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On Manner/Result Complementarity

Abstract

The aim of the paper is to discuss the Manner/Result Complementarity (Levin and Rappaport Hovav 1991, 2006) as one of the restrictions on the construal of lexical meaning at the level of lexicon-syntax interface from the perspective of Polish. The investigation of the manner/result complementarity provides good ground for the analysis of the nature of the relationship between the lexical meaning of a verb and the associated syntactic projection of a verb phrase. The investigation of Polish examples in the paper is presented as a test for the cross-linguistic validity of the complementarity. In the course of the discussion, the role of morphological marking is integrated into the analysis as reflecting the lexicalization pattern of Polish result verbs.

Key Words

lexicon, event structure, verbal prefixes, manner, result

Streszczenie

Celem artykułu jest omówienie zjawiska dotyczącego wymienności występowania dwóch elementów znaczeniowych w rdzeniach czasownikowych (*manner/result complementarity*, Levin i Rappaport Hovav 1991, 2006). Jako model badawczy została przyjęta analiza znaczenia leksykalnego, zakładająca dekompozycję na predykaty pierwotne, która determinuje strukturę składniową na poziomie pogranicza leksykonu i składni. Głównym założeniem wspomnianej restrykcji jest możliwość leksykalizacji przez dany rdzeń czasownikowy tylko jednego elementu znaczenia. Ograniczenie to z jednej strony wpływa na charakterystykę składniową klas czasowników, z drugiej zaś pozwala na wyjaśnienie tej charakterystyki. Analiza polskich przykładów jest spojrzeniem na wspomniane zjawisko językowe z perspektywy innego języka celem weryfikacji reguł leksykalnych przedstawionych przez Levin i Rappaport Hovav (2006, 2013). Jako element dyskusji została również omówiona relacja pomiędzy wykładnikami morfologicznymi rezultatu czynności w formie przedrostków czasownikowych a semantycznym elementem celu charakteryzującym polskie czasowniki rezultatywne.

Słowa kluczowe

leksykon, struktura zdarzeń, prefiksy werbalne, proces, rezultat

1. Introduction

The paper focuses on the Manner/Result Complementarity (Levin and Rappaport Hovav 1991, 2006, 2013) as one of the restrictions on the construal of lexical meaning and argument realization. The complementarity is a restriction which determines the construal of verb meaning, limiting the number of possible lexicalization patterns and is claimed to be of cross-linguistic relevance. The analysis of Polish examples is aimed to shed more light on the cross-linguistic aspect of the proposed complementarity. Analysing a language where result interpretation is overtly encoded morphologically (cf. Ramchand and Svenonius 2002; Ramchand 2008), provides interesting ground for investigating the relationship between morphological marking and lexicalized meaning. We believe that the outcome of the analysis supports the findings of Levin and Rappaport Hovav (1991, 2006) with respect to the Manner/Result Complementarity, as this distinction in lexical encoding is maintained by Polish verbs.

The structure of the paper is as follows. The second section presents the main tenets of the result/manner complementarity and the implications it has for the theory of lexical meaning. The third section presents the critical evaluation of the restriction that appear in the literature. The closing sections are aimed at investigating the complementarity from the perspective of aspectual notions and the morphological encoding of result in Polish. It is claimed that the verbs marked for result consistently lexicalize a different element of meaning from manner verbs. With these two types of verbs, manner and result are in complementary distribution as far as the asserted element of meaning is concerned, which reflects different patterns of lexicalization.

2. Restricting lexical meaning

2.1. Uniformity and variability in the lexicon

Taking the interpretation of a sentence to be a compositional process, both the lexical information encoded in the lexical entries and the syntactic pattern in which they are used contribute to the overall interpretation of a sentence. The syntactic contexts in which a given lexical entry is used contribute substantially to interpretation as indicated by the examples in (1). This is the essence of the constructionist's approach to language, which in its extreme postulates no structured meaning in the lexicon (e.g., Borer 2005; Ramchand 2008).

- (1) a. The factory horns sired throughout the raid.
- b. The factory horns sired midday and everyone broke for lunch.
- c. The police car sired the Porsche to a stop.

- d. The police car sired up to the accident site.
- e. The police car sired the daylight out of me. (Borer 2005: (7))

In such a model, lexical items get interpreted in a particular syntactic context, and delineating their uniform lexical content may prove difficult at best. In view of examples such as (1), one is faced with a dilemma of proposing a lexical account, which entails the existence of multiple (polysemous) lexical entries of a given verb, or a more systemic constructionist stand, which postulates little lexical content for a given entry, and proposes compositionality across lexicon and syntax (e.g. Croft 2012; Goldberg 2005).

Levin and Rappaport Hovav (2013: 49) adopt an intermediate solution, the essence of which is the assumption that the overall interpretation is partly lexical and partly compositional:

We believe, however, that it is indeed possible to distinguish facets of meaning which are strictly contributed by the verb from other facets of meaning which may be derived either by the choice of argument or from particular or prototypical uses of that verb in context. We refer to the former as elements of LEXICALIZED MEANING, taken to comprise a verb's core meaning.

The two types of meaning can be distinguished in this general way as postulated by Levin and Rappaport Hovav (2013: 49):

We suggest that the criterion for lexicalized meaning is constancy of entailment across all uses of a verb. Crucially, a verb's lexicalized meaning is to be distinguished from additional facets of meaning that can be inferred from a particular use of that verb in context and from the choice of noun phrases serving as arguments of the verb.

Taking into consideration the fact that most verbs function in a wide number of contexts, lexicalized meaning must be of quite general type. Levin and Rappaport Hovav (2013: 50) illustrate this on the example of the verb *open*:

The verb *open* specifies a change of state that an entity undergoes, but the precise change is not fully determined by the verb itself; rather, it depends on the choice of object as well. Opening a jar or a bottle means removing its lid or cap, while opening a door or window means moving the door or window so that the aperture it is blocking is now unblocked (see Levison 1993 on opening containers vs. conduits). These variations in the precise change described, however, are not part of what is lexicalized by *open*. What this verb lexicalizes is removing an obstruction to allow access to a formerly inaccessible space, but exactly how the obstruction is removed varies depending on the actual physical object involved.

Hence if we consider some examples of sentences with *open*, we can see that the elements that co-appear with the verb in the clause have an important influence on the final interpretation. This applies to the (lexico-)semantic content of the verb as well as to the aspectual and quantitative interpretation of the whole VP.

- (2) a. Open the file called Templates.
 b. Open your books to page 63.
 c. [...] a little gadget that helps you to open jars.
 d. Andrew Lloyd Webber's new musical will open later this year.
 e. Did you open the mail?
 f. How do you open this umbrella?
 g. Police have opened an investigation into the girl's disappearance.
 h. The animals were fasted for 24 hours and then their abdomen was opened and the stomach exposed under light ether anaesthesia.

(examples from LDOCE 2003)

On the other hand, the meaning of a verb may be altered only to a particular degree, or to put it differently, only certain aspects of its meaning may be changed. This results from the functioning of predicate decomposition (Levin and Rappaport Hovav 1995, 1999, 2006), where core meaning is distinguished from peripheral meaning. These two types of meaning are realised by event constants and event variables respectively. The number of event constants is limited, and it determines the number of verb classes. For example, event constants distinguish between manner and result verbs (*pour* vs. *fill*). Event variables, on the other hand, differentiate between verbs within a given class. Thus, in the manner class, they would distinguish between *pour* and *ladle* and within the result class between *fill* and *cover*. The association of a particular verb class with an event template which contains both closed positions (i.e. event constants) and open positions (i.e. event variables) enables maintaining the central meaning for a given verb and allows some variability in its usage.

An alternative approach is to postulate polysemous lexical entries for a particular verb. The downside of such approach is that it misses on the generalizations that can be made with respect to the relationship between different uses of a particular verb in different contexts. This leaves us with a three way possibility when a given verb is used in different meanings: the lexical entries associated with these meanings are polysemous (*John closed the door* vs. *The door closed*), there is no polysemy but extension (*John closed the door* vs. *John closed the deal*), or there is homophony (*John kicked the ball* vs. *John kicked the bucket*).¹ At that point we are going to follow Levin and Rappaport Hovav (2013), who claim that natural language tries to minimize polysemy and any given verb should have a single sense (i.e. lexicalized meaning), which remains constant across all its uses.

¹ In the case of homophony, the relationship between the uses may be a result of coincidence, however in some cases it may be possible to trace it back and explain it resorting to language change.

2.2. The Manner/Result Complementarity

The meanings entailed by linguistic form may be encoded by different means, and at different levels of linguistic representation. For example, theories like the Minimalist Program (Chomsky 1995) and Distributed Morphology (Halle and Marantz 1993) propose that such differences in the linguistic representation result from different morphological encoding. One of the key aspects of linguistic representation is argument realization, which according to the approach adopted here is determined by event structure decomposition. The function of event structure is twofold: it enables the encoding of predicates' lexical meaning and it induces restrictions on the possible types of meaning, including the possible combinations of simpler lexical elements into more complex ones. One of such restrictions is the manner/result complementarity (Levin and Rappaport Hovav 2006, 2013).

- (3) Manner/Result Complementary: Manner and result meaning components are in complementary distribution: a verb lexicalizes only one.

This restriction is taken to reveal important characteristics of the structure of lexical meaning. For Rappaport Hovav and Levin (2010: 25), the complementarity results from the way in which lexical roots are associated with event structure, and the assumption that a given root can be linked only to a single position in the event structure. The distinction into manner and result verbs is an outcome of their lexicalization patterns. The sentences in (4) present pairs of verbs, in which the first sentence represents manner verbs and the second one related result verbs. What characterizes manner verbs is that the object argument has the role of SURFACE, while the object of result verbs is PATIENT. At the level of event structure, this distinction is reflected by different argument realization patterns in (5) (Levin and Rappaport Hovav 2006).

- (4) a. The boy hit the window [SURFACE] (with a ball [INSTRUMENT]).
 b. The boy broke the window [PATIENT] (with a ball [INSTRUMENT]).
 c. The boy smeared the bread with butter.
 d. The boy covered the bread with butter.
 e. The boy poured the water into a jug.
 f. The boy filled the jug with water.
 g. The boy shoveled the coals from the truck.
 h. The boy emptied the truck of coals.
 i. The boy shook the ingredients of the drink.
 j. The boy combined the ingredients of the drink.
 k. The boy stabbed the victim with a knife.
 l. The boy killed the victim with a knife.

- (5) a. manner \rightarrow [x ACT_{<MANNER>}]
 (e.g., jog, run, creak, whistle, . . .)

b. externally caused, i.e. result, state →
 [[x ACT] CAUSE [y BECOME <RESULT-STATE>]]
 (e.g., break, dry, harden, melt, open, . . .)²

(Rappaport Hovav and Levin 1998: 109)

An observation that seems to go unnoticed is that the difference in the complexity of event structure of manner verbs and result verbs has implications for lexicalized meaning. Result verbs (5b) are represented by a complex predicate CAUSE, which links two simple predicates ACT and BECOME. The subpredicates function as arguments of CAUSE. By comparison, manner verbs (5a) are represented by a simple predicate ACT with MANNER acting as a modifier.³ Once we integrate it with the notion of lexicalized meaning, we arrive at the following scheme. In a complex event structure, result is lexicalized as the element of meaning which differentiates it from the simple structure of activities. This is the consequence of a more general constraint on structuring lexical meaning which entails that only one element of meaning may be lexicalized by the root, as presented below.⁴

- (6) The lexicalization constraint: A root can only be associated with one primitive predicate in an event schema, as either an argument or a modifier.

(Rappaport Hovav and Levin 2010)

The arguments stated above imply that it should not be possible for any particular verb to lexicalize two different elements of meaning. This leads to the emergence of two natural classes of verbs: manner verbs and result verbs. Conversely, if verbs that lexicalize both manner and result to be found, they would constitute counter-examples to the above theory. The following section relates to such cases.

² Following Rappaport Hovav and Levin (2010), this is how the notation for predicate decomposition should be interpreted: „[r]oots are integrated into event schemas as arguments [...] or modifiers [...] of predicates in the event schemas. Roots are italicized and in angle brackets; they are notated via subscripts when functioning as modifiers.”

³ We believe that the event template of result verbs can be regarded as an extension of the one of manner verbs. This can be achieved by means of event template augmentation in the sense of Rappaport Hovav and Levin (1998), where a simple event predicate becomes a complex one. As an effect of the lexicalization constraint, only one of the two elements of meaning is lexicalized, and in this case it is the result. As we will see below, lexicalization does not preclude another element of meaning from being part of the interpretation as contextualized meaning.

⁴ What remains unclear at this point is the underlying cause for the lexicalization of the result predicate at the cost of the manner predicate of causative/result verbs. This situation is in line with ontological knowledge which entails that a result originates from an activity, and an activity may lead to a result. The lexicalization constraint leads to the emergence of the two classes of verbs. This issue, however, requires further research.

3. The case of manner of death verbs

The key aspect of the manner/result complementarity relates to the prediction that a given root verb can express only one element of meaning as lexicalized meaning specified by its event structure. If it lexicalizes manner, it cannot lexicalize result and vice versa. Hence examples of verbs in which both manner and result are present would be clear counter-examples to this complementarity. The examples below present the canonical examples of manner (7) and result verbs (8).

- (7) a. John wiped the table.
 b. John wiped the table clean.
 c. John wiped the table but it remained dirty.
- (8) a. John cleaned the table.
 b. ??John cleaned the table spotless.
 c. ??John cleaned the table but it remained dirty.

In (7) the activity of wiping does not necessarily involve a result, as indicated by (7c). However, the result predicate may be added to it, as indicated in (7b). Thus, in (7b) the interpretation includes both manner (the activity of wiping) and result (the table becoming clean). The question is whether this interpretation should be treated as a counter-example to the complementarity. According to Levin and Rappaport Hovav (2013), the answer is negative, since the result part of meaning does not constitute lexicalized meaning. After all, the result interpretation in (7a) is not an entailment which is constant across all usages of that verb, cf. (7c). It is an entailment which is pragmatically contextualized: it may be realized outside the main verb (7b) and it may be contradicted (7c). Lexicalized meaning is characterized by entailment which is constant across all spectrum of usage of a particular verb. On this assumption, interpretation and lexicalized meaning do not overlap. The elements that contribute to the overall interpretation are: lexicalized meaning, the structural context of the clause, and the pragmatic context of an utterance. The postulated content of a lexical entry of a root verb contains only the former.

There is however a group of verbs which are argued to contradict the manner/result complementarity (Koontz-Garboden and Beavers 2010). These are manner of death verbs, which are believed to lexicalize both the manner and the result component of their meaning. Each member of this group of verbs entails a particular result (i.e. death) and the manner in which it was achieved. As noted above, the existence of particular meaning is not the sole determinant of lexicalized meaning. Let us have a look at the list of proposed counter-examples more closely with the intention of investigating whether they indeed lexicalize both manner and result components of meaning.

- (9) MANNER OF DEATH VERBS: asphyxiate, behead, crucify, hang, decapitate, disembowel, drown, electrocute, eviscerate, gas, guillotine, gut, hara kiri (seppuku), immolate, impale, poison, quarter, smother, strangle, . . .

As specified above, the characteristics of lexicalized meaning are the following: it is a constant entailment across all usage of a verb, it cannot be expressed outside the verb (e.g. by means of a PP or a particle), it can be negated, but it cannot be contradicted. Let us use these criteria to see whether the verbs in (9) actually lexicalize both result and manner.

- (10) a. The king wasn't beheaded but he still died.
 b. The king was beheaded but he wasn't guillotined.
 c. The king was killed by beheading.
 d. As a result of the collision, the statue was beheaded by the plane's wing.
- (11) a. The king was beheaded with a guillotine / with a sword / with an axe / by a falling object.
 b. The king wasn't beheaded, he was guillotined.
 c. The king died, but he wasn't beheaded.

The examples above indicate that even though *behead* expresses both result and manner, it is only manner which is lexicalized by the root. The strongest evidence comes from negation (11b, c), which applies only to manner but not result (i.e. death). The examples in (10) indicate that result is the presupposed part of meaning, as it cannot be negated.⁵ The sentence in (10b) indicates that manner is of general nature which also meets the requirement on lexicalized meaning. Our intuition is that its general meaning relates to 'severing one's head by some kind of incision', which in line with ontological knowledge leads to death.⁶ It seems that manner of death verbs entail both manner and result, but these two elements of meaning are not of equal status. Since lexicalized meaning is not the only source of meaning, the class of manner of death verbs does not necessarily contradict the manner/result complementarity. As maintained by Husband (2011), in the case of manner of death verbs only one element of meaning is lexicalized. In the case of verbs like *guillotine*, which are taken to be achievements, it is the result component. In the case of verbs like *electrocute*, which are considered to be activities, it is manner.⁷ Consequently, manner of death verbs do not constitute counter-examples to the manner/result complementarity, as they conform to the lexicalization constraint and lexicalize only one element of meaning.

⁵ This is in line with Levinson (1983), who argues that assertions can be questioned and negated, while presuppositions cannot.

⁶ More examples of manner of death verbs are discussed in Husband (2011).

⁷ For further details see Husband (2011).

Other verbs which are believed to falsify the manner/result complementarity are *climb* and *cut*. According to Koontz-Garboden and Beavers (2010) these verbs reveal the behaviour of both manner and result verbs. Levin and Rappaport Hovav (2013) argue against this claim and postulate that it is an over-generalization, since in any given context the verbs lexicalize either manner or result, but not both. In other words they are polysemous between the manner interpretation and the result interpretation. These are a result of different event structure templates. The representations in (12) indicate the decomposition of *electrocute*, *cut* as a manner verb, and *cut* as a result verb respectively. In each case only one element of meaning is lexicalized; in the first two it is manner, in the third one it is result.

- (12) a. *electrocute*: [[x ACT _{<MANNER>}] CAUSE [y BECOME]]
 b. *cut*: [x ACT _{<MANNER>}]
 c. *cut*: [[x ACT] CAUSE [y BECOME _{<RESULT-STATE>}]]

In this section we discussed verbs which fluctuate between the manner and result interpretation, with the two interpretations being in complementary distribution. This is the case of *cut*. Verbs like *electrocute* entail the two elements of meaning but only one of them constitutes asserted or lexicalized meaning, and in this case it is manner. As indicated by Husband (2011) and Levin and Rappaport Hovav (2013), all potential counter-examples conform to the manner/result complementarity under closer scrutiny. In the following section, we are going to turn to Polish manner and result verbs to see whether they reflect the pattern proposed by Levin and Rappaport Hovav and investigate the interplay between aspectual notions and event structure in this domain.

4. Argument realization patterns

In this section we focus on argument realization as a reflection of the difference in the event structure template between manner verbs and result verbs. As mentioned in section 2.2, the two classes of verbs differ with respect to the thematic role they assign to their complements, which is also reflected in two different event structure templates. Manner verbs are simple predicates which may take an additional argument realizing the role of Surface. Result verbs are projections of a complex event template, which is associated with the role of Patient. These characteristics, as argued by Levin (2012), lead to different argument realization patterns for the two classes of verbs. Generally, result verbs invariably realise the second argument as direct object, while manner verbs are more flexible in that respect, thus the second argument may be realised for example as oblique.

4.1. The cross-linguistic template for the study

As already noted, the function of event structure is that it is the domain of linguistic representation which determines argument realization (Levin and Rappaport Hovav 1995, 2006). As such it is an intermediary between lexically encoded information and syntax. The interface between lexicon and syntax is delineated by a set of rules and constraints which determine argument realization patterns and correspond to speakers' linguistic knowledge (Levin and Rappaport Hovav 1995). The manner/result complementarity is an example of such constraint. As argued by Levin (2012), the effects of this constraint are visible in argument realization cross-linguistically. Levin (2012) also proposes an outline for such cross-linguistic investigation. It is based on the characteristics of 'hitting' verbs, which are representative of manner verbs, and 'breaking' verbs, which represent result verbs, and the general premises of lexicon-syntax interface. As already noted, the key difference between those two classes of verbs concerns the thematic role of the object argument and the eventuality type of the associated event.

- (13) a. The boy broke the window [PATIENT] (with a ball [INSTRUMENT]).
 b. The boy hit the window [SURFACE] (with a ball [INSTRUMENT]).

In the case of breaking verbs, the object argument is Patient, while with hitting verbs it is Surface. One of the key premise of the lexicon-syntax interface concerns the realization of Patient, which is heavily constrained. The constraint amounts to its realization as a direct object. The realization pattern for Surface is more flexible and such arguments are realized as obliques. This is formulated as the following constraint for English by Levin (2012).

- (14) Generalizations about argument realization in English across transitive uses:
 — The Patient must be the object of a breaking verb.
 — The Surface may, but need not be the object of a hitting verb.

The different role of the complement leads to different event structures for these verbs. In terms of interpretation, the difference is reflected by result verbs specifying a scalar change, while manner verbs specify a non-scalar change. Examples of verbs specifying scalar change are *fall* and *rise*, and those specifying nonscalar change are *jog* and *exercise*. The key components of this proposal are presented below:

- (15) A SCALE is constituted by a set of degrees – points or intervals indicating measurement values – on a particular dimension (e.g., brightness, depth, height, ripeness, temperature), with an ordering relation. The dimension represents an attribute of an entity, with the degrees indicating the possible values of this attribute (Kennedy 2001; Kennedy and McNally 2005).

- (16) A SCALAR CHANGE in an entity involves a change in the value of one of its scalar-valued attributes in a particular direction on the relevant scale.
- (17) A NONSCALAR CHANGE in an entity is any change which isn't characterizable in terms of an ordered set of degrees – i.e. values of a single attribute – along a dimension representing this attribute.

Taking the above into account, Patient is an argument that undergoes scalar change with verbs like *warm* or *cool* (Kennedy and McNally 2005), while Surface is a 'more passive' argument undergoing nonscalar change. The differing argument realization patterns are a result of this difference. This is specified in (18).

- (18) THE ARGUMENT REALIZATION PROPERTY OF RESULT VERBS (Levin 2012: 14):
The patient MUST be realized and CAN ONLY be realized as a direct object (cf. Fillmore 1970 [...], Levin 1993, RH&L 1998 [...] on change of state verbs).

According to Levin (2012), the argument realization properties above are cross-linguistically relevant and this is specified in the assumptions in (19). The manner/result complementarity is expected to hold in other languages, as it reflects a property of natural language in general. Even though all languages are expected to make the distinction between result and manner verbs with respect to argument realization, the differences themselves will conform to the morphological characteristics of a given language.

- (19) a. The prediction for result verbs:
[...] across languages they should show little flexibility in the options available to them.
- b. The predictions for manner verbs:
- In a given language, manner verbs should show more flexibility than result verbs in their object choices, including the need to take an object at all.
 - Across languages, manner verbs should manifest more diversity in their argument realization options than result verbs.⁸

In the following section, we are going to focus on the analysis of Polish in order to see how it relates to this predicted pattern.

4.2. Polish manner and result verbs

In this section, we are going to look at Polish examples of manner and result verbs to see whether they conform to the cross-linguistic pattern as predicted by Levin (2012). In the following section, we are going to investigate the language specific characteristics of those two classes of Polish verbs paying particular attention to the interaction between morphological marking and result.

⁸ As indicated by an anonymous reviewer, the prediction concerning cross-linguistic uniformity of result verbs vs. variability of manner verbs has been empirically tested in the Leipzig Valency Project.

To begin with, we are going to analyse some examples of cognate verbs to see whether the distinction between those two types of verbs is justifiable at all.

4.2.1. Manner verbs

As indicated in section 5.1, manner verbs should show some flexibility with respect to the realization of the complement of the verb, which is characterized as Surface (cf. (13)).

- (20) a. Janek zmywał kiedy Ania czytała gazetę.
 Janek_[NOM] wash up_[IPFV] when Ania_[NOM] read_[IPFV] paper_[ACC]
 'Janek was washing up while Ania was reading a paper.'
- b. Janek odkurza przed wizytą gości.
 Janek_[NOM] vacuum_[IPFV] before visit guests_[INS]
 'Janek is vacuuming before the guests visit.'
- c. Janek wlał wodę do dzbanka. / *Janek wlał dzbanek wodą.
 Janek_[NOM] pour_[PRF] water_[ACC] in jug / Janek_[NOM] pour_[PRF] jug_[ACC] water_[INS]
 'Janek poured water into the jug/Janek poured the jug with water.'
- d. Janek szorował szczotką po podłodze. / Janek szorował podłogę szczotką.
 Janek_[NOM] scrub_[IPFV] brush_[INS] on floor / Janek_[NOM] scrub_[IPFV] floor_[ACC] brush_[INS]
 'Janek was scrubbing the floor with a brush.'
- e. Janek umył naczynia do czysta.
 Janek_[NOM] wash_[PRF] dishes_[ACC] to clean
 'Janek washed the dishes clean.'

The examples above indicate the following properties of manner verbs: they allow unspecified objects (20a, 20b), they allow Substance to be realised as direct object (20c), they allow the Surface to be realised by a PP (20d), they allow the result to be further specified by a PP (20e).

4.2.2. Result verbs

Result verbs entail reaching a particular end state as a consequence of the eventuality and they are predicted to be rigid with respect to argument realization of the verb's complement as direct object.

- (21) a. Janek czyścił *(samochód) kiedy Ania czytała gazetę.
 Janek_[NOM] clean_[IPFV] (car_[ACC]) when Ania_[NOM] read_[IPFV] paper_[ACC]
 'Janek was cleaning the car while Ania was reading a paper.'
- b. Janek oczyścił ziemniaki /??ziemniaków na obiad.
 Janek_[NOM] clean_[PRF] potatoes_[ACC] / potatoes_[GEN] for dinner
 'Janek cleaned the potatoes/some potatoes for dinner.'
- c. Janek napełnił dzbanek wodą. / *Janek napełnił wodę do dzbanka
 Janek_[NOM] fill_[PRF] jug_[ACC] water_[INS] / Janek_[NOM] fill_[PRF] water_[ACC] to jug
 'Janek filled the jug with water. / Janek poured water into the jug.'

- d. *Janek czyścił szczotką po podłodze. / Janek czyścił podłogę szczotką.
 Janek_[NOM] clean_[IPFV] brush_[INS] on floor / Janek_[NOM] clean_[IPFV] floor_[ACC] brush_[INS]
 'Janek was cleaning the floor with a brush.'
- e. ??Janek wyczyścił samochód do czysta.
 Janek_[NOM] clean_[PRF] car_[ACC] to clean
 'Janek cleaned the car clean.'

The examples above indicate the following properties of result verbs: they do not allow unspecified objects (21a), they do not allow the complement to be realised as oblique (21b), they require Container to be realised as direct object (21c), they do not allow the Patient to be realised as a PP (21d), they do not allow the result to be further specified by a PP.

The examples above indicate that manner and result verbs show different behaviour in argument realization. The argument realization pattern for result verbs seems to be more rigid, while manner verbs reveal more flexibility in this respect. However, because of the morphological characteristics of Polish, the situation is not as clear as in English. Hence in the following section, we are going to turn to the morphological expression of result in Polish.

4.3. Verbal prefixes

Polish, like other Slavic languages, shows morphological marking of result. This takes the form of verbal prefixes, which according to Romanova (2004) and Ramchand (2008), among others, project a result phrase at the level below VP (also referred to as the inner aspect level, cf. Travis 2010). Hence a given unprefixated activity verb becomes a verb expressing result by the addition of the prefix.

- (22) a. Zosia czytała książkę.
 Zosia_[NOM] read_[IPFV] book_[ACC]
 'Zosia was reading a book.'
- b. Zosia prze-czytała książkę.
 Zosia_[NOM] RES-read_[PRF] book_[ACC]
 'Zosia has read the book.'

In (22) the activity verb *czytać* 'read' becomes the resultative *prze-czytać*. It is argued by Ramchand and Svenonius (2002) that the verbal prefix specifies the realization of a result phrase and it plays an analogous function to verbal particles in Germanic languages. From the perspective of event structure, the process may be interpreted as an instance of event template augmentation (cf. fn. 3), where an activity predicate becomes a complex result predicate. The examples below indicate that *czytać* reveals behaviour typical of manner verbs, as it allows unspecified objects and does not have to entail result (23). The

prefixed *przeczytać* behaves like a result verb, as it does not allow unspecified objects and entails result.

- (23) a. Zosia czytała od drugiej do trzeciej.
 Zosia_[NOM] read_[IPFV] from two to three
 ‘Zosia was reading from two to three.’
- b. Zosia czytała i czytała, ale w sumie nic nie przeczytała.
 Zosia_[NOM] read_[IPFV] and read_[IPFV] but in sum nothing not read_[PRF]
 ‘Zosia read and read but eventually has not read anything.’
- c. ??Zosia nie czytała artykułu, ale go przeczytała.
 Zosia_[NOM] not read_[IPFV] article_[GEN] but it read_[PRF]
 ‘Zosia didn’t read the article, but she has read it.’
- (24) a. Zosia prze-czytała *(artykuł) wczoraj.
 Zosia_[NOM] RES-read_[PRF] (article_[ACC]) yesterday
 ‘Zosia read the article yesterday.’
- b. ??Zosia prze-czytała artykuł, ale nie do końca.
 Zosia_[NOM] RES-read_[PRF] article_[ACC] but not to end
 ‘Zosia read and read but not until the end.’
- c. Zosia nie przeczytała artykułu, ale go czytała.
 Zosia_[NOM] not RES-read_[PRF] article_[GEN] but it read_[IPFV]
 ‘Zosia hasn’t read the article but she read it.’

An interesting question arises with respect to lexicalized meaning of verb forms such as *czytać* and *przeczytać*. As already indicated by (23c) and (24c), the examples with negation shed some light on this issue.

- (25) a. Zosia nie czytała książki, ona jedynie oglądała obrazki.
 Zosia_[NOM] not read_[IPFV] book_[GEN] she just watch_[IPFV] pictures_[ACC]
 ‘Zosia was not reading the book, she was only looking at the pictures.’
- b. ??Zosia nie prze-czytała książki, bo w ogóle jej nie czytała.
 Zosia_[NOM] not RES-read_[PRF] book_[GEN] because at all it_[GEN] not read_[IPFV]
 ‘Zosia hasn’t read the book, as she wasn’t reading it at all.’
- (26) a. Janek nie u-mył naczyń, ale je mył.
 Janek_[NOM] not RES-wash_[PRF] dishes_[GEN] but them wash_[IPFV]
 ‘Janek hasn’t washed the dishes, but he washed them.’
- b. Janek mył, mył, ale nie u-mył naczyń.
 Janek_[NOM] wash_[IPFV] wash_[IPFV] but not RES-wash_[PRF] dishes_[GEN]
 ‘Janek was washing, but hasn’t washed the dishes.’
- c. Czy Janek u-mył naczynia? Nie, ale je mył.
 Janek_[NOM] RES-wash_[PRF] dishes_[ACC]? No but them_[ACC] wash_[IPFV]
 ‘Has Janek washed the dishes? No, but he was washing them.’
- (27) a. ??Janek nie mył naczyń, ale je umył.
 Janek_[NOM] not wash_[IPFV] dishes_[GEN] but them_[ACC] RES-wash_[PRF]
 ‘Janek wasn’t washing the dishes, but he has washed them.’
- b. Czy Janek mył naczynia? *Nie, ale je umył.
 Q Janek_[NOM] wash_[IPFV] dishes_[ACC]? No but them_[ACC] wash_[PRF]
 ‘Was Janek washing the dishes? No, but he has washed them.’

- (28) a. Janek nie zabił jaszczurki, ale ją okaleczył.
 Janek_[NOM] not kill_[PRF] lizard_[GEN] but it_[ACC] maim_[PRF]
 'Janek hasn't killed the lizard, but he's maimed it.'
- b. Czy Janek zabił jaszczurkę? ??Tak, ale nic jej się nie stało.
 Q Janek_[NOM] kill_[PRF] lizard_[ACC] Yes but nothing it_[DAT] REFL not happen_[PRF]
 'Has Janek killed the lizard? Yes, but it is ok.'

In (25a) with the unprefixd verb the manner can be negated, while in (25b) with the prefixed verb negation relates to the result. This indicates that in the first case manner is asserted, while in the second case it is result which is asserted. This indicates that prefixation as an instance of event template augmentation reflects the manner/result complementary. In other words, a verb which lexicalizes manner has to change that characteristic as a consequence of being supplied with a prefix expressing result. Further examples in (26)-(28) reveal that the relevant elements of meaning can be questioned. Again with manner verbs (i.e. the unprefixd variants), the question relates to the manner of performing the activity, while with result verbs (i.e. the prefixed variants), it is the result which is questioned.

The source of resultative interpretation in Polish is generally the morphological marking on the verb, which gives rise to resultative verb pairs. However, there is a group of verbs which seem to be lexically marked as resultative. In other words, these are verbs which only have a result variant. As such they may be treated as equivalents of the English *break* verbs, with the difference that the result is morphologically marked. With these verbs the result variant has been lexicalized and there is either no unprefixd equivalent, or the cognate verb does not have equivalent semantics. The relevant examples are: *opróżnić* 'empty', *zabić* 'kill', *przekroczyć* 'cross', *wytrzeć* 'wipe clean'. We would like to indicate that these verbs are still subject to the complementarity, which is indicated by the fact that an additional result prefix cannot be added and the asserted meaning relates to result.

- (29) a. *Złodzieje wy-opróznili skarbiec w banku.
 robbers_[NOM] RES -empty_[PRF] vault_[ACC] in bank
 'The robbers emptied the bank's vault.'
- b. *Kelner do-zabił muchę gazetą.
 waiter_[NOM] RES -kill_[PRF] fly_[ACC] paper_[INS]
 'The waiter killed the fly with a paper.'
- c. *Janek na-przekroczył swoje uprawnienia, pomagając Zosi.
 Janek_[NOM] RES -cross_[PRF] his authority_[ACC] helping Zosia_[DAT]
 'Janek has exceeded his authority by helping Zosia.'
- (30) a. Złodzieje nie opróżnili skarbcza w banku, ale próbowali.
 robbers_[NOM] not empty_[PRF] vault_[GEN] in bank but tried
 'The robbers didn't empty the bank's vault, but they tried.'

- b. Kelner nie zabił muchy gazetą, ponieważ uderzenie było zbyt słabe.
waiter_[NOM] not kill_[PRF] fly_[GEN] paper_[INS]
‘The waiter didn’t kill the fly with a paper because the blow was too light.’
- c. Janek nie prze-kroczył swoich uprawnień, chociaż był blisko.
Janek_[NOM] not_[RES] -cross_[PRF] his authority_[GEN] but was close
‘Janek has not exceeded his authority, but he was close.’

This section indicated that the division into manner and result verbs in Polish is not as clear cut as in English, since result interpretation is associated with verbal prefixation. Many authors (e.g. Ramchand (2008), Ramchand and Svenonius (2002), Romanova (2004)) associate verbal prefixes with the notion of result and the function of projecting the result phrase at the inner aspect level. As a result of morphological marking, most activity verbs are found in aspectual pairs: non-resultative vs. resultative. Within the pairs, the verbs comply with the manner/result complementarity. Each form asserts only one element of meaning, which is either manner or result, and the other one may be inferred only by presupposition.

5. Lexicon and aspect

In this section we would like to look more closely at the interplay between the elements of meaning specifying manner and result and aspectual notions. It was already noted above that in Polish the semantics of result is achieved via morphological means in the form of prefixation. Here we follow Ramchand (2008), among others, in treating verbal prefixes as projecting a lexical result head, which alters the lexical meaning of a verb.

If we follow the assumption that verbal prefixation spells out result within lexical aspect, we also need to investigate whether it can be associated with the notion of scalar change (Levin 2012). As already noted, scalar change characterizes result verbs, and non-scalar change characterizes manner verbs. The question is whether the addition of a prefix has the same effect irrespective of verb type and the prefix involved. Let us have a look at what may be considered classical examples of result verbs, like *łamać* ‘break’ and activity verbs, like *biec* ‘run’.

- (31) a. Janek z-łamał kod w pięć minut.
Janek_[NOM] RES -break_[PRF] code_[ACC] in five minutes
‘Janek broke the code in five minutes.’
- b. ??Janek łamał kod przez pięć minut.
Janek_[NOM] break_[IPFV] code_[ACC] for five minutes
‘Janek was breaking the code for five minutes.’
- c. Janek łamał / *z-łamywał kod w pięć minut.
Janek_[NOM] break_[IPFV] / break_[PRF] (repetitive/habitual) code_[ACC] in five minutes
‘Janek would break the code in five minutes.’

- d. ??Janek łamał kod, aż go z-łamał.
 Janek_[NOM] break_[IPFV] code_[ACC] until it_[ACC] RES-break_[PRF]
 'Janek was breaking the code until he broke it.'
- (32) a. Janek do-biegł do pokoju w pięć minut.
 Janek_[NOM] RES-run_[PRF] into room in five minutes
 'Janek ran into the room in five minutes.'
- b. Janek biegł do pokoju przez pięć minut.
 Janek_[NOM] run_[PRF] to the room for five minutes
 'Janek ran towards the room for five minutes.'
- c. Janek do-biegał do pokoju w pięć minut.
 Janek_[NOM] RES-run_[PRF] to room in five minutes
 'Janek would run towards/reach the room in five minutes (habitual reading).'
- d. Janek biegł, aż dobiegł do pokoju.
 Janek_[NOM] run_[IPFV] until run_[PRF] to room
 'Janek ran until he ran to/reached the room.'
- (33) a. Janek spacerował przez pięć minut / *w pięć minut.
 Janek_[NOM] walk_[IPFV] for five minutes / in five minutes
 'Janek was walking for five minutes.'
- b. *Janek do-spacerował do domu.
 Janek_[NOM] RES-walk_[PRF] to home
 'Janek walked home.'

Verbs like *łamać* are naturally associated with result interpretation understood as covering a scale of cracking a code, which qualifies as scalar change. Motion verbs reveal similar characteristics for directional variants, thus *biec* 'run' is manner (and non-scalar), while *biec do* 'run to' is directional, and scalar. (33) presents an example of a verb that allows manner interpretation only, which is quite rare for Polish. In this case, no result interpretation is possible (33b), and the aspectual interpretation is only that of an activity. Interestingly, in some cases it is possible to get result interpretation even with an unprefix result verb. Thus one of the possible interpretations of (34a) below is: 'it took Janek two years to build the house', which indicates that the result interpretation may be present with the unprefix verb form. This interpretation seems to be possible in (34a-d), but not in (34e-g), which indicates that the event schema of accomplishment verbs may be accessed even when such verbs are unprefix.⁹ We believe that a possible account for such cases is to relate it to the distinction between scalar and non-scalar change as a lexical feature. Verbs like *budować* 'build' are associated with a scalar change, hence they are natu-

⁹ This is what Croft (2012) calls event frame of a predicate. The event frame may lead to multiple construals profiling particular elements in that event frame for syntactic realization. It seems that the whole event frame is accessible for interpretation. However, in the case of result interpretation in (34a-d) it seems to be context dependent, and it is neither asserted or presupposed in these sentences.

rally associated with a result, while verbs like *myć* ‘wash’ or *biec* ‘run’ represent a non-scalar change, and unless prefixed they are not associated with a result.

- (34) a. Janek budował dom przez dwa lata.
 Janek_[NOM] build_[IPFV] house_[ACC] for two years
 ‘Janek was building a house for two years.’
- b. Janek z-budował dom (*przez dwa lata).
 Janek_[NOM] RES-build_[PRF] house_[ACC] for two years
 ‘Janek built this house (for two years).’
- c. Janek łamał ten kod przez dwie godziny.
 Janek_[NOM] break_[IPFV] this code_[ACC] for two hours
 ‘Janek was breaking the code for two hours.’
- d. Janek biegł do domu przez dwie godziny.
 Janek_[NOM] run_[IPFV] to home for two hours
 ‘Janek ran home for two hours.’
- e. Janek biegł przed dwie godziny.
 Janek_[NOM] run_[IPFV] for two hours
 ‘Janek ran for two hours.’
- f. Janek mył naczynia przez dwie godziny.
 Janek_[NOM] wash_[IPFV] dishes_[ACC] for two hours
 ‘Janek was washing the dishes for two hours.’
- g. Janek spacerował przez dwie godziny.
 Janek_[NOM] walk_[IPFV] for two hours
 ‘Janek walked for two hours.’

Interestingly, in such cases (i.e., (34a–d)) the result is presupposed, not asserted, which is indicated by the fact that it cannot be negated or questioned. The interpretation of (35a) is one where the activity of building is negated, not the result. In (35b) the answer to the stated question may not refer to the result.

- (35) a. Janek nie budował tego domu przez dwa lata.
 Janek_[NOM] not build_[IPFV] this house_[GEN] for two years
 ‘Janek wasn’t building this house for two years.’
- b. – Czy Janek budował ten dom przez ostatnie dwa lata?
 this house_[ACC] for last two years
 – ^Q??Tak, z-budował go.
 Yes RES-build_[PRF] it_[ACC]
 ‘Was Janek building this house for the last two years? Yes, he built it.’

This indicates that every prefixed verb asserts result as its lexicalized meaning.¹⁰ Other elements of meaning may only fall from presupposition. The

¹⁰ This generalization applies only to lexical prefixes, which project a result phrase. The discussion does not cover superlexical prefixes, which are believed to function at a higher (non-lexical) aspectual level (e.g. Romanova 2004). However, an analysis of the relation between superlexical prefixes and event structure could provide additional clues on the nature of the interface between lexicon and aspect in the domain of manner and result verbs.

examples below further prove this point. With prefixed verbs, negation and questions invariably apply to result, not manner. The negation with a prefixed motion verb in (36a) indicates that Tomek has not reached the destination; it does not indicate that he has not been running. In (36b) the question relates to having crossed the border, not the means of doing that. Similarly in (36c) the negated element of meaning is the result not the action of closing the door.

- (36) a. Tomek nie do-biegł do domu, mimo że biegł szybko.
 Tomek_[NOM] not RES-run_[PRF] to home even though run_[IPFV] fast
 ‘Tome hasn’t reached home, even though he ran fast.’
- b. – Czy Tomek prze-kroczyl granicę? – Tak, ale nie wiem jak.
 Q Tomek_[NOM] RES-cross_[PRF] border_[ACC] Yes but not know how
 ‘Has Tomek crossed the border? Yes, but I don’t know how.’
- c. Tomek nie zamknął drzwi, mimo że próbował.
 Tomek_[NOM] not lock_[PRF] door_[ACC] even though try
 ‘Tomek hasn’t closed the door, even though he tried.’

In this section we investigated the relationship between the interpretation of result and the morphological marking by verbal prefixes in Polish. Prefixation invariably leads to the interpretation of result and this element of meaning is asserted by the verb. The link between asserted meaning and lexicalization led to the further conclusion that this is the only lexicalized element of meaning with prefixed verbs. We also investigated cases where non-prefixed forms entail result. In such cases, however, this element of meaning is presupposed, not asserted. All in all, the examples analysed above support the prediction enailed by the manner/result complementarity. The elements of meaning relating to manner and result are in complementary distribution as far as lexicalized meaning is concerned. In each case it is either manner or result that is asserted and lexicalized, with the other one inferred contextually.

6. Conclusion

In this paper we focused on the manner/result complementarity (Levin and Rappaport Hovav 2006, 2013) as an example of a constraint on lexical meaning of verbs. First we delineated the core premises of the restriction within the approach to lexical meaning which entails predicate decomposition. We observed some generalizations that result from such treatment of structured lexical knowledge, which themselves entail a set of restrictions on the possible structuring of lexical information. In the second part of the paper, we paid attention to the examples of Polish result and manner verbs where result as an element of meaning is marked morphologically by means of verbal prefixes. We adopted the view where lexical prefixes are projections of a lexical result

phrase (Ramchand 2008; Romanova 2004), which is associated with the result argument in the event structure template. Using the values of asserted meaning and presupposed meaning we were able to show that result verbs invariably assert result and other elements of meaning (i.e. manner) are contextually determined (by presupposition). In this way the preliminary study of Polish result and manner verbs supports the cross-linguistic aspect of the manner/result complementarity as a restriction on lexicalized meaning. Additionally, this complementarity can be used to explain the restriction in Polish, and possibly Slavic, where only one lexical prefix for a given verb can be projected. Since only one element of meaning can be lexicalized, whether it is manner or result, only one prefix corresponding to such element of meaning can be projected.

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