

DOI: 10.31648/an.6414

## PREDICATE-ARGUMENT STRUCTURE IN A VALENCE DICTIONARY (ON THE EXAMPLE OF THE VERB *REWARD*)

**Katarzyna Góra**

ORCID: <https://orcid.org/0000-0003-3326-0311>

Uniwersytet Warmińsko-Mazurski w Olsztynie / University of Warmia  
and Mazury in Olsztyn

e-mail: [katarzyna.kokot-gora@uwm.edu.pl](mailto:katarzyna.kokot-gora@uwm.edu.pl)

**Keywords:** valence dictionary; predicate-argument structure; semantic syntax; complementation; *reward*

**Abstract:** Valence dictionaries are very often specialized works for advanced readers which present how particular linguistic units combine with its subordinates. The article is a critical analysis of a dictionary entry for the lexical unit of *reward* contained in *A Valency Dictionary of English, a Corpus-Based Analysis of the Complementation Patterns of English Verbs, Nouns and Adjectives* [2004]. A complementary proposal regarding the predicate-argument structure and its annotation system will be provided based on the theoretical model proposed by S. Karolak [1984; 2002] called Semantic Syntax (SS) and more specifically its extended model called explicative syntax [Kiklewicz et al. 2010; 2019]. The research findings demonstrate the need for coordinated international projects that should integrate both the syntactic as well as the semantic levels in order to gradually meet the objective of an integrated language description encompassing both the grammar and the lexicon.

### 1. Introduction

An average language user will rarely consult an advanced dictionary to check argument positions or, in other words, valence places of a particular lexeme. Nevertheless, the way particular content is realized syntactically is a fundamental and important issue for linguists. The article is part of a larger research project on the semantics and syntax of predicates of gratification

in contemporary English and Polish. The present paper will concentrate on a dictionary entry for the lexical unit of *reward* contained in an advanced and specialized dictionary *A Valency Dictionary of English (VDE)*, a *Corpus-Based Analysis of the Complementations Patterns of English Verbs, Nouns and Adjectives*. The analysis will focus on the description of the most relevant features of the notations and abbreviations employed in the entry for *REWARD* in VDE. I will also try to offer a comprehensive examination of this entry, and an evaluative discussion of the overall framework of the dictionary. I will finally present a complementary proposal and research findings on the predicate-argument structure of *reward* and its combinatory syntactic patterns, based on the theoretical model proposed by S. Karolak [1984; 2002] called semantic syntax (SS) and more specifically its extended model called explicative syntax [Kiklewicz et al. 2010; 2019]. Final remarks will constitute the last part of the paper.

## 2. A Valency Dictionary of English

VDE, which presents detailed distributional information for each lexeme, covers 511 verbs, 274 nouns and 544 adjectives. Each entry is illustrated by a fair number of examples excerpted (almost entirely) from the Bank of English corpus [www.collins.co.uk]. The first aim that authors of the book point out is to enable

linguists to carry out research in the fields of verb, adjective and noun complementation ... to extend the analyses ...to investigate parallels between the syntactic and semantic properties of words, to consider the character of valence phenomena and the place they ought to occupy in more general and comprehensive models of language [Herbst et al. 2004, vii].

Since complementation, more specifically, the syntactic manifestation of the conceptual components (arguments) of the event of rewarding constitutes the author's research objectives, I was thus interested in how this verb is rendered in VDE and investigate the validity of its data.

The presentation of lexicographic (including semantic and syntactic) information has always been a bit of a challenge. How to illustrate the subtleties of syntactic and semantic realizations of a given lexeme without bombarding the dictionary user with complicated annotations, yet at the same time without oversimplifying the observed phenomena, the lexicographic information, is still a valid question. VDE's "arsenal of symbolic devices" seems a puzzle even to Fillmore [2008, 2]<sup>1</sup>. The dictionary separates verbs from adjectives and

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<sup>1</sup> Fillmore's article *A Valency Dictionary of English* [2008] served as an inspiration to investigate the predicate 'reward' in VDE mainly from the semantic syntax perspective. While I fully acknowledge that an article presenting the predicate REWARD in various lexicographic projects

nouns in its lexicographic conventions. Only verbs are given full notational apparatus and we learn that the choice of linguistic units in VDE was made on the basis of frequency criteria and complexity of their valence structures. In this article, I will discuss only the verb entry of *REWARD*. Before presenting the entry for *REWARD*, it is necessary to offer general information on how verbs are illustrated in VDE.

## 2.1. Verbs in VDE

A complete verb entry in VDE includes the complement inventory (preceded by a headword, its part of speech, and voice characteristics); the valence pattern and example block; a box containing information on meaning; (where relevant) a bloc with idiomatic phrasal verbs (e.g. *call forth*, *call out*, *call up*, etc. in the *call* entry) [Herbst 2004, ix-x] (see Fig. 2).

For the clarification of theoretical terms, it needs to be pointed out that the basic assumption of valence theory treats a verb as having a central position in the sentence. Elements that grammatically depend on that governing verb are called complements [Herbst 2004, xii]. In the model of valence employed in VDE, a sentence such as:

1. *I put paper and kindling by the fire last night.*

can be characterized as consisting of a subject (I), which is a complement of the governing verb, a predicate comprising the verb (*put*) and two complements (*paper and kindling*) and (*by the fire*) as well as an adjunct (*last night*) [Herbst 2004, xxiv-xxv].

The complement inventory consists of quantitative and qualitative valence. The former lists the minimum and maximum number of complements required by the verb to occur in an acceptable sentence (in an active as well as a passive clause). VDE also classifies complements into obligatory, optional and contextually optional. It uses capital letter symbols (Z, M, D, T, Q) to give information about the valence number of a given verb<sup>2</sup>. As for valence patterns, each pattern is illustrated with some example sentences in which it occurs. At this point, more terminological issues need to be clarified. What may be identified as semantic roles (semantic valents or argument places – see Sec. 3) in the left margin of VDE verb entries are upper-case Roman numerals which are linked to syntactic valents. The term argument will be used by

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would be valuable, due to the limited scope of this paper, the entry for *reward* in FrameNet [Fillmore et. al 1997] or Walenty Hajnicz [Hajnicz et al. 2020] etc. did not constitute the object of analysis here and will be amended in the future article.

<sup>2</sup> Z stands for zerovalent, a valent use, a pattern with no complements, M stands for a monovalent use, a pattern with one complement, D for divalent use, T for trivalent use, and Q for a tetra- or quadrivalent use.

the author to refer to a semantic role realized as complement (a syntactic exponent) implicated by the predicate (lexical governor). The Roman numerals also point to the example blocks that illustrate corresponding phrase types. The semantic notes sections at the end (Fig. 1) shows a lexeme in one of its typical grammatical contexts, providing a definition based of valence positions, and including information about semantic actants exhibited in segments of a sentence. Each semantic role is superscripted with large Roman numerals at the end of a segment.

A person<sup>I</sup> can insist

- (i) on or upon something<sup>III</sup>
- (ii) that something is the case or should be done<sup>II</sup>, i.e. refuse to change their mind about what ought to be done or is the case.

Figure 1. VDE definition of INSIST

The information about valence structures is provided in the dictionary in the following order: pattern information, sense identification and examples. The entries thus include information of various kinds of cross-references, semantic valents depicted in the preamble are connected to appropriate example sets, and the meaning descriptions link elements of the definitions to the semantic valents [Fillmore 2008, 10]. However, in the *brief guide* we read that semantic roles are only indicated in cases “when two complements are identical in form and could easily be confused” [Herbst 2004, xiii]. They identify three such roles: AFFECTED EFFECTED, AGENT, BENEFICIARY RECIPIENT and provide examples.

2. *But this system is a perfect setup for denying women BENREC justice AFFECTED.*
3. *The wind AGENT bent the brunches of the tree ÆFFECTED.*
4. *The fire ÆFFECTED lit.*

## 2.2. REWARD in VDE

This section will deal with the analysis of *reward* as presented in VDE. The predicate *reward* seems, on the surface, a relatively simple verb, however, in reality offers many complications (see Sec. 3). The explanation of meaning has two parts labelled (i) and (ii) which I will refer to as two different senses. In the first sense (Fig. 3) VDE identifies (I) the agent, (II) the object of rewarding (including a person, an animal as well as behavior<sup>3</sup> and (III) the reaction, in another sense: (I) the agent, (II) the object of rewarding and

<sup>3</sup> It feels natural to call it a Beneficiary; however, VDE list *behaviour* as a possible rewardee, which only proves that the analysis may be inadequate when confronted with semantic roles and predicate-argument structure. For a further discussion see [Kokot-Góra 2015].

(III) the object which is rewarded are marked. The segments of this entry will be shown separately.

The entry in Figure 2 constitutes the preamble to the entry for *reward*. It informs the user about quantitative valence and voice variability of the verb *reward*. VDE states that if *reward* is used in an active declarative sentence, it has a minimum valence of 2 (it requires 2 complements), as in [*He*] *rewarded* [*me*], and a maximum valence of 3, as in [*He*] *rewarded* [*me*] [*with a pay rise*].

Reward	<i>verb</i>		
Active:	2/3	Passive	1/3
I	[N] <sub>A</sub> / [by N]		
II obl	[N] <sub>P</sub>	D	T1-3
III	[by X]		T1
IV	[for N/V-ing]		T2
V	[with N]		T3

Figure 2. Preamble to VDE entry for *REWARD*

If *reward* is used in passive declarative clauses, it has a minimum valence of 1 (because only one complement is needed, as in [*I*] *was rewarded*, and a maximum of 3 complements, as in [*I*] *was rewarded* [*by him*] [*with a pay rise*]). In many lexical entries, the dictionary also mentions the so-called general use, i.e. a zero-valent use in which a verb can be used in a general way without the subject (as in *Supplying can be punished with life imprisonment*). For *REWARD*, VDE seemed not to find such use. However, it is quite evident that zerovalent possibility is available in the general meaning of the verb *reward* (as in *Rewarding can be an effective way of motivating people*). As for monovalent realizations of *REWARD* in the active voice, VDE does not list such an option. However, in the introduction we read that the fact that no examples of monovalent uses of certain verbs e.g. *request* are supplied, does not exclude the possibility of such a pattern with those verbs, “but it reflects the fact that no monovalent examples were found in the corpus” [Herbst 2004, x]. Apparently, the corpus did not generate examples of *reward* in a broad sense.

In relation to syntactic representation of complements, according to VDE description, in the general sense of *REWARD*, only complement II is identified as obligatory. Complement I does not need to be realized in passive clauses (although it can of course occur in the form of a by-phrase), it is optional. Complements III, IV and V are also listed as not obligatory. In the first row of the preamble for *REWARD* one learns that VDE provides information about alternative realization types of the highest-ranking verbal argument in transitive sense of the verb *REWARD*. [N]<sub>A</sub> / [by N] shows that the first complement can appear either as the subject of an active sentence (*The president rewarded his ministers*) or as a NP in the by-phrase (*Ministers were rewarded by the president*). VDE does not illustrate such examples,

as it is probably assumed that it is part of every valence. The second row [N]<sub>p</sub> tells the reader that syntactic realizations can appear either as a direct object or a passive subject. Third, fourth and fifth rows inform the users that a complement of *REWARD* can be expressed as a *by* phrase, a *for* phrase realized as a nominal or a gerund or a *with* phrase with a nominal. Even though symbols D and T1-T3 stand for cross-reference to the example collection, the system is not clear to the reader.

Before we look at the examples, let us analyze Figure 3, which provides the explanation of the meaning of the analyzed verb. If the Roman numerals in Figure 2 are supposed to transfer back to numerals in the definition which represent semantic roles, then definitely row IV [for N/V-ing] is missing, which undeniably adds to the confusion of a person trying to extract as much data as possible about a certain predicate.

*A person or organization<sup>I</sup> can reward a person, organization, animal, or their behavior, way of acting etc.<sup>II</sup>*

- (i) *By reacting in a certain way<sup>III</sup>*
- (ii) *With something, such as a prize or money<sup>V</sup>.*

Figure 3. VDE definition of *REWARD*

Irrespective of the reasons why the causal element is missing (Cause) in the above definition, a possible place it should take in the structure is after the object of rewarding (II), such as:

*A person or organization<sup>I</sup> can reward a person, organization, animal, or their behavior, way of acting etc.<sup>II</sup> for the fact that they have done something good<sup>IV</sup>*

- (i) *By reacting in a certain way<sup>III</sup>*
- (ii) *With something, such as a prize or money<sup>V</sup>.*

Figure 3.1. Possible modification of VDE definition of *REWARD*

Apart from the missing row IV, which causes disorientation, the reader can more or less see what the arguments I, II, III, V stand for. The senses are distinguished with parenthesized small Roman numerals as seen with *reward*. Valent I and II are the same in sense (i) and (ii), however, valent III in the sense (i) seems to be a non-object argument which would make it a propositional argument of the higher-order predicate of *REWARD* (see Sec. 3). Valent I stands for the Agent of rewarding, a person or an organization who rewards the Beneficiary or the way the Beneficiary behaves or acts. Valent III is the way somebody acted in order to reward and valent V in the second sense is the object, the thing with which one rewards, such as a prize, money, flowers, etc.

Before an alternative analysis of the predicate-argument-structure of *REWARD* based on the theoretical foundations proposed by Karolak [2002] dealt with in the later parts of the paper, let us move onto examples

of the patterns provided by VDE. The illustrations in VDE are preceded by a capital letter and bold-font phrase-type labels, marked off with pluses, for example D (divalent) + N<sub>p</sub> which shows only one complement after the verb. The passive-subject subscript <sub>p</sub> on the N<sub>p</sub> shows the availability of this nominal as subject in a passive expression: *things which are rewarded*. The first pattern preceding example sentences is:

D + N<sub>p</sub>

5. *It is only governments that can shape the market to reward and promote environment-friendly economic activity on a lasting basis.*
6. *We are more likely to continue to do things which are rewarded and to cease activities which are either ignored or punished.*

The next valency pattern provided for *reward* is + N<sub>p</sub> + by N/V-ing/N<sub>p</sub> + by N V-ing. It shows two valence positions after the verb, which are a noun phrase and a prepositional phrase with *by* followed by a noun (*by the smile*) (example 7) or a gerund (*by sitting down*) (example 8) or an ing-clause preceded by a noun phrase subject. In other words, we learn about the syntactic exponents of arguments, however, we do not know which argument position they represent. We also learn that the following examples illustrate three valence positions. We must bear in mind that this model informs us of the quantitative aspect of valence, however, there is no way we are able to extract which valence positions were actually realized.

T1 + N<sub>p</sub> + by N/V-ing/N<sub>p</sub> + by N V-ing

7. *She put a hand on his thigh and was rewarded by the smile with which he acknowledged her sympathy.*
8. *I will reward myself by sitting down for half an hour and listening to a favorite record.*
9. *It's a fight which Baltic leaders hope will now be rewarded by the United States recognizing their republic's independence.*

The dictionary which is discussed here is presented as one serving the needs of the foreign language learner. The above analysis leads one to the conclusion that many examples provided by VDE in order to illustrate valency patterns are obscure and might be confusing even to an advanced learner of English. It would prove useful not only to foreign language learners to highlight respective elements of a given valence pattern in each example meant as an illustration of that pattern, but also, to quote VDE, to “applied linguistics, grammarians and lexicographers to develop new teaching materials” [Herbst 2004, vii].

A comment which merits reflections at this moment is that obviously VDE provides a more generous amount of information than classical dictionaries could afford to do. Therefore, it seems inappropriate to ask for more. However, it is intellectually intolerable not to think about what might have been.

The compilers undertook the task to identify the semantically relevant elements of a structure connoted by a verb for example. Nevertheless, it is striking that the definition of the dictionary entry for *REWARD* leaves out the causal argument altogether. To the author of this article the Cause<sup>4</sup>: information why somebody was rewarded constitutes an essential element to the completion aspect of the predicate-argument structure of this verb without which the Agent could not engage in the mental activity of judging and acknowledging the potential Beneficiary for its actions, way of being and attitudes. The decision of the editorial board to exclude this argument from the definition is indeed surprising. Especially, that in valency patterns (examples 10-11), this argument, which is most frequently introduced by a preposition *for*, is acknowledged by VDE entry for *REWARD*. See the following:

T2      N<sub>P</sub> + for N/V-ing

10. *The Senegalese President, Mr. Abdou Diouf, has said that African countries who make progress towards democracy should be rewarded for their efforts.*
11. *The little girl is not rewarded for being aggressive.*

The pattern identifies two complements of the verb, a noun phrase and a preposition phrase *for* followed by a noun phrase (*for efforts*) or a gerund form of the verb clause (*for being aggressive*). These indicators are obviously syntactic realizations of the fourth argument connoted by predicate *reward* which imply the cause of being rewarded.

The last pattern provided by VDE for *REWARD* is N<sub>p</sub> + with N (*with a new car, salaries*):

12. *She was extremely good at her job, a fact acknowledged by her employers who rewarded her with a new car.*
13. *At the same time industry should recognize the extra time taken and reward the best graduates with doubled starting salaries of between 30,000 and 40,000 a year.*
14. *If your newly converted bank decides to reward shareholders with dividends, they too, will be taxed.*

VDE does not list one more syntactic possibility after the preposition *with* (example 15). The COCA (*Corpus of Contemporary American*) generated a construction with N<sub>p</sub> + with V-ing:

15. *The most important thing is not revenge, but a person like this, ..., is not rewarded with being able to live in the greatest country in the world. (News\_Denver News\_2013)*

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<sup>4</sup> Some dictionaries, e.g., FrameNet [Fillmore et al. 1997] call it Reason when describing the frame for *rewards\_and\_punishments* (v).



### 3. Proposal

What is significant about the above analysis is the fact that VDE entry for *REWARD* needs to be acknowledged. At the same time, many inconsistencies which have been pointed out require a different approach which could significantly add to the understanding and illustration of linguistic structures. This part will constitute the presentation of the predicate *REWARD* from a semantic syntax perspective. In order to do this, I will introduce theoretical framework which served as a foundation for my investigations, which will be followed by a critical analysis.

#### 3.1. Theoretical framework

The methodological model of this analysis is based on the semantic syntax theory proposed by a Polish linguist Stanisław Karolak [1984; 2001; 2002] and its extended model of explicative syntax [Kiklewicz et al. 2010; 2019]. Karolak's extensive research on syntactic realizations of many different semantic predicates which posits the primacy of semantic structure (predicate-argument) of a sentence in relation to its formal structure – grammatically configured and lexically filled, has sometimes been referred to as the Polish School of Semantic Syntax [Szumska 2013, 13]. Such a structure is believed to consist of argument positions, implicated by the central element – predicate. The analysis is carried out on two levels: the propositional-semantic level and the syntactic level (the so-called explicative patterns). The terminology employed on the semantic level is based on predicate calculus language of logic. On the syntactic level, positions opened by the predicate are usually realized in the form of 1) nominal groups founded on nouns; 2) infinitive forms or 3) subordinate clauses [Korytkowska, Małdziewa 2002, 19]. The concept of explicative syntax presented here takes a certain algorithm of ordering, emphasising and explaining 'surface' structures'. As part of semantic syntax, explicative syntax allows for the illustration of the propositional content of sentences, phrases and their relational properties generated in a process of linguistic activity. Moreover, Karolak emphasises that explicative patterns are essential as they illustrate information about the realization or the lack of it, of certain argument positions, showing "the difference between the number of argument positions opened by predicates and the number of valence places opened for complements by its exponents" [Karolak 2002, 154 (transl. K.K.-G.); I. A. Sag 2012, 79] writes that the feature of predicate-argument structure, inherently linked with its primary purpose, is to encode the combinatorial potential of a lexical unit – by naming its syntactico-semantic arguments. At the same time "semantic combinatoricity can be identified with a universal set of rules of co-occurrence of semantic units" [Bogacki, Karolak 1992, 158].

It must be stated that research presented in this paper, apart from the theoretical framework proposed by Karolak, Kiklewicz, Korytkowska and others, has been influenced by other well-grounded linguistic traditions. One of them is the theory of valance within dependency grammar by Lucien Tesnière [1959], in which a verb, which has been given a central status, takes a number of dependent complements. Another work which needs to be acknowledged is the case theory with emphasis on semantic roles introduced by Ch. Fillmore [1967].

### 3.2. Reward in SS

In line with Karolak's semantic syntax, his objective is to gain insight on the 'saturation' level (in Frege's terminology) of the content plane as opposed to only the expression (formal) plane, which is believed to be a reflection of the conceptual composition. Consequently, before observing how much of the 'full', complete semantic structure is realized in the formal structure, one needs to establish the necessary components of the predicate-argument structure. Even though lexicographic definitions vary as to the number of obligatory (core) arguments, the following semantic definition is based on expert dictionary analysis, traditional definitions and large empirical data [Kokot-Góra 2020]. Due to the limited scope of the paper, we cannot quote them all, however, FrameNet identifies for *reward* (v) three core elements: Agent, Evaluee and Reason (which here is referred to as Cause) and one element that is described as 'core-unexpressed' – Response Action.<sup>5</sup> Zaron [1980, 72] describes *NAGRODZIĆ/NAGRADZAĆ; WYNAGRODZIĆ/WYNAGRADZAĆ* ('reward'; 'compensate') as a verb „signifying a personal relation with an event argument” and classifies it as a verb with three arguments, where she excludes the instrument/means from the list of obligatory components. For Apresjan [2000, 103-104, 133], on the other hand, it is a four-place predicate for which he offers a following explication: *cause for B something pleasant X for a good deed C that B did for a reason so that B continues doing well*<sup>6</sup>.

I assume a four-place character of the predicate REWARD and suggest the following explication:

<sup>5</sup> An **Agent** (the punisher or rewarder) performs a **Response action** on an **Evaluee** for a **Reason**, the **Evaluee**'s actions or beliefs. **Means** and **Instrument** may also be indicated. The goal of the punishment/reward is to discourage/encourage the actions or beliefs. Words in this frame presuppose that a judgment of the **Evaluee** has occurred and that the **Evaluee** is (or becomes) aware of the judgment. This judgment was performed by a cognizer which is either the same as the **Agent**, or, minimally, a representative of the same institution. [FrameNet], see [Fillmore et al. 1997].

<sup>6</sup> Chojak [2012, 16] observes that today this definition would probably be extended as well as formulated in, what she calls, “a more friendly way”.

SOMEBODY (a group of people, an institution) (x) DOES SOMETHING (P) TO SOMEBODY (alternatively another live being, a group of people, institution) (y) by RESPONDING (doing, giving something) IN A CERTAIN WAY (p) to show appreciation FOR SOMETHING (usually) GOOD SOMEONE (y) HAS DONE (q)

The predicate *REWARD* opens four argument positions with a formal logical structure  $(x, y, p, q)$ . It exhibits the relation between two object arguments  $(x, y)$  and two non-object (propositional) arguments<sup>7</sup>  $(p, q)$ . Argument  $x$  can be identified as an Agent, describing the subject of the activity of rewarding (*who rewards*);  $y$  is the Beneficiary, describing the object of rewarding (who is rewarded);  $p$  is a propositional argument describing Response Action<sup>8</sup> of rewarding (how, with what somebody is rewarded), as well as  $q$  is identified as a causal argument (Cause) describing the reason of rewarding (why somebody is rewarded). It has been established that the predicate *reward* is inherently bound to judgement and axiological values [Levin 1993] calls it a ‘positive judgement verb’. Therefore, showing appreciation and acknowledgement by the Agent for someone’s activity, mental or moral abilities “in recognition of service, effort, or achievement” [Collins Dictionary of English] comprises a crucial aspect to the situation of rewarding.

Predicate-argument structure with a predicate of higher as well as lower order<sup>9</sup> may be realized by complete predicate expressions (isosemic) when all the argument places are filled with formal exponents and incomplete (nonisosemic) representations. Patterns with complete realizations – possibly due to a complex, in particular four place character of the predicate *REWARD*, are rare [see Kokot-Góra 2015]. In the above example, even though each argument is formally represented (argument positions implicated by the predicate are lexically filled), it should be observed that propositional arguments have

<sup>7</sup> For Karolak [ibid. 2002, 26] a non-object argument is a notion that refers “to the whole situation, or in other words, to the state of affairs”. Non-object argument exponents are most often realised in the finite form of the verb and known in the grammatical tradition as subordinate clauses, or in generative grammar as embedded clauses [Topolińska 1984, 70-71], but also in the form of various syntactic constructions, nominal forms [Karolak 1984, 70], or even adjectives and adverbs [Szumska 2006, 105].

<sup>8</sup> The term Response Action (RA) was adopted from FrameNet. I am aware that identification of semantic roles and the grammatical markers associated with them has been an important goal in linguistic analyses. Nevertheless, with reference to the predicate *REWARD*, distinguishing Instrument, Manner and Means seemed questionable from the semantic point of view and somehow superfluous from the practical, annotational point of view. That is why the ontological category of RA is treated relatively widely here (incorporating Instrument, Manner and Means) which supports the thesis that the event of rewarding is not just about giving (flowers, money etc.) but doing something (smiling, clapping, loving). Extensive corpus data confirms that both English (48%) and Polish (38%) speakers have a greater inclination to realize RA argument as a nominal group in the form of an abstract noun (*with a smile, promotion, a moment of relaxation*) rather than more tangible, physical rewards (*with toys, fine houses*) (English speakers (4%), Polish (11%)), see [Kokot-Góra 2020].

<sup>9</sup> Second-order predicates (also called higher-order predicates) implicate at least one non-object argument (propositional) as opposed to first-order predicates that implicate only object arguments, irrespective of the number of arguments they require [Karolak 2002, 27-28].

undergone certain condensation. For example, in sentence in Figure 4: *The boss rewarded his worker with a bonus for diligence* the propositional argument  $p$  is realized in the form of a nominal phrase *with a bonus*, while a ‘complete’ form would take the form of a subordinate clause: *by giving (worker) a bonus* or in a more periphrastic way *in such a way, that (the worker) was given a bonus*. Similarly, the argument  $q$  is not verbalized in its discrete (complete) form: *for being diligent* (or *the fact that he was diligent*) but in a condensed form of a nominal group structure *for diligence*.<sup>10</sup>

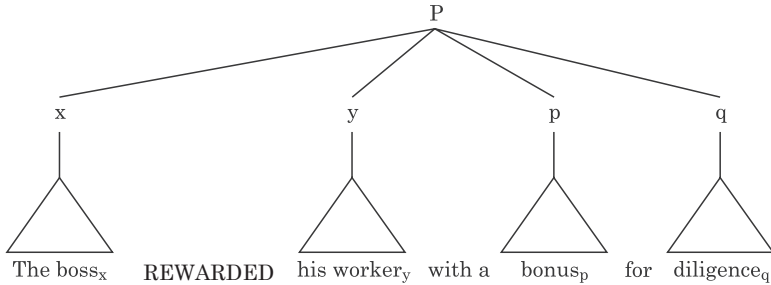


Figure 4. Argument mapping for the sentence ‘The boss rewarded his worker with a bonus for diligence.’ P is the predicate REWARD (own-elaboration)

The explicative pattern of the above sentence would be annotated:  $V N_x N_y N_{ap}^{11} NV_q^{12}$ , where the subscript  $a$  stands for the symbol of an argument ‘moved’ from a dependent propositional structure to a nuclear proposition (not derived).

16. *Let us now look at the examples from VDE. When we look at sentence (16)*

It is only governments that can shape the market to reward and promote environment-friendly economic activity on a lasting basis.

and we read that *activity* is rewarded, we must remember that in the conceptual structure of the predicate *REWARD* there must have been a preliminary event, due to which the acknowledging agent decided to reward

<sup>10</sup> It must be stated that such an explication would sound rather artificial: *The boss rewarded his worker in such a way that he gave him a bonus for the fact that he was diligent*, however it is useful when illustrating propositional functions of arguments in a clear and unequivocal way.

<sup>11</sup> For example, the nominal group introduced by a preposition *with a flower* as in *Leila rewarded Gustav with a flower* is annotated as  $N_{ap}$  – *Leila rewarded him in such a way that she gave him a flower*. The situation is different with nominal phrases which are a result of nominalization of an argument realised as sentential nouns e.g. *with a smile* – *Leila rewarded him in such a way that she smiled to him*. For this reason, the latter will be annotated with  $NV_p$ .

<sup>12</sup>  $NV_p/NV_q$  – symbol of a nominal phrase as a result of nominalization of the argument position  $p/q$  in the form of an abstract name (very often deverbal — in Polish e.g. *obezwładnienie* ‘incapacitating’), de-adjectival – *mądrość* ‘wisdom’) that notate the exponents of first and higher order predicates. Sentential nouns (*diligence, success, victory, behaviour, etc.*) will also be symbolized in this manner

the Beneficiary. Based on the predicate-argument theory we can assume that the causal argument, or rather a causal sentence constitutes a structure founded upon a predicate of second order where an event P' (usually doing something good) causes an event P'' to take place, thus P'' is conditioned by P'<sup>13</sup>:

[Somebody rewarded somebody with something for the fact that the activity someone has done was environment-friendly.]

In the above example, the exponent of the fourth propositional argument *q* is a noun *activity*. In a condensed form it represents *x* did some activity. However, as we assume from a definition of *reward*, doing an activity may not be enough to be rewarded. What is semantically central to this argument is the fact that somebody has done something good. In this instance, it was probably the fact that the activity that somebody was involved in was *environment-friendly*. On the surface this argument is formally realized as a modifier which describes a noun. Specific reason *q* of rewarding has not been explicitly mentioned, it has been marked by the fact that this proposition is opened in the semantic structure of this predicate (somebody has done something good).<sup>14</sup> Preliminary observations suggest attributive adjectives do not seem to adapt predicativity, while evaluative, having the value-judgement, do. In addition to this, Szumska [2006, 78] rightly observes that the functioning of the term attribution should be treated as “contradictory to the postulate of methodological reductionism”. Such constructions cause the listener to initiate the inference process which is finalized by cognitive coherence<sup>15</sup>, when the speaker complies with what Grice termed as the Principle of Cooperation (the maxim of quality)<sup>16</sup>. Annotating such examples into explicative patterns may sometimes be a challenging task. In accordance with the annotation system employed by explicative syntax the following pattern will be suggested for the above sentence [N<sub>x</sub>] (NV<sub>q</sub> > Adj<sub>q</sub>) O<sub>y</sub> Ø<sub>p</sub> Ø<sub>q</sub>.<sup>17</sup>

Authors of VDE point out that this area of analysis (complex complements) is subject to a considerable amount of uncertainty. This is even more so, if one does not take a semantic-propositional structure as a starting point

<sup>13</sup> More about the problem of causality and its way of realization see [Korytkowska 2004, 45-64].

<sup>14</sup> For a similar discussion on condensed arguments of the predicate *instigate* see [Karolak 1993, 89-99].

<sup>15</sup> “Cognitive coherence” means that “the receiver accepts that he reached (alleged) communicative intention of a speaker and believed that his interpretation is appropriate in a given context” [Duszak 1998, 126].

<sup>16</sup> The maxim of quality basically refers to: Try to make your contribution one that is true; Do not say what you believe to be false; Do not say that for which you lack adequate evidence [Lyons 1989, 207].

<sup>17</sup> Square brackets [] stand for the symbol of argument positions that are realised outside the analysed predicate-argument structure, e.g. the subject in infinitive structures; () stand for the symbol of two argument positions when one element depends on the other; > a symbol representing the relation between two argument expressions in which an element is syntactically dependent on the other element in the nominal group.

for the analysis. Let us have a look at another example (17) with which VDE illustrated a divalent structure with a nominal complement with a possible passive subject.

17. *We are more likely to continue to do things which are rewarded and to cease activities which are either ignored or punished.*

First of all, if we look at the expression *things which are rewarded* in the context of the whole sentence, we observe that the argument exponent *things* had not been implicated by the predicate *reward* but by the predicate *do* or even rather *continue*. Such an example would most probably not be taken as a unit of observation in relation to the predicate *reward*, since, in the above sentence *reward* does not constitute a nuclear proposition (elementary proposition), but an embedded structure of a polipredicate sentence. It seems that it would be desirable if valence dictionaries, for clarity and precision of illustrating a given entry, would restrict themselves to providing examples of verbs that function as elementary propositions of structures.<sup>18</sup>

Let us look again at the following set of examples:

18. *She put a hand on his thigh and was rewarded by the smile with which he acknowledged her sympathy.*  
 19. *I will reward myself by sitting down for half an hour and listening to a favorite record.*  
 20. *It's a fight which Baltic leaders hope will now be rewarded by the United States recognizing their republic's independence.*

In sentence (18) we know that she *y* was rewarded *by a smile* which represents the Response Action propositional argument *p*. We are aware that *p* may be expressed as specific objects, such as flowers, certificates, typically introduced by the preposition *with* – *she was rewarded with flowers*. However, it has been observed that *p* can also be realized in the form of a non-object arguments, such as *by a smile*, which is a condensed form of *he smiled*. The ‘how’ argument can also be realized with a gerund form of a verb – *by sitting down for half an hour* (Ger<sub>p</sub>) (example 19) or an *-ing* clause preceded by a noun phrase subject – *by the United States recognizing their republic's independence* (example 20).

In the case of the verb *reward*, the information provided by VDE, namely that it introduces its complements by a preposition *by* is definitely useful. However, when one sees *rewarded by a smile* and *rewarded by the United States*, I believe it is somewhat important for foreign learners to distinguish different semantic roles expressed by a phrase preceded with *by*. Even though both complements are nouns: *by the smile* realizes the third argument, which

<sup>18</sup> To read more on the so-called attached elements and the minimal sentence see [Kiklewicz 2010, 345-362].

constitutes the Response Action  $p$  and *by the United States* realizes the Agent of rewarding in the passive construction  $x$ .

With regard to the causal argument implicated by *reward*, the analysis is by no means straightforward. We may say that canonically, it is manifested with a prepositional phrase introduced by *for* (*for their efforts, for being aggressive*). However, when we look closely at different lexical elements present in the structure, we will discover that they encode semantic information inherent in the characteristics of certain arguments. One such example (16) discussed above, when an adjective (*environment-friendly*) referring to an activity, is indeed a condensed form of the  $q$  argument. There is another issue which should not be ignored, namely causal conjunctions (markers). When we look at instantiation (21), we see that there was an event (*she put a hand on his thigh*) prior to the act of rewarding. Despite the fact that it is not explicitly conveyed by the predicate *reward* we know from the context that the reason why she was rewarded was the fact that *she the put a hand on his thigh*. Moreover, the conjunction ‘and’ also leads us to a similar realization. From the classical semantic point of view, *and* is classified as commutative but also a conjunction of coordination and thus symmetric. However, from the pragmatic point of view this commutativity has not been attested in many cases of the natural language [Grice 1989; Blochowiak 2014]. The data gathered on the structures with the verb *reward* proves that ‘and’ may connote the causal relationship as in:

21. *She put a hand on his thigh and was rewarded by the smile with which he acknowledged her sympathy.*

On the formal level though, this information is a separate sentence and thus, is outside the nuclear predicate structure ‘opened’ by *reward*. To formally annotate such phenomena in the explicative pattern, the term ‘a contextual zero’ will be employed in the form of  $[\emptyset]$  symbol in square bracket to illustrate a situation, when a certain argument connoted by the nuclear predicate has not been realized in its structure, however, has been realized elsewhere – contextually (example 21). Therefore, the following pattern is suggested for the above  $V \emptyset_x N_y NV_{ap} [\emptyset_q]$  [for the fact that she put a hand on his thigh]. If we look at sentence (22):

22. *She was extremely good at her job, a fact acknowledged by her employers who rewarded her with a new car.*

we could rephrase it with

23. *She was extremely good at her job and her employers rewarded her with a new car.*

As a matter of fact, we could account for a similar causal case of the conjunction ‘and’ (23), thus deriving an explicative pattern as such –  $V N_x N_y N_{ap} [\emptyset_q]$  [for the fact that she was extremely good at her job].

What merits reflection in relation to the causal argument is the fact that semantic syntax allows for the analysis at a much more profound level. The vantage point of that methodology has a potential, in contrast with classical syntactic descriptions, to take into account the various ways of argument realizations of a given predicate in formal types of sentences.<sup>19</sup> For the sentence (24) VDE's description is limited to providing information about the surface categorial properties of the verb *reward*, namely the fact that the two complements that follow *reward* are a noun phrase and a noun phrase preceded by the preposition *with*.

24. *At the same time industry should recognize the extra time taken and reward the best graduates with doubled starting salaries of between 30,000 and 40,000 a year.*

When one analyses it in more detail, it can be argued that the phrase *the best graduates* depicts syncretic realization of two arguments: the addressee *y* and the reason *q*. As mentioned, this structure exemplifies the integration of information about those two semantic functions in one sentence constituent. From a formal point of view, we are dealing with one nominal group, which is in fact ambiguous – the notation being proposed ( $N_y > Adj_q$ ). From a semantic point of view, the information encoded in such a way represents two different semantic functions. Therefore, the construction *reward the best graduates* from one side denotes the Beneficiary of rewarding: *graduates*, from the other side, the modifier of *graduates* – *best* carries semantic information which allows the reader to infer that not just any graduates were rewarded but the best ones. As a result, graduates were rewarded for the fact that they were the best, for obtaining the best results.<sup>20</sup> Comparison of a compressed structure with their complete equivalent:

*reward graduates for being the best graduates* → *reward graduates for being the best* → *reward the best graduates*

shows that the syntactic structure  $V N_x (N_y > Adj_q) NV_p \emptyset_q$  could be the result of avoiding redundancy of sentence elements of the same referential meaning. One might state that a comprehensive analysis of linguistic structures should take into account syntactic and semantic relation in order to (among many other reasons), assist the comprehension of how linguistic expressions are formed and how are they are used and realized. The research [Kokot-Góra 2020] clearly demonstrates that the predicate *reward*, which is inherently bound to judgement and axiological values, conveys predicative status

<sup>19</sup> For a full account of explicative syntax methodology see [Kiklewicz et al. 2010; 2019].

<sup>20</sup> One might inquire that if an evaluative adjective realizes the Cause argument, what would be the notation in sentences such as: *Reward your best students for their efforts and achievements*. Clearly, in this instantiation the Cause (*q*) for the act of rewarding is manifested double: through the Adj and through the nominal group *for their efforts and achievements* – NV. Therefore, the following notation may be suggested:  $V N_x (N_y > Adj_q) \emptyset_p NV_q$ .



of the propositional argument  $q$  in the form of an evaluative adjective with positive connotation. Therefore, ignoring such nominal groups with evaluative adjectives (sometimes referred to as “pragmatically axiological” ([Puzynina 1986, 123] such as *wierny, wyróżniający się, bohaterski, najlepszy* (‘faithful’, ‘outstanding’, ‘courageous’, ‘the best’) which have been generated by the corpus with a relatively high frequency (almost 6% in Polish and 3% in English), would seem impoverishing to the overall analysis.<sup>21</sup>

Another significant issue which would need refinement is the analysis of nouns. First of all, the noun *reward* has not been represented in the dictionary. Likewise, the issue of derivationally related words seems an important topic. That way VDE could have pointed out many crucial similarities and potential differences that characterize abstract predicative nouns like *reward*. Moreover, as has been pointed out by Igor Mel’čuk [1996] and Alonso Ramos [2003] there are numerous cases when a verb that is next to a valency bearing noun opens syntactic position relevant to the semantic structure of the noun. Taking this into account could provide more insight into the analysis of the so-called light verbs which do not change the meaning of the phrase: *taking a bath is bathing, giving a reward is rewarding* etc.

Consequently, it would seem appropriate for a dictionary like VDE to point out places where the prepositional marking of the valents is shared between the verb and its nominal form, such as in sentences:

25. *She was rewarded by the government.*
26. *She was given a reward by the government.*

both of which introduce the Agent of rewarding. This can also be observed for the preposition *for* which introduces the causal argument with verbal and nominal structures:

27. *She was rewarded for writing the best story.*
28. *She was given a reward for writing the best story.*

## 4.0 Concluding remarks

*A Valency Dictionary of English*, irrespective of the inaccuracies and apparent gaps, is a source of information of great value. It holds the potential to enrich the public as well as scholarly aspect of human knowledge. In this article, I have explored a dictionary entry for *reward* in VDE. Having presented the basic assumptions of this project by Herbst et. al, with an emphasis given to verbs in the introductory part, in the second section I have analyzed the valency patterns, examples and definitions of *reward* in VDE. In the third part I have proposed a complementary approach to presenting valence patterns

<sup>21</sup> For an advanced study on the adjective as an added predicative expression see [Szumska 2006].

of the predicate *reward*. The main conclusion that emerged is that theoretical foundations of the so-called semantic syntax proposed by Karolak, with an emphasis on its extended model of explicative syntax constitutes a valuable linguistic tool to investigate propositional-semantic structures of sentences as well as valence properties of predicates.

Most dictionaries which employ the theory of valency [Helbig, Schenkel 1983; Engel, Schumacher 1978; Engel, Savin 1983 in Rytel-Kuc 1991] treat semantic information as secondary, if at all (Engel-Schumacher dictionary does not have it). Therefore, it is very often limited to an interpretative analysis and provides information about semantic restrictions in relation to elements connoted on the surface [Rytel-Kuc 1991, 68; Kawka 1980, 7]. A crucial difference between VDE and SS is that arguments are implicated by a central predicate, therefore they are described and analyzed with reference to the propositional-semantic structure they open. It is thus not only limited to surface elements following the predicate which seems the case in VDE. It can be said that compilers of VDE concentrated on identifying elements that appear to the right of the main verb, more formally, the complements that are part of the phrasal projection of the lexical unit. An ability to refer to (if not all) but most valents could have made the analysis more comprehensive. It misses the opportunity to identify argument realizations present for example in compounds, adjective modifiers (*environment-friendly economic activity*, *best graduates*) in the case of the predicate *reward*. Explicative syntax does not necessarily give modifiers equal weight to that of a canonical (discrete) realization of a causal argument (*for the fact that somebody was the best or for doing something that is friendly to the environment*), however, including such examples in the analysis gives an opportunity to detect and study condensation processes in language construction. The analysis employing the semantic and explicative syntax model allows to observe the asymmetry between the conceptual and the formal realizational levels that involve condensation processes manifested in various forms such as modifiers, the possessive determiners, or postnominal dependents.

As has been observed in the course of the analysis, the causal argument, which constitutes an essential element to the completion aspect of the predicate-argument structure of *reward*, has not been incorporated in neither of the two senses identified by VDE for *reward*. It also would also seem appropriate for a project like VDE to provide information as to which arguments are realized by different prepositional marking. An advanced dictionary should not fail to mention different semantic roles preceded by the preposition *by* (*rewarded by the smile*, *rewarded by the United States*).

As for the general layout and clarity of entries, the conclusion is drawn that VDE is not 'user friendly'. I must admit that if one has a moderately trained mind in linguistics, one will be able to more or less understand the general way an entry has been ordered and profit from examples and syntactic

valence patterns. However, if one is interested in, for example, more detailed knowledge of a particular phenomenon, such as a comprehensive characteristic of each argument connoted by a given predicate, or one would like to take advantage of thorough scholarly work of Herbst and his teamwork, one will be unable to do so, unless one spends a vast amount of time in acquainting oneself with a theoretical guide to the dictionary. And even so, as the analysis has shown, there are many inaccuracies.

Most of the examples provided by VDE that have been examined provide a lot of contextual information. The importance of context should be acknowledged, however, I am inclined to the opinion that it would make it more approachable to the learner, if VDE example sentences had been limited to illustrating the valence patterns they present. Providing examples with a lot of additional information, such as many adjuncts, which in many cases constitute elements of embedded sentences implicated by other predicates, may draw away from the labeled information that is already overloaded with numerous “symbolic devices”.

To conclude, an inference can be drawn that despite the awareness of ‘the interfusion’ of the syntactic and the semantic planes, and the fact that grammar and dictionary should complement each other, lexicographical studies do not have much in common with grammar as observed by Polański [1980, 5]. Moreover, if such descriptions are present, they give precedence to formal aspects without taking into account the level of the conceptual plane – the gravity and validity of which Karolak defended and demonstrated in his methodology.

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