Just a Matter of *Manner*? Modeling Action Verb Semantics in an Inter-Linguistic Perspective

by *Federica Cominetti, Alessandro Panunzi**

Abstract

Action verbs are an important testing ground for the study of lexical encoding of the *manner* feature. In this respect, the opposition between *manner* and *result* verbs has definitely become one of the central nodes to describe different ways to lexicalize the meaning components. Nonetheless, a more integrated way to conceive cognitive and semantic conceptualization of actions can lead to highlighting a wider range of lexicalization strategies. The inter-linguistic comparison of these strategies can make a major contribution to this end. In this paper, we will mostly focus on Chinese, English and Italian, and we will analyze the meaning components of different series of verbs from the semantic fields of *breaking*, *cutting*, *cooking*, *killing*, and *motion*. In order to perform such an analysis, we assumed the framework adopted by the IMAGACT Ontology, a multilingual database linking visually represented action concepts and lexical entries. The results lead to reconsidering the weight of some of the traditional categories used to describe action verb semantics. More specifically, we will see that *manner* and *result* features can interact in different and complex ways, and that other components, such as the *goal* of the action, can be useful to describe the meaning of verbs encoding neither *manner* nor *result*.

Introduction

Action verbs reveal a primary semantic field for the study of manner. In this paper, we will present a preliminary study of the strategies adopted in different languages, and notably in Chinese, English and Italian, for representing the different components of action conceptualization, primarily focusing on manner, result, and related categories. We will present data from different semantic fields, mainly regarding *breaking*, *cutting*, *cooking*, *killing* and *motion* events.

The paper has the following structure. In Section 1 we will present the general problem of action definition in both linguistic and cognitive perspectives, and the solution provided by IMAGACT, a multilingual database linking visually represented action concepts and lexical entries. In Section 2 we will focus on the traditional partition between manner and result verbs, showing classic diagnostics and tackling their problems. Correlations between this classification and other conceptual components of action definition will be highlighted. In Section 3, a state of the art of the debate on events and action lexicalization in Chinese will be presented. The related category of

resultative complements will be also introduced. In Section 4 we will present data on action verbs extracted from the IMAGACT database comparing Chinese with English and Italian. We will account for some major problems in the definition of action categories, relating them to the distinction of manner and result components of meaning. The results lead to reconsidering the traditional categories used to describe action verb semantics, trying to give a more integrated cognitive and linguistic model for the representation of actions. We will finally draw some conclusions.

1
The problem of action definition and the IMAGACT framework

Starting at least with Davidson's account of the logical semantics and ontological structure of action sentences[1], the notion of "event" became a core element in the representation of the meaning of action verbs. Following these footsteps, lexical semanticists working in the Generative Semantics tradition developed models for representing verbs semantics by means of the "event structure" components. These models try to explicit the verb meaning in a propositional form, combining two main types of components[2]: (a) generic basic predicates as semantic primitives (including, for instance, ACT, CAUSE, BECOME); (b) specific lexical roots encoding more specific meanings. These models have been often exploited in order to build predictive models of possible and non-possible lexicalization of events.
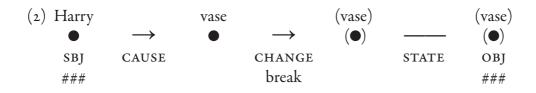
Other approaches, focusing on different aspects, contributed to give a broader linguistic framework for the description of events, including the inherent temporal properties of an event[3], the definition of spatial relations among event participants as the basic component of a verb meaning[4], or the description of the cause and effect chains within the transmission of force dynamics[5].

Despite this multi-faceted account of its linguistic expression, the definition of what an action is within the continuum of events still remains an open question, from both a general cognitive level and a linguistic one. As we said, linguistic studies mainly focused on the semantic structure of verbs and their role within the expressions referring to actions, which is assumed to reflect a general cognitive structure[6]. On the other side, studies on the cognitive correlates of action rather focused on how we create mental models of actions[7]. Nevertheless, the interaction between these two sides of the question is still lacking, and we are still far from a unifying framework connecting them.

One of the main problems of the event-structure-based accounts of action verb meaning is that the root semantics is usually represented by the lexeme itself, triggering a confusion between general conceptual categories and specific linguistic ones[8]. This clearly emerges from the formal representation of the meaning of the verb *to break* given, for instance, by Rappaport Hovav and Levin[9]:

(1) $[[X \text{ ACT }_{\text{<MANNER>}}] \text{ CAUSE } [\text{BECOME } [Y_{\text{<BROKEN>}}]]]$

The same kind of problem can be also seen in the representation of the sentence *Harry broke the vase* as a causal chain in Croft[10]:

(2) Harry   vase   (vase)   (vase)

   ●   →   ●   →   (●)   ——   (●)

SBJ   CAUSE   CHANGE   STATE   OBJ

\#\#\#   break   \#\#\#

Actually, both these accounts leave us unanswered about what the verb *to break* means, since its meaning still remains expressed by the same lexical entry which is the object of the study.

The IMAGACT Ontology of Actions[11] has been built separating the problem of action identification from the one of action definition, trying to give a way out to the problem of the underdeterminacy of meaning, so well-known within the philosophical tradition[12].

The basic idea that inspired the building of this resource is to visually represent the classes of actions to which a verb can refer, using prototypical scenes (recorded videos or 3D animations) to identify each class. In brief, the set of scenes linked to each verb is a sampling of the unlimited possible actions referred to by that verb, extending over its semantic variation. From this point of view, IMAGACT tries to represent the meaning of an action verb directly by its referential properties[13], leaving unexpressed their intensional definitions.

Through a corpus-based methodology applied to spoken English and Italian resources[14], the IMAGACT procedure identified the basic entities of reference of the action verbs representing them in a repertory of 1,010 Scenes. The Scenes have been further used to extend the database to many other languages[15] via competence judgments given by native speakers.

In order to distinguish the different classes of actions to which a verb can refer, IMAGACT used cognitive criteria, like judgements of sameness and differences by native speaker, and linguistic criteria, mostly exploiting the phenomenon of *local equivalence*[16]. Two or more verbs are defined "locally equivalent" when they can refer to the same class of actions, even if they have different meanings. This relation is then not defined on synonymousness, but on an extensional equality between two verbs, with respect to a specific (local) set of actions.

If we take into account the referential variation of a single verb, we can then distinguish different classes of actions by annotating the association and disassociations of local equivalence relations. For instance, the verb *to break* can refer to all the scenes represented in FIG. 1 (among many others).
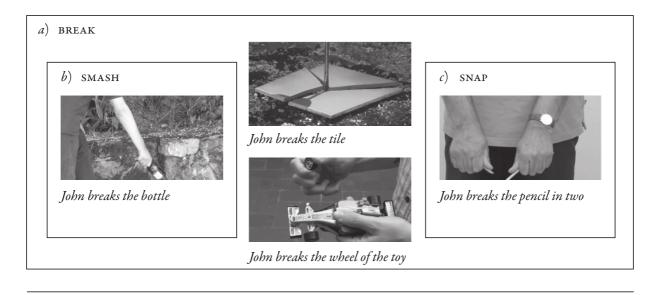
FIGURE 1

Semantic variation of the verb *to break* and local equivalence relations (*to smash*, *to snap*)

a) BREAK

b) SMASH

John breaks the bottle

John breaks the tile

John breaks the wheel of the toy

c) SNAP

John breaks the pencil in two

The verb *to break* can apply to all the actions represented in FIG. 1, showing a broad semantic variation. We call this kind of verb *general* [17], in the sense that they can be used to describe cognitively different classes of actions.

We can notice that there is another verb, namely *to smash*, that can be applied to the Scene *John breaks the bottle* (frame B). This fact implies that there is a local equivalence relation between these two verbs with respect to the referred Scene. The same is true for the verb *to snap*, which can refer to the Scene *John breaks the pencil in two* (frame C). These semantic relations have been then used to identify two different Scenes within the semantic variation of *to break*.

Interestingly, the other two Scenes do not show a linguistic differential in English, since we are not able to underline a disassociation in terms of local equivalent verbs (i.e. an English verb applicable to one and not to the other). Actually, these two Scenes derived from the annotation of Italian, in which they can be distinguished by the applicability of the verb *staccare* (roughly, *to remove*), which can refer only to the Scene *John breaks the wheel off the toy*. Nevertheless, it is clear that the two Scenes are different with respect to their cognitive representation, since in *John breaks the tile* the whole object is involved in the breaking event, while in *John breaks the wheel off the toy* the damage regards a single part of it. For this reason, we can figure out that these two actions belong to different classes and should be represented by two different Scenes also in the variation of the English verb *to break*.

To sum up, IMAGACT uses locally equivalent verbs to identify focal points in the variation of a general verb and represent them with prototypical Scenes. Once an instance is identified through a distinctive local equivalence, it produces a prototype according to linguistic categorization. The set of key Scenes identified following this

procedure have been linked to the lexicon of each language represented in IMAGACT. In this way, we have a measure of the degree of "generality" of a verb: the more general the verb is, the higher is the number of the Scenes linked to it.

Beyond that, a great number of linguistic and cognitive differentials may occur within the range of the most general action verbs (for example, the verb *to take* refers to more than 100 IMAGACT Scenes). In order to give a cognitively plausible account of their semantic variation with a reasonable level of granularity, the representation of verb semantic variation requires broader classes. This has been done by grouping conceptually similar Scenes, gathered together in verb-specific clusters, called Action Types. The creation of Action Types was performed independently of each other in the Italian and English corpora by mother tongue annotators through a corpus-driven process of associating similar actions.

At a higher level of conceptualization, all the Scenes represented in IMAGACT have been gathered into 9 metacategories[18], characterized by very general cognitive properties used for categorizations of action. Given this general framework, we are not going to refer to these broader categories in this paper. We will use only the conceptualization given by the Scenes, which represent fine-grained classes of actions identified by a visual anchorage.

The potential of the IMAGACT approach for the semantic representation of action verbs becomes even clearer in a crosslinguistic perspective. For instance, if we look at the variation of the verb *to take*, we can distinguish the following examples (among many others) to distinguish different Scenes, identified by local equivalence relations (LE, between brackets):

(3) John takes the glass from the shelf
(4) John takes the door handle in his hand (LE: *to grab*)
(5) John takes the chair over to the table (LE: *to bring*)

As underlined in recent studies[19], neither Italian, nor Japanese nor Hindi can refer to the same three Scenes using a single verb. Italian can use the verb *prendere* for the actions in (3) and (4), but has to shift to the verb *portare* (more similar to *to bring*) for the action in (5). On the other way around, the Italian verb *prendere* can refer to other actions, as in (6) and (7), to which the verb *to take* cannot extend: English has to use the verb *to catch* in order to describe those actions.

(6) Maria prende la palla (*Mary catches the ball*)
(7) Gianni prende Maria (*John catches Mary*)

Both Japanese and Hindi have to use three different verbs to describe actions in (3), (4), and (5), but can extends some of these verbs also to the action in (6) or (7). TAB. 1 shows the whole set of correspondences just described. The relations among scenes and verbs in

TABLE 1
Lexical variation of taking events in English, Italian, Japanese and Hindi.

Scene	English	Italian	Japanese	Hindi
John takes the glass from the shelf	take	prendere	取る (toru)	लेना (lenA)
John takes the door handle in his hand	take/grasp	prendere	掴む (tsukamu)	पकड़ना (paka.DanA)
John takes the chair over to the table	take/bring	portare	寄せる (yoseru)	ले जाना (le jAnA)
Mary catches the ball	catch	prendere	取る (toru)	लोकना (lokanA)
John catches Mary	catch	prendere	捕まえる (tsukamaeru)	पकड़ना (paka.DanA)

FIGURE 2
Visual representation of the lexical variation of taking events in English, Italian, Japanese and Hindi

222

the four above-mentioned languages is visually represented in FIG. 2. The picture makes evident that each language parses the continuum of action in its own way[20].

2
Manner, result, and beyond

The original distinction by Talmy[21] between manner and path motion verbs has been remodeled by Levin and Rappaport Hovav, who hypothesized the complementary partition of eventive verbs between two broad lexical classes: manner verbs and result verbs[22]. As well known, manner verbs encode the way by which an action is carried out, e.g. *wipe*, *sweep*, *scrub*, *blink*, *yell*, *whistle*, *run*, *walk*, *swim*. On the contrary, result verbs encode some property regarding the final state of an action, e.g. *break*, *crush*, *destroy*, *clean*, *open*, *dim*, *harden*, *melt*.

From this point of view, the class of path verbs included in the original distinction hypothesized by Talmy for directed motion events (e.g. *enter*, *exit*) could be subsumed in the result class: the path can be conceived as a sort of result[23], and both notions involve a change of properties or states, whether it belongs to the spatial domain or to other ones[24].

A wide series of truth conditional diagnostics, showing verb-specific inferences, have been used in the literature to identify and distinguish the classes of result and manner verbs. For instance, result verbs are sensitive to the Denial of Result test[25], i.e. they generate a contradiction if they occur in perfective form within sentences followed by a continuation that deny the achievement of the resulting state (8)[26]. On the contrary, manner verbs are still acceptable in the same circumstances (9):

(8)   #Jane just cleaned the stain, but nothing happened to it / but nothing is different about it
(9)   Jane just wiped the stain, but nothing happened to it / but nothing is different about it

Another mentioned diagnostic is the Inanimate Subject test[27]. While result verbs permit inanimate entities and natural forces to be in their subject position (10a and 10b), manner verbs usually disallow this possibility, resulting in a selectional restriction in argument structure alternation (11a and 11b)[28]:

(10a) John cleaned the stain with a tissue
(10b)   The tissue cleaned the stain

(11a) John wiped the stain with a tissue
(11b) #The tissue wiped the stain.

As a first generalization, Rappaport Hovav and Levin[29] claim that a single verb, i.e. a single lexical root, cannot encode both the meaning components (Complementary

Hypothesis): when a verb encodes the coming about of the result in a particular final state, the manner in which this happened is never specified, and *vice versa*. From their perspective, the encoding of both components is only possible for complex verbs, given that each root specifies a single trait, as for the English resultative *sweep clean*.

In more formal terms, each lexeme is representable as a single lexical root, which can alternatively modify an underlying ACT predicate, as in (12), or be the argument of an underlying BECOME predicate, as in (13). The combination of these functions is not possible, and therefore a structure like the one in (14) cannot occur:

(12) $[\text{x ACT}_{<\text{ROOT(MANNER)}>}]$

(13) $[[\text{x ACT}] \text{ CAUSE } [\text{y BECOME}_{<\text{ROOT(RESULT)}>}]]$

(14) $*[[\text{x ACT}_{<\text{ROOT(MANNER)}>}] \text{ CAUSE } [\text{y BECOME }_{<\text{ROOT(RESULT)}>}]]$

This generalization regarding possible and impossible event structures (and related verb meanings) have been criticized in further studies. For instance, Beavers and Koontz-Garbooden[30] show that several classes of verbs counterexemplify the complementarity hypothesis, encoding both manner and result in the same lexeme. It is the case of some "manner of killing" verbs (e.g. *drown*, *hang*, *electrocute*, *crucify*), some "manner of cooking" verbs (e.g. *sauté*, *roast*, *fry*, *stew*, *braise*)[31], and "ditransitive ballistic" motion verbs (e.g. *throw*, *toss*). More specifically, the authors claim that a single lexical root can pack together both the meaning components.

As a second high-level generalization, Rappaport Hovav and Levin claim that while result verbs denote events in which a scalar change operates[32], manner verbs specify non scalar changes. Also this correlation has been challenged: for instance, Warglien, Gärdenfors, and Westera claimed that a number of result verbs, e.g. the ones that describe a radical change in the structure of an object (e.g. *explode*, *break*, *cut*, *burn*) have a prominent binary structure[33]. For this reason, the scalar change they should represent is on a two-point scale, which is not "scalar" at all. In parallel, they claim that scalar manner verbs do exist, e.g. *push* and *fry*[34].

More in general, Rappaport Hovav and Levin claim that any verb «tends to be classified as a manner verb or as a result verb»[35]. As already introduced in the beginning of this Section, they include path verbs (in the original Talmy distinction) within the result verbs. This can be motivated by the general tendency to give the same linguistic construction to a changing entity (the object of a result verbs) as to a moving one (the theme of a path verb)[36]: both involve changes of properties, which manner verbs do not.

Nevertheless, action verbs can show contradictory behaviors with respect to the basic diagnostic tests we mentioned above. For instance, the difference between *to break* and *to hit* has been traditionally accounted as a distinction between, respectively, a result and a manner verb[37]. If we apply the tests, we can observe that, while *to break* behaves consistently in both, *to hit* behaves as a manner verb in the Denial of Result

test (examples 15 and 16), but as a result verb in the Inanimate Subject test (examples 17a-17b and 18a-18b).

(15)   #Jane just broke the vase, but nothing happened to it / but nothing is different about it
(16)   Jane just hit the vase, but nothing happened to it / but nothing is different about it

(17a) Jane broke the vase with a hammer
(17b) The hammer broke the vase

(18a) Jane hit the vase with a hammer
(18b) The hammer hit the vase

The Complementary Hypothesis seems then to be seriously challenged by a series of criticisms highlighting frequent exceptions to the partition of verb lexicon in two clear-cut categories. However, the categories of manner and result remain useful to focus on the different ways of lexicalization of the action concepts. As a matter of fact, it is quite clear that there are frequent correlations between the classification of verbs into manner or result, and other verb classification criteria. For instance, it is easy to notice that manner verbs (e.g. *to sweep*) are usually activities in Vendler sense[38], while result verbs are always telic, and tendentially accomplishments (e.g. *to clean*).

Even more interestingly, at least within the perspective of the IMAGACT framework, we could notice that result verbs (e.g. *to clean*, *to cook*, *to break*) tend to be much more general than manner verbs (e.g. *to wipe*, *to fry*, *to snap*), since they can refer to a variety of physical actions carrying to similar results. Result verbs, therefore, often behave as hypernyms that have a series of manner verbs as troponyms, each one representable with few (or even just one) Scenes. We will show more data regarding this aspect in Section 4, comparing English and Italian with Chinese.

From a more cognitive perspective, we could say that the encoding of result and manner components in a lexeme correlates with a different semantic focus of the verbs with respect to the development of the actions it can refer to. In general, we can define an action verb as a lexical encoding of a specific class of events, conceived as a productive model of world modification performed by an intentional *agent* (or something that can be conceived as "intentional"), which operates a *change* in the world according to some *goal*, thus modifying a *theme*[39].

If we take into account the *change* process, an action can be seen as starting from an initial state (s1), producing a modification of this state during its execution, and resulting in a final state (s2). In this way, we can see manner verbs as focusing on the changing process during its development. Result verbs, on the contrary, focus on the final state, as they predicate of a property of the *theme* which underwent the changing process.

This traditional perspective looks at the action as an event among others. But if we assume the point of view of the intentional *agent,* which allows us to distinguish an

action from a generic occurring event, the overall framework may change. From this perspective, we could conceptualize actions following at least two different strategies:

a)   defining the motor act involved in the action execution, focusing on the way in which an *agent* performs the action;

b)   defining the *goal* to which an action is directed, focusing on the preliminary intentions of the *agent* and on the expected results.

Following this idea, one of the core elements for defining the action should be its *goal*, which has been also highlighted by Talmy in his description of moot-fulfillment verbs encoding "action+goal" components[40]. Moreover, *goal* has been demonstrated to have a central role in the neuropsychological interpretation of the categorization of actions in the brain. For instance, it has been highlighted that different sensorimotor patterns performed with the same *goal* imply a similar activation at the brain level, notably in the premotor cortex[41]. The *goal* component has been also put in evidence as a fundamental element for the definition of actions by recent models trying to unify the cognitive and computational representations of action concepts[42].

However, while the manner component tends to be strictly correlated to the motor schema adopted by the *agent* during the action execution, the relationship between the *goal* of an action and its actual result is more complex. Of course, when we perform an action with a certain *goal,* we usually have some expectations about its result; in this respect, these elements are closely linked. But while the result is, as we said, a property regarding the final state of the *theme*, the *goal* is a most wide defining component that accompanies (and even precedes) the action execution.

At this point, we would like to pose the question whether the *goal* could assume a central role in the action definition, also from the point of view of its linguistic encoding. Some observations we will present at the end of Section 3 seem to go in this direction.

3
Manner of action in Chinese: state of the art and theoretical background

3.1. Motion events

The expression of the manner of action in Chinese has drawn much attention as far as motion events are concerned[43]. Talmy's[44] milestone distinction between verb-framing and satellite-framing languages[45] has soon been applied to Chinese. Talmy[46] himself picked Chinese as prototype of serializing languages, classifying them as satellite-framing languages. As such, Chinese is described as a language which encodes the path of motion in one morpheme separated from the main verb, encoding the manner of motion. This seems quite straightforward, since Chinese motion events are described through so-called direction complement[47] (*qūxiàng bǔyǔ*), a construction which in its most complex variant expresses both direction and deixis at the

right of a manner of motion verb: ex. *ná chū lai* "take with hands + exit + toward the speaker" "take out (toward the speaker)".

An opposite view was suggested by Tai[48], who proposed some reasons why the element encoding the direction – normally defined as a complement – should be considered the center of the predication (which we will resume in Section 4.1). Accordingly, he argued that Chinese should be considered a V-language.

On the same topic, a third hypothesis came from Slobin and Hoiting[49], who suggested that serializing languages as Chinese should form a category distinct from both V-languages and S-languages. The distinction they introduce is based on the fact that in serializing languages the path is not realized as a proper satellite (i.e. a preposition or any non-verbal item) but as another verb, from which the definition of *equipollently-framed languages* derives. A pragmatic confirmation of this hypothesis came by Chen and Guo[50], who found that «Chinese writers do not pattern their narrative descriptions of motion events as do writers of satellite-framed languages, nor as writers of verb framed languages. Rather, Chinese writers follow unique habitual patterns of language use that lead to the contention that Chinese is an equipollently-framed language»[51]. On the other side, an analysis of translated texts drawn by Romagnoli has shown that in Chinese motion events, the manner tends to be expressed more often than in corresponding Italian, thus confirming the Talmyan typology[52].

Peyraube[53] has dealt with the topic from a diachronic perspective, showing that Chinese has undergone a typological shift from a V-language to an S-language, thus rejecting the equipollently-framed hypothesis. Having undergone a process of grammaticalization, direction complements should not be considered as verbs but as actual satellites. Lamarre[54] followed up showing that direction complements are characterized by different properties from homonym verbs – confirming that they actually are satellites. Shi and Wu[55] also rejected Slobin's proposal and explained that the diverse patterns of encoding motion events adopted in Modern Chinese, which are different from both typical verb-framed and typical satellite-framed patterns, are due to the fact that the typological shift from V-language to S-language has not been completed yet.

Also Rappaport Hovav and Levin's manner/result Complementary Hypothesis[56] has been tested on Chinese verbs. However, also in this case, the privileged object of research has been motion verbs. Lin[57] stated that Chinese motion verbs conform to the complementarity hypothesis, i.e. they cannot lexicalize manner and result simultaneously. Other studies have identified some exceptions to the hypothesis, which in general is considered as verified[58].

3.2. Resultatives

The theoretical notion of result, at the center of the interests of this paper, is very important in the Chinese grammar, being involved in the very common *resultative compounds*, composed of two verbal elements where V1 is the causing event and V2 the result[59]: ex. *xué huì* (study + be able) = "master". If the complement[60] expresses the

result, often the first verb expresses the manner of action: ex. *xǐ gānjìng* (wash + clean) = "clean by washing". Not by chance, the direction can be considered a type of resultative[61], thus qualifying Verb+Direction items as particular instances of resultative compounds: ex. *pǎo jìn* (run + enter) "run in, enter by running". As already mentioned, this is not true only of Chinese[62].

Another particular type of resultative compounds is the one where the result is better definable as a *phase complement*, consisting in a verb which expresses the accomplishment of the action entailed by the first verb, ex. *kàn dào* (see + arrive) = "succeed in seeing"[63].

What is of great interest to the present discussion is that the diffusion of the resultative compounds – and even more clearly for the phase complements – is revealing of a lexicon where actions (potentially) leading to a result tend to be kept lexically separated from the result itself. As a consequence, concepts that in other languages are stored in the lexicon as accomplishments or achievements tend with a greater frequency to be expressed as activities (in Vendler[64]'s sense) plus results[65]: ex. *zhǎo dào* (look for + arrive) "find".

In our inter-linguistic perspective, the "attemptative" nature of many Chinese action verbs is particularly clear when some translation issues arise:

(19) *Wǒ shā le   John   liàng-cí,   tā dōu méi sǐ.*
    I   kill-ASP John   two-CL he all not die
    "I performed the action of attempting to kill John twice, but he didn't die."[66]

The verb *shā* is not easily translatable in English or Italian: indeed, it refers to the action of attempting to kill, but does not imply its success. It is the resultative complement *sǐ* "die" that implies the meaning of voluntarily causing someone's death: *shāsǐ* "kill". In the Talmyan[67] typology, *shā* would be defined as a moot-fulfillment verb. In our perspective (cf. Section 2), it provides a very clear example of verb which encodes the *goal* of the action, leaving unspecified both manner and result.

4
Comparing data from Chinese with English and Italian

4.1. Unavoidable manner: the scarceness of general verbs in Chinese

As mentioned in Section 1, in the IMAGACT framework verbs that extend over qualitatively different events – locally equivalent to specific verbs – are labelled as *general verbs*. For example, the Italian verb *mettere* extends over 96 Scenes and is locally equivalent to other verbs such as *posare*, *appoggiare*, *collocare*, *aggiungere*, *conficcare*, *stendere*, *infilare*, and many others.

TABLE 2
Chinese verbs corresponding to the highest number of Scenes in IMAGACT

Verb	Scenes
Fàng "release"	66
Dǎkāi "open"	24
Sāi "stuff"	23
Dǎ "hit"	23
Bān "move"	19
Gěi "give"	17
Lā "pull"	17
Zhuāng "load"	17

In this respect, it has been noticed that Chinese tends to show fewer general verbs than English and Italian[68]. More precisely, Chinese does not show very broad general verbs covering more than 90 Scenes, like Italian *mettere* (or English *put*, 99 Scenes). In the following table, the Chinese verbs corresponding to the highest number of scenes in IMAGACT are listed[69] (TAB. 2).

The first verb in the table, *fàng*, refers to actions whose common trait is the releasing of something, be it an animal set free from a cage, a person set free from prison or an object released by a hand. As such, it is the best Chinese equivalent of the above mentioned *mettere* and *put*. Specifically, 51 Scenes of *mettere* are covered by *fàng*, which, on the other side, does not apply to scenes where Italian *mettere* and English *put* cover some more specific ways of putting which cannot be described as releasing of one object, such as, for Italian: *mette il telo sul tavolo* (*pū* "spread", *tān* "spread out"), *mette le lenzuola infilate* (*sāi* "stuff"), *mette il disco nel palo* (*chā* "stick in"), *mette la matita nell'anello* (*chuān guò* "pass through"), *mette una sedia sopra l'altra* (*dié* "pile up", *luò* "stack"), *mette i due cilindri più vicini* (*shǐ... kào jìn* "let be close", *shǐ... kào lǒng* "let close up"), *mette la macchina dentro le strisce* (*tíng* "stop").

In this respect, Chinese needs to be more precise than English and Italian about the manner, since many of the verbs which cover the Scenes of *putting* correspond to the English and Italian local equivalents. If we considered only Italian and Chinese, such trait might fit in the view according to which the tendency to morphological isolation corresponds to a richer and more precise lexicon, while languages with a more complex inflectional morphology tend to have a more general lexicon[70]. Nonetheless, English – a language with a morphological tendency to analysis and a high number of general verbs – provides a first counter-example to this. Secondly, the reduced number of general verbs observed in Chinese is also shared by languages such as German and Danish[71], thus questioning the weight of genealogic distance too.

Apart from lacking very broad general verbs, Chinese also lacks the generic "hypernyms" shown by English and Italian (cf. Section 2). For example, as discussed in Gregori[72], Italian has a generic resultative verb *pulire* "clean" which covers a vast range of conceptually different actions (cleaning a dish requires a very different action from cleaning the floor). In Chinese the action of cleaning cannot be described without specifying the performed action: *sǎo* "sweep", *cā* "rub", *tuō* "mop", *dǎn* "brush lightly". Normally, these verbs get a non-telic interpretation: the accomplishment of the cleaning process is expressed through the result complements *gānjing* "clean" or *diào* "drop, fall, come off" (cf. the following section).

Gregori also mentions *suonare* "play", a generic verb referring to the production of music through an instrument, careless of the very different actions performed by the player. In Chinese there is no equivalent to such generic meaning, but the manner of producing music must be specified: *tán* "pluck" (piano and guitar), *jī* "beat" or *dǎ* "hit" (percussions), *chuī* "blow" (wind instruments), *lā* "pull, drag" (bow instruments).

Another example of the same phenomenon is provided by the verbs of cooking. Let us consider the table derived from IMAGACT with the English, Italian and Chinese equivalents for each scene (TAB. 3)

TABLE 3
Scenes of *cuocere* and equivalents in Italian, Chinese and English

Scene	English	Italian	Chinese
Cooks the potatoes	cook, boil	cuocere, cucinare, bollire, lessare	zhǔ
Cooks bread	cook, bake	cuocere	kǎo
Cooks the garlic	cook, fry, saute	cuocere, cucinare, soffriggere	biān chǎo
Cooks the vegetables	cook, fry	cuocere, cucinare, friggere	yóu zhá
Cooks the meat (in the oven)	cook, roast	cuocere, cucinare, arrostire	kǎo
Cooks the kabobs	cook, grill	cuocere, cucinare, arrostire	kǎo
Cooks the meat (in little pieces, in a pan)	cook, stew	cuocere, cucinare, stufare	zuò, shāo
Cooks the meat (a big piece, with wine, in a pan)	cook, braise	cuocere, cucinare, brasare	zuò, shāo, dùn
Cooks a meal	cook	cucinare	zuò, shāo, zuò fàn, shāo fàn

As may be noticed in the table, En. *cook* and It. *cuocere* cover all the scenes (except the last, where *cook* works but *cuocere* does not) and they are locally equivalent to more specific verbs. On the other side, there is no such generic verb in Chinese: in other words, in Chinese it is not possible to omit the manner of cooking. Also this trait – the missing of generic "hypernyms" – is interestingly shared by Danish[73].

The lack of a general verb is not without exceptions. For example, alongside many locally equivalent hyponyms, Chinese has one general verb meaning "to (try and) kill": the above-mentioned *shā*.

Concluding this section, we want to draw the attention to an interesting phenomenon emerged from the analysis of the "generality" of verbs. Let us consider the Italian general verb *passare* and its Chinese best translator *guò*. According to the comparison provided by the IMAGACT interface, only one of the 10 scenes covered by *passare* is covered by *guò*. However, in this case the comparison proves to be misleading. In fact, a qualitative analysis shows that 8 out of 9 of the remaining scenes do actually involve the same verb *guò*: they are not listed in the interface because *guò* does not appear as the main verb but as the result complement, as may be seen in the following description of the Scenes:

(20) Fabio passa il semaforo
      "Fabio passes the traffic light"
      → *guò*

(21) Fabio passa davanti all'autovelox
      "Fabio passes in front of the camera"
      → *jīng guò* "pass through + pass"

(22) Fabio passa tra le macchine
      "Fabio passes between the cars"
      → *jīng guò* "pass through + pass"

(23) L'autobus passa
      "The bus passes by me"
      → *kāi guò* "drive + pass", *jīng guò* "pass through + pass"

(24) Fabio passa attraverso il cortile alberato
      "Fabio passes through the trees"
      → *chuān guò* "penetrate + pass", *jīng guò* "pass through + pass"

(25) Fabio passa la cintura nei passanti dei pantaloni
      "Fabio passes the belt through the belt loops"
      → *chuān guò* "penetrate + pass"

(26) Fabio passa la linea
      "Fabio passes the line"
      → *kuà guò* "step + pass", *yuè guò* "get over + pass"

Actually, the only scene covered by *passare* or *pass* in which *guò* is not involved is *passare il pennello* (*to pass the brush*), which in Chinese is rendered by *fú* or *shuā*.

The analysis of the equivalents of Italian *passare* leads to one important point: we suggest that the mentioned examples should all be considered instances of *guò*, and accordingly that they all be listed as equivalents of Italian *passare*. Such proposal would imply that result complements can be considered the center of the predication, as proposed in Tai[74]. This fits very well in the fact that the action predicate expresses the manner of action, that is a description of the manner in which an action is carried out, while the result expresses the fulfillment of the action, the true content of the predication.

4.2. Is there a manner even in results?

The situation we described in the preceding section is particularly suitable to describe *non-telic* action constructs in Chinese. We have shown that in those constructs Chinese has a tendency to express the manner of the action, where English and Italian can resort to very broad general verbs. In this section we are dealing mainly with accomplishments and achievements.

As already mentioned, many accomplishments and achievements are rendered in Chinese as patterns including one verb of action and one resultative complement. In such cases, the first verb typically expresses the manner of action. One clear example is provided by the above-mentioned examples *pulire* "to clean", in which the manner of action is followed by the resultative *gānjìng* "clean", and *passare*, in which the resultative is *guò* "pass".

Another example of the same pattern is *aprire* "open". The Chinese equivalents of Italian *aprire* are a variety of different manner verbs followed by the resultative *kāi* "open". See for instance:

(27) Fabio apre la porta
        "Fabio opens the door"
        → *dǎ kāi* "hit open"

(28) Fabio apre il golf
        "Fabio unbuttons the cardigan"
        → *jiě kāi* "untie/separate open"

(29) Fabio apre le gambe
        "Fabio opens his legs"
        → *fēn kāi* "divide open"

(30) Fabio apre il rossetto
      "Fabio opens the lipstick"
      → *xuán kāi* "spin open"

(31) Fabio apre una noce
      "Fabio opens the nut"
      → *jiá kāi* "press open", *qián kāi* "pinch open"

(32) Fabio apre la cassaforte con il piede di porco
      "Fabio opens the container with the crowbar"
      → *qiào kāi* "pry open"

Also in this case, we would suggest that all the mentioned examples should be considered equivalents of Italian *aprire*, thus defining the result complement as the center of predication.

In this section we intend to provide some more data from Chinese, to suggest that the expression of a manner component not only regards the first verb of the telic construct, but seems to be also relevant in the expression of the result state.

Let us consider the Chinese equivalents of *rompere* "break". As in other examples mentioned above, also in this case the Chinese language acknowledges the many different actions that can lead to the result of breaking, such as for example: *qiāo* "knock", *dǎ* "hit", *lā* "pull", *zhé* "fold", *bāi* "nip off with fingers", *zá* "smash", *qián* "pinch".

Alongside different "manners of breaking", in this case the Chinese language acknowledges a difference in what we might call the "manners of breakage". For example, the same action of *qiāo* "knock" can cause both a smashing (33) and a splitting (34).

(33) *Lǐ Míng bǎ   píjiǔpíng   qiāosuì*
      Li Ming OBJ   beer bottle   knock.smash
      "Li Ming smashed the bottle of beer by knocking it".

(34) *Cízhuān bèi   qiāoliè   le*
      Tile   PASS   knock.split   PERF
      "The tile has been splitted by knocking".

It is interesting to notice that for describing both these events we could apply the English verb *to break* (e.g. *John breaks the bottle /the tile*), or the Italian verb *rompere* (*Fabio rompe la bottiglia / la mattonella*). As a matter of fact, these two verbs just encode the very general result of the action (in which the theme is no longer neither intact nor usable), and avoid to specify both the manner of the breaking action (*knocking*), and the "manner" of the resultative breakage (*smashed* vs *splitted*). This is not the case of

Chinese, in which we never encounter a pure resultative, hyper-general verb as *to break*, since we have to express both these meaning components.

The different "manners of breaking" (in terms of action) and "manners of breakage" (in terms of result) identified in IMAGACT for Chinese are listed in TAB. 4:

TABLE 4
V1 and result complements of the Chinese equivalents of *rompere* "break" listed in IMAGACT

V1	Result
nòng "do, play with"	*huài* "spoiled"
qiāo "knock, strike"	*suì* "smashed"
dǎ "hit"	*kāi* "open"
chě "pull, tear"	*liè* "splitted, cracked"
lā "pull, drag"	*duàn* "broken, cut off"
zhuài "pull, haul"	*pò* "broken, damaged, torn"
zhé "fold, snap"	*làn* "mashed"
bāi "break/nip off with fingers"	*shé* "broken"
zá "pound, break, smash"	
qián "pinch, clamp"	
jiā "press, squeeze"	

Another example is provided by the equivalents of Italian *schiacciare* "squash, press" reported in TAB. 5.

TABLE 5
V1 and result complements of the Chinese equivalents of *schiacciare* "press, squash" listed in IMAGACT

V1	Result
yā "press"	*suì* "smashed"
niē "hold between the fingers"	*biǎn* "flat"
cǎi "step"	*làn* "mashed"
pāi "clap"	*kāi* "open"
àn "press"	
qián "pinch, clamp"	
jiá "press, squeeze, clip"	
jǐ "squeeze, press"	

In other cases, the variety of possible manners of result is not so wide. It may include, for example, only two choices, as in the case of the equivalents of Italian *tagliare*:

TABLE 6

V1 and result complements of the Chinese equivalents of *tagliare* "to cut" listed in IMAGACT

V1	Result
jiǎn "cut"	*duǎn* "short"
gǎi "change"	*duàn* "cut off, broken"
jié "cut off, sever"	
qiē "slice"	
jù "saw"	

In this case, the scenes collected in IMAGACT cover only one part of the large variety of "manners of cutting" lexicalized in Chinese in different verbs: *qiē* "do cutting with a single blade or blade-like instrument", *kǎn* "do cutting with a single blade or blade-like instrument with force", *duò* "do chopping, dicing, repeatedly", *zhǎn* "do chopping, cutting cleanly" (often in literary use), *pī* "do hacking, cutting with force and usually into halves, cleave", *pò* "dissect, cut carefully", *gē* "do cutting with a single blade or single-blade-like instrument slowly, duratively, back and forth", *záo* "do cutting with a chisel", *chuō* "do cutting with a sharp pointed instrument", *jù* "do cutting with a saw in a sawing manner, back and forth". All this "manners of acting" can result into two possible "manners of being cut": become shorter or be cut off.

The data presented in this section immediately calls Rappaport Hovav and Levin's complementarity hypothesis[75] to mind: according to it, event verbs can express either manner or result, but not both. Provided that some Chinese result complements seem to express also manner, can they be considered as event verbs? Despite the fact that result complements tend to express resulting *states*, as we are willing to adopt Tai's suggestion[76] that result complements can be considered the center of the predication, our data actually seem to compete with Rappaport Hovav and Levin's hypothesis.

Chinese data can contribute also to Beavers and Koontz-Garboden's rejection of the complementarity hypothesis[77]. In fact, such argumentation is based on the evidence that at least some *killing verbs* and *cooking verbs* can express both manner and result. This is not true in Chinese. As already mentioned, killing verbs can indeed express the manner but, if they are not followed by the resultative *sǐ*, express only the attempt of killing, and not the result. The same is true of cooking verbs. In fact, as shown in Section 4.1, cooking verbs are one the cases in which the manner cannot be left unexpressed. Nonetheless, exactly like killing verbs, cooking verbs *per se* do not imply the

fulfillment of the cooking, which must be expressed by the phase complement *hǎo* "good". Cooking verbs are another example of how many Chinese events verbs typically apply to non-telic constructs, while the accomplishment of the action must be specified through a complement:

(35) *Ròu kǎo hǎo le.*
Meat roast good PERF
"The meat is cooked".

Conclusions

The category of manner and result have been largely exploited to account for the linguistic behavior of action verbs. Their explanatory power has been proved on a large series of verbs. Nonetheless, the cognitive components of action conceptualization can be described from different perspectives, focusing more on the agent perspective, or alternatively on the representation of the outcome of the action, i.e. the final state produced by it. A comprehensive framework for describing all these components is still not available, but data from different languages can help us to complete the picture.

In this paper, we assumed the IMAGACT framework to make a contrastive analysis of data from Chinese, in which the analysis of the manner of action proves to be particularly interesting in relation to some phenomena.

First, some Chinese result complements may compete with Rappaport Hovav and Levin's complementarity hypothesis in a different way from what suggested by Beavers and Koontz-Garboden. In fact, they seem to have a tendency to express both the result and some kind of related manner: if in English an object can simply be *broken*, in Chinese is less easy to omit the kind of breakage (is it *suì* "smashed", *liè* "splitted" or *làn* "mashed"?). This "manner of result" is expressed in resultative compounds where the (more standard) manner of the action leading to such result is also typically included: for example, the same result of *suì* can be obtained both by knocking (*qiāo suì*) and tearing (*chě suì*).

Secondly, Beavers and Koontz-Garboden's observation that cooking verbs and killing verbs tend to express both manner and result does not apply to Chinese. However, this has not to do with the lexical impossibility of stacking manner and result, but with the tendency of Chinese of expressing the fulfillment of actions in a separate complement. So, in Chinese it is actually impossible to omit the manner of cooking, having to choose among different manner of cooking verbs, but the accomplishment of the cooking action must be expressed with the phase complement *hǎo* "good".

As for killing verb, Chinese provides an interesting example of an action verb expressing neither manner nor result, *shā*, which refers to the action of "attempting to kill", without entailing the successful result of the action. In our perspective, such a verb – which would be described by Talmy as a moot-fulfillment verb – manifests

the encoding of a different cognitive component, i.e. the *goal* of the action, which has a prevailing role in the representation of action from the point of view of the *agent*. We deem this kind of generalization particularly important because it can lead us to a broader picture for unifying the cognitive and linguistic representation of the action concepts.

Furthermore, our analysis of the IMAGACT data has shown that the tendency to consider the Chinese action verb as the center of the predication has driven to the underestimation of some correspondences. In fact, in the IMAGACT interface the Chinese verb *guò* is considered as a poor correspondent of Italian *passare*. Actually, *guò* covers 9 out of 10 scenes of *passare*, but it does so as a result complement, not a manner verb. Despite the fact that result complements tend to express resulting *states*, we are therefore willing to adopt Tai's suggestion[78] that result complements can be considered the center of the predication.

We want to conclude with an observation potentially leading to a broader inter-linguistic comparison. The tendency of Chinese to show fewer highly general verbs and fewer generic "hypernyms" (namely verbs that express one quite generic result such as *to cook*, *to play*, *to clean*) than English and Italian seem at a first sight to be independent from morphological typology and genealogic closeness. A broader inter-linguistic comparison and the crossing of other linguistic parameters may lead us to a better understanding of the phenomenon of the "unavoidability" of the manner.

Notes

* The authors conceived and discussed together all the content of this paper. In formal terms, Federica Cominetti is responsible for Sections 3 and 4; Alessandro Panunzi is responsible for Sections 1 and 2. *Introduction* and *Conclusions* have been written by both authors.

1. D. Davidson, *The Logical Form of Action Sentences*, in N. Rescher (ed.), *The Logic of Decision and Action*, University of Pittsburgh Press, Pittsburgh 1967, pp. 81-95.

2. D. Dowty, *Word Meaning and Montague Grammar*, Reidel, Dordrecht 1979; R. Jackendoff, *Semantics Structures*, MIT Press, Cambridge (MA) 1990; B. Levin, M. Rappaport Hovav, *Unaccusativity: At the Syntax-Lexical Semantics Interface*, MIT Press, Cambridge (MA) 1995.

3. Z. Vendler, *Verbs and Times*, in "The Philosophical Review", 66, 2, 1957, pp. 143-60; E. Bach, *The Algebra of Events*, in "Linguistics and Philosophy", 9, 1986, pp. 5-16; J. Pustejovsky, *The Syntax of Event Structure*, in "Cognition", 41, 1991, pp. 47-81.

4. J. S. Gruber, *Studies in Lexical Relations*, University of Massachusetts Dissertation, Cambridge (MA) 1965; R. Jackendoff, *Semantics and Cognition*, MIT Press, Cambridge (MA) 1983.

5. S. DeLancey, *Notes on Agentivity and Causation*, in "Studies in Language", 8, 1984, pp. 181-213; L. Talmy, *Force Dynamics in Language and Cognition*, in "Cognitive Science", 12, 1988, pp. 49-100; W. Croft, *Verbs: Aspect and Causal Structure*, Oxford University Press, Oxford 2012; P. Gärdenfors, *The Geometry of Meaning: Semantics Based on Conceptual Spaces*, MIT Press, Cambridge (MA) 2014.

6. R. Jackendoff, *Foundations of Language: Brain, Meaning, Grammar, Evolution*, Oxford University Press, Oxford 2002.

7. M. A. Giese, T. Poggio, *Neural Mechanisms for the Recognition of Biological Movements*, in "Nature Reviews Neuroscience", 4, 2003, pp. 179-92; M. A. Giese, I. Thornton, Sh. Edelman, *Metrics of the Perception of Body Movement*, in "Journal of Vision", 8, 9, 2008, pp. 1-18; P. E. Hemeren, *Mind in Action*, Lund University Cognitive Studies, Lund 2008.

8. M. Warglien, P. Gärdenfors, M. Westera, *Event Structure, Conceptual Spaces and the Semantics of Verbs*, in "Theoretical Linguistics", 38, 3-4, 2012, pp. 159-93.

9. M. Rappaport Hovav, B. Levin, *Building Verb Meanings*, in M. Butt, W. Geuder (eds.), *The Projection of Arguments: Lexical and Compositional Factors*, Center for the Study of Language and Information, Stanford (CA) 1998, pp. 97-134.

10. W. Croft, *The Semantics of Subjecthood*, in M. Yaguello (ed.), *Subjecthood and Subjectivity: The Status of the Subject in Linguistic Theory*, Ophrys, Paris 1994, pp. 29-75.

11. http://www.imagact.it; M. Moneglia, *Natural Language Ontology of Action: A Gap with Huge Consequences for Natural Language Understanding and Machine Translation*, in Z. Vetulani, J. Mariani (eds.), *Human Language Technology Challenges for Computer Science and Linguistics*, Springer, Berlin 2014, pp. 379-95; A. Panunzi, I. De Felice, L. Gregori, S. Jacoviello, M. Monachini, M. Moneglia, V. Quochi, *Translating Action Verbs Using a Dictionary of Images: The IMAGACT Ontology*, in A. Abel, C. Vettori, N. Ralli (eds.), *Proceedings of the XVI EURALEX International Congress: The User in Focus*, EURAC Research, Bolzano 2014, pp. 447-62.

12. L. Wittgenstein, *Philosophische Untersuchungen*, Blackwell, Oxford 1953; W. V. O. Quine, *Word and Object*, MIT Press, Cambridge (MA) 1960.

13. D. Marconi, *Lexical Competence*, MIT Press, Cambridge (MA) 1997.

14. M. Moneglia, M. Monachini, O. Calabrese, A. Panunzi, F. Frontini, G. Gagliardi, I. Russo, *The IMAGACT Crosslinguistic Ontology of Action. A new infrastructure for natural language disambiguation*, in N. Calzolari *et al.* (eds.), *Proceedings of the Eigth International Conference on Language Resources and Evaluation*, ELRA, Paris 2012, pp. 2606-13.

15. A further 10 languages are completely mapped (Arab, Chinese, Danish, German, Hindi, Japanese, Polish, Portuguese, Serbian, Spanish) and others are under development.

16. M. Moneglia, A. Panunzi, L. Gregori, *Action Identification and Local Equivalence of Action Verbs: The Annotation Framework of the IMAGACT Ontology*, in J. Pustejovsky, I. van der Sluis (eds.), *Proceedings of the LREC 2018 Workshop "AREA – Annotation, Recognition and Evaluation of Actions"*, ELRA, Paris 2018, pp. 23-30.

17. M. Moneglia, A. Panunzi, *Action Predicates and the Ontology of Action across Spoken Language Corpora: The Basic Issue of the SEMACT Project*, in M. Alcántara Plá, Th. Declerk (eds.), *Proceeding of the International Workshop on the Semantic Representation of Spoken Language (SRSL7)*, Universidad de Salamanca, Salamanca 2007, pp. 51-8.

18. The list of metacategories includes: Movement, Change of location, Force on an object, Modification of the object, Deterioration of an object, Setting relation among objects, Actions in the intersubjective space, Facial expressions, Actions referring to the body.

19. Moneglia, Panunzi, Gregori, *Action Identification and Local Equivalence of Action Verbs: The Annotation Framework of the IMAGACT Ontology*, cit.; M. Moneglia, A. Panunzi, L. Gregori, *"Taking Events" in Hindi. A Case Study from the Annotation of Indian Languages in IMAGACT*, in G. Nath Jha *et al.* (eds.), *Proceedings of the LREC 2018 Workshop "WILDRE4 – 4th Workshop on Indian Language Data: Resources and Evaluation"*, ELRA, Paris 2018, pp. 46-51.

20. A. Majid, M. Bowerman, M. van Staden, J. S. Boster, *The Semantic Categories of Cutting and Breaking Events: A Crosslinguistic Perspective*, in "Cognitive Linguistics", 18, 2, 2007, pp. 133-52; A. Kopecka, B. Narasimhan, *Events of Putting and Taking, A Crosslinguistic Perspective*, Benjamins, Amsterdam-Philadelphia 2012.

21. L. Talmy, *Lexicalization Patterns: Semantic Structure in Lexical Forms*, in T. A. Shopen (ed.), *Language Typology and Syntactic Description*, vol. 3, Cambridge University Press, Cambridge 1985, pp. 57-149.

22. B. Levin, M. Rappaport Hovav, *Wiping the Slate Clean: A Lexical Semantics Exploration*, in "Cognition", 41, 1991, pp. 123-51.

M. Rappaport Hovav, B. Levin, *Reflections on manner/result complementarity*, in M. Rappaport Hovav, E. Doron, I. Sichel (eds.), *Lexical Semantics, Syntax, and Event Structure*, Oxford University Press, Oxford 2010, pp. 21-38.

23. J. Beavers, B. Levin, S. W. Tham, *The Typology of Motion Expressions Revisited*, in "Journal of Linguistics", 46, 2, 2010, pp. 331-77.

24. Warglien, Gärdenfors, Westera, *Event Structure, Conceptual Spaces and the Semantics of Verbs*, cit.

25. Ph. Wolff, *Direct Causation in the Linguistic Encoding and Individuation of Causal Events*, in "Cognition", 88, 2003, pp. 1-48; J. Beavers, *On Affectedness*, in "Natural Language & Linguistic Theory", 29, 2, 2011, pp. 335-70.

26. In order to a continuation sentence that generally denies the resulting state, Wolff (*Direct Causation*, cit.) suggests the form *something happened to x*. Beavers (*On Affectedness*, cit.) suggests a similar sentence: *something is different about x*, "where something is interpreted as an intrinsic physical property".

27. R. D. Van Valin, D. P. Wilkins, *The Case for "Effector": Case Roles, Agents, and Agency Revisited*, in M. Shibatani, S. A. Thompson (eds.), *Grammatical Constructions: Their Form and Meaning*, Clarendon Press, Oxford 1996, pp. 289-322; J. Beavers, A. Koontz-Garboden, *Manner and Result in the Roots of Verbal Meaning*, in "Linguistic Inquiry", 43, 3, 2012, pp. 331-69.

28. This test has also been proposed by Van Valin and Wilkins for identifying agentivity in a verb's meaning, a notion presumably related to manner, and in the causative/inchoative alternation literature as determinant of which causatives have inchoative forms, namely those that impose no conditions on their subjects other than causation The possibility to have an inanimate entity as subject can have exceptions, in case of inanimates that are interpretable as animate (e.g. machines, or instruments under the control of some agent).

29. Rappaport Hovav, Levin, *Reflections on Manner/Result Complementarity*, cit.

30. Beavers, Koontz-Garboden, *Manner and Result in the Roots of Verbal Meaning*, cit.

31. See also A. Goldberg, *Verbs, Constructions, and Semantic Frames*, in M. Rappaport Hovav, E. Doron, I. Sichel (eds.), *Lexical Semantics, Syntax, and Event Structure*, Oxford University Press, Oxford 2010, pp. 39-58.

32. Having defined a scale as "a set of degrees – point of intervals indicating measurement values – on a particular dimension."

33. Warglien, Gärdenfors, M. Westera, *Event Structure, Conceptual Spaces and the Semantics of Verbs*, cit.

34. See also Goldberg, *Verbs, Constructions, and Semantic Frames*, cit.

35. Rappaport Hovav, Levin, *Reflections on Manner/Result Complementarity*, cit., p. 22.

36. R. Jackendoff, *Semantics and Cognition*, MIT Press, Cambridge (MA) 1983.
S. Pinker, *Learnability and Cognition: The Acquisition of Argument Structure*, MIT Press, Cambridge (MA) 1989.

37. Ch. J. Fillmore, *The Grammar of Hitting and Breaking*, in R. A. Jacobs, P. S. Rosenbaum (eds.), *Readings in English Transformational Grammar*, Ginn and Company, Waltham (MA) 1970, pp. 120-33.
B. Levin, M. Rappaport Hovav, *Manner and Result. A View from Clean*, in R. Pensalfini, M. Turpin, D. Guillemin (eds.), *Language Description Informed by Theory*, Benjamins, Amsterdam-Philadelphia 2014, pp. 337-58.

38. Vendler, *Verbs and Times*, cit.

39. Moneglia, Panunzi, Gregori, *Action Identification and Local Equivalence of Action Verbs: The Annotation Framework of the IMAGACT Ontology*, cit.

40. L. Talmy, *Towards a Cognitive Semantics*, MIT Press, Cambridge (MA) 2000, vol. 2, pp. 271-8; L. Talmy, *A Typology of Event Integration in Language*, in L. Talmy, *Ten Lectures on Cognitive Semantics*, Brill, Leiden 2018, p. 395. An example of English moot-fulfillment verb is *to hunt*, which does not imply any fulfillment of the action. Satellite elements (see below, Section 3.1 and note 46) can provide it when combined with the main verb, e.g. *to hunt down*.

41. M. A. Umiltà, L. Escola, I. Intskirveli, F. Grammont, M. J. Rochat, F. Caruana, A. Jezzini, V. Gallese, G. Rizzolatti, *When Pliers Become Fingers in the Monkey Motor System*, in "Proceedings of The National Academy of Sciences", 105, 6, 2008, pp. 2209-13.

42. K. Pastra, Y. Aloimonos, *The Minimalist Grammar of Action*, in "Philosophical Transactions of the Royal Society of London B: Biological Sciences", 367, 2012, pp. 103-17.

43. Even if motion events are not the core interest of this paper, we deem it useful to devote a state-of-the-art section to such an important and well-studied topic.

44. Talmy, *Lexicalization Patterns*, cit., pp. 57-149.

45. Such distinction is based on how languages encode the path of motion. In V-languages the path of motion is encoded in the verb, while in S-languages the path of motion is encoded in a separated particle, called satellite.

46. Talmy, *Towards a Cognitive Semantics*, cit.

47. Xiaoguang Li, *Directional Complements*, in "Encyclopedia of Chinese Language and Linguistics", 2017 [2015].

48. J. Tai, *Cognitive Relativism: Resultative Construction in Chinese*, in "Language and Linguistics", 4, 2, 2003, pp. 301-16.

49. D. Slobin, N. Hoiting, *Reference to Movement in Spoken and Signed Languages: Typological Considerations*, in *Proceedings of the Berkeley Linguistics Society* 1994, 20, pp. 487-505; D. I. Slobin, *The Many Ways to Search for a Frog: Linguistic Typology and the Expression of Motion Events*, in S. Strömqvist, L. Verhoeven (eds.), *Relating Events in Narratives*, vol. 2, *Typological and Contextual Perspectives*, Lawrence Erlbaum, Mahwah (NJ) 2004, pp. 219-57.

50. L. Chen, J. Guo, *Motion Events in Chinese Novels*, in "Journal of Pragmatics", 41, 9, 2009, pp. 1749-66.

51. Ivi, p. 1749.

52. C. Romagnoli. *Analisi preliminare delle strategie di lessicalizzazione degli eventi di moto in italiano e in cinese*, in "Studi italiani di linguistica teorica e applicata", 44, 2, 2015, pp. 281-94.

53. A. Peyraube, *Motion Events in Chinese*, in M. Hickmann, S. Robert (eds.), *Space in Languages*, John Benjamins, Amsterdam-Philadelphia 2006, pp. 121-38.

54. C. Lamarre, *The Linguistic Categorization of Deictic Direction in Chinese: With Reference to Japanese*, in D. Xu (ed.), *Space in Languages of China: Cross-Linguistic, Synchronic and Diachronic Perspectives*, Springer, Dordrecht 2008, pp. 69-98.

55. W. Shi, Y. Wu, *Which Way to Move: The Evolution of Motion Expressions in Chinese*, in "Linguistics", 52.5, 2014, pp. 1237-92.

56. Rappaport Hovav, Levin, *Building Verb Meanings*, cit.; Rappaport Hovav, Levin, *Reflections on Manner/Result Complementarity*, cit.

57. J. X. Lin, *The Encoding of Motion Events in Chinese: Multi-morpheme Motion Constructions*, PhD dissertation, Stanford University, Stanford 2011.

58. Y. X. Ma, *The Development of Chinese Path Verbs and Motion Events Expressions*, Zhongyang minzu daxue press, Beijing 2008; L. Qiu, *The Manner/Result Complementarity in Chinese Motion Verbs Revisited*, in *Proceedings of PACLIC 30*, 2016.

59. Y. R. Chao, *A Grammar of Spoken Chinese*, University of California Press, Berkeley-Los Angeles 1968; A. Cartier, *Les verbes résultatifs en chinois moderne*, Champion, Paris 1972; J. H.-T. Lu, *Resultative Verb Compounds vs. Directional Verb Compounds in Mandarin*, in "Journal of Chinese Linguistics", 5, 2, 1977, pp. 276-313; C. N. Li, S. A. Thompson, *Mandarin Chinese: A Functional Reference Grammar*, University of California Press, Berkeley 1981; B. Basciano, *Resultatives*, in "Encyclopedia of Chinese Language and Linguistics", Leiden, Brill, 2017 [2015]; G. F. Arcodia, *Modern Morphology*, in "Encyclopedia of Chinese Language and Linguistics", Leiden, Brill, 2017 [2015].

60. In Chinese linguistics, the resultative part of resultative compounds is often referred to as "resultative complement" (see among others Tai, *Cognitive Relativism: Resultative Construction in Chinese*, cit.), leading to the potentially confusing situation where resultative compounds are also describable as instances of Verb+Complement phrases. This actually fits in the «notoriously thorny issue of the distinction between compounds and phrases", for which I refer to Arcodia, *Modern Morphology*, cit.

61. J. X. Shen, *Xiandai Hanyu dongbu jiegou de leixingxue kaocha* [The Resultative Construction in Chinese: A Typological Perspective], in "Chinese Teaching in the World", 65, 3, 2003, pp. 17-23; Lamarre, *The Linguistic Categorization of Deictic Direction in Chinese*, cit; Pan, *Verbi di azione in italiano e in cinese mandarino*, Dissertation, University of Florence, 2016; C. N. Li, S. A. Thompson, *Mandarin Chinese: A Functional Reference Grammar*, cit., p. 55.

62. Beavers, Levin, Tham, *The Typology of Motion Expressions Revisited*, cit.

63. Chao, *A Grammar of Spoken Chinese*, cit., p. 446; Li, Thompson, *Mandarin Chinese: A Functional Reference Grammar*, cit., p. 55; R. Sybesma, *Inner Aspect*, in "Encyclopedia of Chinese Language and Linguistics" (first published online 2015, printed in 2017), Leiden, Brill.

64. Vendler, *Verbs and Times*, cit.

65. J. H.-Y. Tai, *Verbs and Times in Chinese: Vendler's Four Categories*, in "Parasession on Lexical Semantics", 20, 1984, pp. 289-96; B. Basciano, *Vendlerian Verb Classes*, in "Encyclopedia of Chinese Language and Linguistics" (first published online 2015, printed in 2017), Leiden, Brill, vol. 4, pp. 484-8.

66. Tai, *Cognitive Relativism: Resultative Construction in Chinese*, cit., p. 306.

67. Talmy, *Towards a Cognitive Semantics*, cit.

68. Gregori, *La forma dell'ontologia dell'azione IMAGACT: dal modello gerarchico al modello insiemistico in un DB a grafo*, Dissertation, University of Florence, 2016, p. 78.

69. For the sake of clarity, an English translation irrespective of the IMAGACT equivalents is provided.

70. E. M. Riddle, *Complexity in Isolating Languages: Lexical elaboration versus grammatical economy*, in M. Miestamo, K. Sinnemäki, F. Karlsson (eds.), *Language Complexity: Typology, Contact, Change*, John Benjamins, Amsterdam-Philadelphia 2008, pp. 133-52.

71. For instance, while in both Italian and English the percentage of verbs linked to more than 10 scenes (i.e. very general ones) is 6.7%, in German and Danish the percentage is respectively 2.2% and 3.4%. In parallel, the percentage of verbs linked to just one scene (i.e. very specific ones) is more than 60% for both German and Danish, but it is just around 35% for Italian and English. I. Korzen, *Endocentric and Exocentric Verb Typology: Talmy Revisited – on Good Grounds*, in "Language and Cognition", 8, 2016, pp. 206-36; I. Korzen, *L'italiano: una lingua esocentrica. osservazioni lessicali e testuali in un'ottica tipologico-comparativa*, in "Studi Italiani di Linguistica Teorica e Applicata", 1, 2018, pp. 15-36.

72. Gregori, *La forma dell'ontologia dell'azione IMAGACT: dal modello gerarchico al modello insiemistico in un DB a grafo*, cit., p. 79.

73. Korzen, *L'italiano: una lingua esocentrica. osservazioni lessicali e testuali in un'ottica tipologico-comparativa*, cit.

74. Tai, *Cognitive Relativism: Resultative Construction in Chinese*, cit.

75. Rappaport Hovav, Levin, *Reflections on Manner/Result Complementarity*, cit.

76. Tai, *Cognitive Relativism: Resultative Construction in Chinese*, cit.

77. J. Beavers, A. Koontz-Garboden. *Manner and Result in the Roots of Verbal Meaning*, in "Linguistic Inquiry", 43, 3, 2012, pp. 331-69.

78. Tai, *Cognitive Relativism: Resultative Construction in Chinese*, cit.