swedish again shows something like the English *against* construction: the instrument of contact may appear as the object.²³

- (75) Jag högg kniven i bordet.
 I stuck knife.DEF in table.DEF
 ‘I stuck the knife into the table.’ (Lundquist & Ramchand 2012: 229, (16))

In Russian, as in Swedish and German, the surface argument of a hitting verb is expressed in a PP when it is inanimate: it is the object of the preposition *po*; however, these same verbs allow the surface to be expressed as an object, bearing accusative case, when animate.

- (76) Petja udaril/ stuknul/ šlepnul Kolju.
 Petja.NOM hit/ knocked/ slapped Kolja.ACC
 ‘Petja hit/knocked/slapped Kolja.’
- (77) Petja udaril/ stuknul/ šlepnul po stolu.
 Petja.NOM hit/ knocked/ slapped on table.DAT
 ‘Petja hit/knocked/slapped the table.’

Although the nature of the animacy effect in Russian need further investigation,²⁴ what matters is that in Russian, causative uses of change of state verbs, including *slomat* ‘break’, are transitive, as in (78).

- (78) Petja slomal stol.
 Petja.NOM broke table.ACC
 ‘Petja broke the table.’

²³But see Andersson (1983: 119) for more detail on the options for the *with/against* alternation in Swedish, including some interactions with animacy of the surface.

²⁴Preliminary corpus studies by T. Nikitina (p.c.) suggest that animacy is not quite the right way to cut the data since not only can balls–physical objects which can be set in motion–be expressed as objects of hitting verbs, but so can breakable entities, such as vases, and openable entities, such as doors. See also note 22.

The agent and patient are expressed as subject and object, respectively, and these verbs do not allow their patient to be expressed in a prepositional phrase, even when it is inanimate.

In summary, although small, the sample of languages surveyed demonstrates that hitting verbs show a range of argument realization options both within and across languages, but the repeated attestation of some of the observed options, even in this small sample of languages, suggests that the argument realization patterns available to hitting verbs do not vary wildly. The simplest options include allowing the surface to be expressed as an oblique complement of the hitting verb rather than as its object or only allowing the surface to be the object if it is animate or meets other semantic criteria (see notes 22 and 24). In addition, some languages use verb-noun combinations to express what is lexicalized as a verb in other languages, with the surface expressed as an oblique. The verb in such a combination may be a general hitting verb or a light verb, and in the limiting case, the combination takes the form of a cognate object construction. Hitting verbs are discussed, more often than not briefly, in work on other languages, and these additional discussions generally support the picture emerging here (e.g., Chung 2003 on Korean; Kiyosawa & Gerds 2010 on Salish; Schaefer & Egbokhare 2004 on Emai; Tsunoda this volume on Djaru; Malchukov 2005: 83–84 on several languages). Furthermore, the survey confirms that the patterns of behavior shown by hitting verbs present a striking contrast to those attested for breaking verbs in their causative use: these appear to have the same transitive argument realization across languages. The variety of argument realization options manifested by hitting verbs conforms to the expectations for manner verbs set out at the beginning of this section: that such verbs should show flexibility in argument realization, as they are not constrained to express a specific argument as object as result verbs are.

6.2 Is there systematicity underlying the attested diversity?

Even the small survey just presented reveals a range of argument realization options for hitting verbs across languages, as well as variation in the options observed in a particular language. Still, there are some generalizations that underlie the diversity observed with hitting verbs. This section articulates these and tries to make some sense of them.

English hitting verbs can realize the surface as a direct object or in a PP. In the other languages investigated, these two options are also attested, although both are not available in all languages, and in some languages the realization depends on animacy. Generally, across the languages surveyed there seems to be some resistance to expressing the surface as a canonical direct object. This observation is foreshadowed in the placement of surface contact verbs in Tsunoda's transitivity hierarchy (1981, 1985: 388–389, this volume). Tsunoda introduces an implicational hierarchy of semantic classes of two-argument verbs organized according to how likely their members are to be transitive in a language.²⁵

- (79) Tsunoda's Transitivity Hierarchy (simplified):
change of state verbs > surface contact verbs > perception/cognition/emotion verbs

²⁵The characterizations of the verb classes in (79) have been slightly modified to align with the terms used in this paper; change of state verbs are Tsunoda's class 1A, while surface contact verbs constitute a large part of his class 1B. T. Tsunoda (p.c.) points out that a class intermediate between his 1A and 1B may need to be recognized; see note 12. See also Malchukov (2005) for a refinement of Tsunoda's hierarchy, which recognizes two dimensions of variation, affectedness and agentivity, which splits the hierarchy into two hierarchies.

The verb classes are ordered left-to-right from those whose members are most to least likely to be transitive across languages. Thus, the placement of surface contact verbs in this hierarchy recognizes that the surface is not the object in all languages. The transitivity hierarchy might be understood as arising as a consequence of priorities among various semantic determinants of argument realization. Based on an assessment of the semantic components of transitivity suggested by Hopper & Thompson (1980), Tsunoda proposes that verbs are ordered in the hierarchy from those with the most to least “affected” second argument.

As §6.1 shows, in some languages when the surface is not expressed as the object, a third, instrument argument is expressed as the object instead, as in (12) in Kimaragang Dusun, (51) in Lhasa Tibetan, (56) in Ingush, and (75) in Swedish. This argument realization pattern resembles the *against* variant of the English *with/against* alternation.²⁶

- (80) a. Sam hit the fence with a stick.
 b. Sam hit a stick against the fence.

As noted by Nichols (1984: 188), this argument realization pattern apparently reflects what is a primary argument realization option for hitting verbs in Caucasian languages. The label “instrument” has been used for the third argument for two reasons: it may be expressed as the object of the preposition *with* as in the English (80a) and the noun phrase filling this argument position may denote an artifact designed to be an instrument. However, in a hitting event, this artifact moves into contact with the surface and, thus, also qualifies as a theme in the localist sense (Gruber 1965; Jackendoff 1976, 1983) or a figure in the Talmyan sense (1975, 1985). Thus, the *against* variant in the English *with/against* alternation illustrated in (80b) provides a realization of a verb’s arguments where the moving argument is given priority over the surface as the object.

As discussed in §5.1 for English, an argument that changes state has priority as object, taking priority over other arguments. However, if an event lacks such an argument, as in hitting events and surface contact events more generally, this requirement is irrelevant. The data surveyed in §6.1 shows that this is no less true in languages other than English; thus, more variation is attested in the expression of non-patient arguments. The observed argument realization patterns show that with hitting verbs either the instrument or surface—a Talmyan ground—can be realized as the object. The question is precisely what factors are involved. An instrument qualifies as an object because it is a moving entity. The surface qualifies as a force recipient—an argument that is impinged upon by a force but does not necessarily change state (Croft 1991; Rappaport Hovav & Levin 2001), and such arguments can also be expressed as objects, as they are in English. However, in some instances the surface may qualify as affected, especially when the surface is animate and, thus, sentient. Thus, Lundquist & Ramchand (2012) propose that animates are necessarily affected in a hitting event because they are sentient or “experientially affected by the event” in their words (2012: 230), while inanimates are not (see also Dowty 1991: 596; Malchukov 2006: 334, 2008: 211, who cites Wierzbicka 1981). According to them, this is why Swedish shows an animacy split in the transitivity of hitting verbs: events with an animate surface are more likely to have a transitive expression than those without because affected entities

²⁶M. Bowerman (p.c.) points out to me that children learning English make errors that involve this mode of argument realization, as in the following two examples: *someone hit a snowball at a policeman* or *anyone that would, like, try to hit a spear at you would just fall back*.

are expressed as objects; de Swart (2010) makes similar arguments to explain comparable facts in Dutch.

Thus, the availability of both object and oblique realizations for the surface could be attributed to conflicting priorities for objecthood that arise in the absence of an argument undergoing a scalar change. Both the surface as a force recipient—or, when animate, an affected entity—and the instrument as a moving entity qualify as objects. Which one is chosen depends on the language, so that the options attested in a particular language reflect its priorities. I do not fully work out the priorities here, but the data suggests they must exist, with some variation across languages. Some languages prefer to express the surface as object when it alone is expressed, as in English; others disallow the expression of the ground as object, either across the board, as apparently in Lhasa Tibetan or Ulwa, or if it is inanimate, as in Russian or Swedish.

Although a theory of argument realization could be designed to handle such priorities, it is possible that the priorities in some languages may have a deeper source. Specifically, the data presented in §6.1 suggest that some languages have a tendency to express at least some part of the manner component in a hitting event—typically, an instrument, but sometimes a more abstract notion—outside the verb. This option is instantiated when the manner is a complement to a fairly nonspecific hitting verb, as in Ingush and Lhasa Tibetan, or a light verb, as in Hebrew, Portuguese, and Spanish. It is also instantiated in Vietnamese, where the manner is not only lexicalized by the verb, but is reiterated as a cognate object.

Comments in some of the studies consulted suggest that languages that use the verb-noun combination option have a smaller set of hitting verbs than English. Thus, in Portuguese only 16 of the 47 bases for violent actions nouns listed in Baptista (2004) provide bases for denominal verbs. DeLancey (2000: 13) comments that verb-noun combinations express the Lhasa Tibetan counterparts of English hitting verbs, implicitly suggesting that this language lacks corresponding verbs. These observations are noteworthy because reduced manner of motion verb inventories have been documented in a range of languages, including Basque, Japanese, Korean, and Spanish (Baird 2008; Cardini 2008; Cifuentes Férrez 2007, 2009; Ibarretxe Antuñano 2004; Shi 2008; Slobin 2000, 2004a, 2004b, 2006; Wienold 1995).²⁷ Further, Wienold (1995: 319-322) suggests that the reduced manner of motion verb inventory in Japanese, Korean, and Thai is reflective of a more general reduction in the size of the manner verb inventory in these languages. Although I am unaware of studies of the manner of motion verb inventory in Portuguese or Lhasa Tibetan, a question for further research is whether the reduced number of hitting verbs in these languages is a

²⁷Observations about the size of manner of motion verb inventories have been made in the context of investigations of the lexicalization patterns of motion events. This literature distinguishes verb-framed languages like Japanese or Spanish, which typically express the path of motion in the verb, from satellite-framed languages like English, which typically express the path outside the verb, typically in PPs (Talmy 1975, 1985, 2000). The studies cited in the text note that verb-framed languages—and Portuguese is such a language—tend to have smaller inventories of manner of motion verbs than satellite-framed languages or use fewer different such verbs in the description of the same events; however, more recent studies suggest that these correlations may be more complex (Iacobini 2010; Matsumoto 2003). Thus, Iacobini (2010) shows that Italian, said to be a verb-framed language, has a manner verb inventory that is more comparable in size to that of English (but see Cardini 2008 for an alternative perspective), and also shows other features of satellite-framed languages (Iacobini & Masini 2006: 162–163). I leave an exploration of links between the expression of motion events and hitting events—and, specifically, whether languages which express hitting events with verb-noun combinations are verb-framed languages—for future work.

reflection of the size of their manner verb inventories in general.

What matters here is that the discussions of manner of motion verb inventories provide some insight into the expression of hitting events. They note that verbs specifying major gaits—for instance, the equivalents of English *walk* and *run*—tend to be lexicalized across languages, while their hyponyms— notions such as those expressed by English *jog*, *lope*, *amble*, *creep*, *prance*, and *strut*—are not always lexicalized, particularly in so-called verb-framed languages (Malt et al. 2008; Slobin 2000, 2006; Wienold 1995). These hyponyms name more specific gaits, and languages vary as to which gaits they lexicalize, with some even being culturally specific. (Thus, even though English and German have a comparable number of manner of motion verbs (Snell-Hornby 1983), they do not have the same verbs.) Similarly, the discussions of languages that use verb-noun combinations in the expression of hitting events mention the presence of general hitting verbs (A. Koontz-Garboden p.c.; Nichols 1984: 190); the notions expressed by the verb-noun combinations correspond to the hyponyms of English *hit*.

Furthermore, languages with reduced manner of motion verb inventories circumvent the limitations of their verb inventories by expressing manner outside the verb (Slobin 2004b: 232-236; also Ibarretxe-Antuñano 2004 on Basque; Akita 2008 on Japanese). To make up for “missing” manner of motion verbs, languages may use a more general manner verb in combination with an adverbial modifier, as in the English *walk on tiptoe* instead of the verb *tiptoe*, although such expressions are often avoided where possible (Slobin 1996, 2006). Languages with ideophones may use these to fulfill the same function (Akita 2008; Ibarretxe-Antuñano 2006, 2009; Matsumoto 2003; Slobin 2004b: 233-235; Stringer 2011; Sugiyama 2005; Wienold 1995: 319-322). This is exemplified with Japanese data from Wienold (1995: 320, Table 8), who makes the same point about Korean and Indonesian.

Table 4. Japanese ideophones used to convey manners of walking

Ideophone	Verb	Gloss
<i>yochiyochi</i>	<i>aruku</i> ‘walk’	‘toddle, totter’
<i>yoboyobo</i>	<i>aruku</i>	‘totter, stagger’
<i>sutasuta</i>	<i>aruku</i>	‘walk briskly’
<i>burabura</i>	<i>aruku</i>	‘stroll’
<i>tobotobo</i>	<i>aruku</i>	‘trudge along, tread on’
<i>shanarishanari</i>	<i>aruku</i>	‘walk daintily’

The use of the ideophone strategy in Japanese extends beyond the motion domain. Shibatani (1990: 155) makes the same point about verbs for laughing: the nuances that differentiate English *chuckle* and *giggle* are captured through different choices of ideophones combined with the single verb *warau* ‘laugh’. Further examples involve manners of crying (Shibatani 1990: 155; Wienold 1995: 32) and manners of looking (Tsujimura 2007: 449).

This brief discussion of verb inventories and ideophones is intended to demonstrate that manners lexicalized as part of English verb meanings are expressed outside the verb in various semantic domains in Japanese. Thus, verb-ideophone combinations might be expected to provide a way of making finer-grained distinctions within the hitting domain, and, indeed Japanese has ideophones which may be combined with the Japanese counterparts of hitting verbs, such as *tataku* ‘hit’ and *tutuku* ‘poke’, to do precisely this (Kageyama 2007: 47), as

in (81).²⁸

- (81) Yukiko-ga doa-o gongon tatai-ta.
Yukiko-NOM door-ACC ‘bang’ hit-PST
‘Yukiko banged the door.’

Ideophones, then, are another resource for increasing the types of hitting events that can be described in a language, just as verb-noun combinations are. What is interesting about (81) is that the use of the ideophone is not accompanied by a shift in the grammatical relation (or morphological case) associated with the noun phrase expressing the surface: it is still an object marked for the accusative case. This contrasts with Ingush, Lhasa Tibetan, or Portuguese where the use of a noun with the counterpart of the verb *hit* or a light verb precludes the expression of the surface as an object, or Vietnamese, where the presence of a cognate object leads to the unavailability of this expression. Presumably, Japanese allows the surface to be still expressed as an object because ideophones are adverbial in nature (Kageyama 2007: 37) and, thus, do not occupy a nominal “slot” in a sentence. The realization of the surface as an object, then, is not just a matter of a language’s argument realization priorities, but also of availability.

Some of the crosslinguistic diversity in the realization of the arguments of hitting verbs, then, may be traceable to differences in the morphosyntactic resources available to the languages under consideration. Beavers et al. (2010) make precisely this point with respect to the expression of motion events. They argue that the diversity of encoding of motion events that has come under the lexicalization pattern rubric is a reflection of how differences among languages in available morphosyntactic resources are reflected in the encoding options attested for such events.

The discussion in this section suggests that there is a still incompletely uncovered logic underlying the attested argument realization options for hitting verbs. There is an abstract behavioral unity across languages despite differences in their argument realization patterns that might stem from facets of a language’s morphosyntactic profile. More careful and extensive study of this and other verb classes across languages is needed to fully isolate the relevant factors and understand their contribution to argument realization. The Valency Classes Project and comparable projects are poised to help us make progress in doing this.

7 Conclusion

Verb classes are essential to characterizing regular patterns of verb behavior within and across languages. Verb classes, however, are not primitive, but emerge from more fundamental meaning components such as manner and result (Levin 1993: 18). These components may then contribute to our understanding of patterns of verb behavior across languages, just as the notions of manner and result do.

Equally important, crosslinguistic studies of verb classes allow us to compare the ways in which languages describe particular types of events. The similarities and differences

²⁸Japanese also allows ideophones to combine directly with the light verb *suru* ‘do’ to convey hitting events (Kageyama 2007: 47). An example involving the ideophone *tonton* is *kata-o tonton suru* ‘tap someone’s shoulder’. Interestingly, in English there are various hitting verbs which are onomatopoeic in that the verb takes its name from a sound produced by surface contact, e.g., *bang*, *clink*, *clatter*, *plink*, *plonk*, *thud*, *thump*, *whack* (Richardson 1983; Stringer 2011: 18), so English is using verbs directly where Japanese is using ideophones.

uncovered can then be investigated to obtain a better understanding of how a language's morphosyntactic type might play into its patterns of argument realization. These points were illustrated with the case study of hitting verbs. My hope is that even this brief study underscores the importance of the Valency Classes Project and its potential larger contribution to our understanding of languages. The availability of studies of valency in a range of languages will facilitate studies such as the one presented here by providing them with considerable data to draw on.

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