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## Hyper-hyponymic relations in noun-juxtapositions of the Ukrainian terminology

Hiperhiponimiczne stosunki w rzeczownikach-zestawieniach w ukraińskiej terminologii

### INTRODUCTION

The research in the field of terminology is considered relevant since terminological research is global, universal, and because of scientific and technological progress, takes dominant positions and becomes an active characteristic of many trends in vocabulary and word formation in general [1: 76].

Today linguistics is represented by a large number of scientific studies that examine different aspects of terminology – its structural organization, lexical-semantic relations in term systems, loan words amounting to terms, etc. (Proceedings by D. S. Lotte [2; 3], V. P. Danylenko [1; 4], V. M. Ovcharenko [5], B. M. Golovin [6], F. A. Tsytkina [7], A. V. Superanska [8], T. I. Panko, I. M. Kochan, G. P. Matsyuk [9; 10], L. O. Symonenko [11; 12], L. V. Kozak [13], T. V. Lepeha [14], L. M. Filyuk [15], O. V. Chorna [16], A. V. Zenina [17] and others).

The meaning of the words is worth exploring more fully in the system, because “the meaning of the word, its value (significance) depends on the meanings of some other words semantically related to it in a greater or lesser extent” [18: 267]. Terminology is a “described subsystem of the general lexical system in a particular language, and that the system, most available for review and calculation” [19: 20].

**The goal** of our study is a general analysis of hyper-hyponymic relations between noun-juxtapositions components on the basis of the Ukrainian terminology. The goal includes the following tasks: 1) to find out the importance of hyper-hyp-

onymic relations for the research of terminological vocabulary; 2) to examine the setter of hyper-hyponymic relations between noun-juxtapositions components; 3) to determine the basic semantic groups of noun-juxtapositions belonging to terminological vocabulary for the conventional value of hyperonym.

## 1. THE IMPORTANCE OF HYPER-HYPONIMY FOR THE RESEARCH OF TERMINOLOGICAL VOCABULARY

As any lexical-semantic system is based on relations, their study is considered extremely important for regulating and systematizing terminology, constructing the hierarchy of concepts in some fields of knowledge. There is no doubt that investigation of semantic relations “allows to specify theoretical understanding of the terminology systemic nature on the semantic level, and... also identify patterns of systemic correlation of the expression plan and the content plan of the specific professional terminological system” [20: 207].

We certainly agree with the opinion of linguists about the fact that at the heart of hierarchical organization of vocabulary and terminology, particularly in the development of vocabulary, underlie paradigmatic relations, because “the term dependence on subsystem concepts is developed in particular paradigmatics, in the specific characteristics of compatibility with other terms within each terminological system” [21: 123]. M. P. Kocherhan believes that the meaning of the word depends on its position in the lexical-semantic paradigm, that is from its paradigmatic relations: „Words as well as phonemes, morphemes, constructions, are positioned between each other in different oppositions and united into different paradigms. Paradigmatic relations in the lexical-semantic system are the relations between words and groups of words based on community or opposition of their meanings” [18: 266].

In the system of paradigmatic relations hyper-hyponymy (from *gr.* Hyper – ‘*floor, above normal over*’ and hypo – ‘*below, under*’) „is one of the most important categories that is forming terminological structure” [16: 177]. Relevance of research of hyper-hyponymic relations is conditioned to the fact that they are used to analyze different groups of lexic and vocabulary of the language in general. The researchers note the importance of hyper-hyponymy in solving problems of ordering vocabulary, describing its thematic connections and also for lexicographic work as “binding principle of organization of dictionary of any type is a definition of the word by genus and species difference” [16: 177].

To indicate this semantic categories in linguistics mainly terms “*hyper-hyponymic relations*” [9: 192; 22: 14; 23: 20 and many others] or “*genus-species relationship*” (parallel) are used, along with them often the concepts of “*hyponymy*” [24: 478; 25: 241; 26: 97; 27: 81; 18: 269; 28: 2; 29 and others], “*categorical-specification*”, “*inclusive-exclusive relationship*” [30] are used. For the first

time the concept of „hyponymy” was used in the book “Introduction to theoretical linguistics” (translation from English) by a famous English scientist John Lyons. He called the relationships of hyponymy „the most fundamental paradigmatic semantic relations, through which the vocabulary of a language is structured” [23: 478]. The term was formed by an example of „synonymy” and „antonymy”. The linguist said: “Although the term is a new, the notion of hyponymy is fairly traditional; it has been recognized as one of the constitutive principles of the vocabulary of all languages long since» [23: 478]. The statement of an Austrian terminologist E. Vyuster recorded in the book “International standardization of language in technology” (published in 1931, translated from German) serves the proof of this: „Each concept has a higher concept that regards to it, as a concept of a car regards to the concept of a motor (every motor is a machine, but not every machine is a motor)” [31: 29].

L. A. Novikov calls the hyponymy in terminology as expressing of subordination and co-subordination and building on their basis hierarchy system of terms, in which the term of a broader meaning, i.e. generic, includes the term of a narrower meaning, i.e. of aspect [25: 241]. Hyponymy, says the researcher further, is based on logical and semantic subordination: a lexical unit *elephant* is a hyponym to *animal*, *tulip* – to *flower*. Conversely, in terms of inverse relationship (superordination) *animal*, *flower* – are hyperonyms to the appropriate words [25: 241].

The main functions of hyponyms in terminological systems of different fields of science and technology are to systematize the timing and interpretation of values [29: 92]. These functions are implemented in terminology by two methods: generalization, i.e. referring to the generic concept, and specification of features using aspect differences [32: 17]. Except systematization function, generic-aspect signs in denoted term by subject (and corresponding concept) are required to get a good definition of a term [6: 82].

In linguistics there exist allegations of hierarchy and relative of hyponymy. Describing hierarchy of hyponymy, they use the concepts of logical and semantic subordination (the ratio of aspect to generic) and superordination (the ratio of generic to aspect): “... hyperonym subjugates words meanings of which it «absorbs», the last ones collectively are subordinated to the general word” [27: 81]. Relativity of hyponymy consists in that hyperonym itself can be hyponym to the words with a broader meaning. For example, the word *flower* is hyperonym to the words *rose*, *tulip*, *carnation* and at the same time hyponym to the broader concept of the *plant* [27: 81]. This property of hyponymy is important enough to organize lexical systems, especially for terminology, as it enables consistently allocate classes and subclasses of lexical items (terms).

In Ukrainian linguistics, the concept of hyper-hyponymic relations as a theoretical and methodological foundations of the study of terminological vocabulary was first substantiated by the authors of a manual “Ukrainian terminology” (Lviv,

1994) T. I. Panko, I. Kochan, G. P. Matsyuk. They identified hyper-hyponymic relations of terms as “universal means of thematic hierarchy of a particular system” [9: 194]. Subsequently, some aspects of the use of hyper-hyponymy were realized in exploring of different terminology systems of Ukrainian terminology: steel industry (N. K. Kytarova, 2000) [22], forensic (T. V. Lepekha, 2000) [14], terminology of agriculture (S. B. Lubarsky, 2008) [33], land management and cadastre (O. M. Tur, 2008) [34], the tax field (O. V. Chorna, 2009) [16], journalism (M. A. Hontar, 2011) [35], Christian theological terminology (L. A. Zakrenytska, 2011) [36] and others.

## 2. THE WAY OF ESTABLISHMENT OF HYPER-HYONYMIC CONNECTIONS BETWEEN THE COMPONENTS OF NOUN-JUXTAPOSITIONS

The division of semantics of the term-juxtapositions into separate components we realize conventionally as it contradicts their established interpretation in linguistics (Proceedings by N. F. Klymenko [37], K. H. Horodens'ka [38], Ye. A. Karpilovs'ka [39], L. Ye. Azarova [40; 41], T. I. Kochetkova [42], O. H. Dontsova [43], I. Ya. Myslyva-Bun'ko [44] and others). Noun-juxtaposition is a semantically inseparable integral unit, its general meaning is not derived from the meanings of the components but it is partially motivated by their content. Juxtapositions serving as naming, nomination consist of components – carriers of compulsory integral characteristic of a signified concept. For example, the semantics of the first component noun-juxtapositions *економіст-демограф, інженер-будівельник, інженер-інструктор, прокурор-криміналіст, технік-геолог, технік-метеоролог* supplemented, specifying the semantics of the second component. Meaning of these words can not be separated into components, since it disturbed the meaning of all compound words. Therefore, considering hyper-hyponymic relations between the components of noun-juxtapositions we took into account conditionality of division of juxtapositions semantics into separate components.

**Hyperonym** in composed of noun-juxtaposit is named the main, generic component and **hyponym** is named subordinate, aspect component.

The substance of hyponymic relations is in the contrast of lexical items which meanings relate to a particular feature such as a word for the narrower sense, species (h y p o n y m) which is opposed to the word with a wider sense, generic (h y p e r o n y m or superordynat). The meaning of the first is a part of the meaning of the second, for example, the meaning of the word *програма-оригінал* is a part of the meaning of the word *програма, нуль-вектор → вектор, місто-округ → місто*, etc. So the content of the species concept becomes wider and the size becomes smaller, so the meaning of words-hyponyms contains of bigger quantity

of semantic components than the meaning of words-hyperonyms. This statement is illustrated by the comparison of the following terms: *льон* – ‘annual or perennial herbaceous tech plant which stems are used to produce fiber and which seeds are used to produce oil’ and *льон-довгунець* – ‘breed of flax (annual or perennial herbaceous tech plant) with long productive part of the stem, which is grown mainly for fiber’. The term *льон-довгунець* contains more semantic components than the term *льон* because semantics of the first one is specified by another semantic component – ‘the form of the stem’. Schematically it can be shown as follows (*Figure 1*):

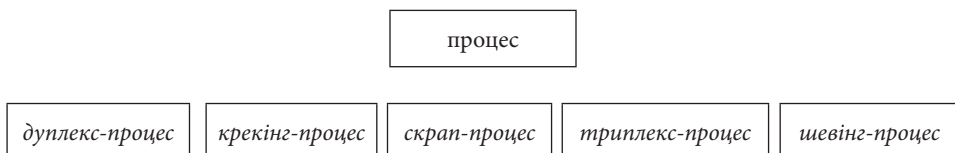
Meaning of a hyponym =  
Meaning of a hyperonym + new semantic component

*Figure 1.* Structure of hyponym’s semantic

Hyponyms can be described as words which are organized on the principle of the subordination of meanings, for example, *інженер-технолог-протезист* → *інженер-технолог* → *інженер*.

Term hyponym also denotes the set of words (joint-hyponyms) as elements of a certain class that are combined by the word which is the name of this class – hyperonym. For example, a number of terms *літак-винищувач*, *літак-заправник*, *літак-перехоплювач*, *літак-ретранслятор*, *літак-розвідник* has a hyponym word *літак*; *блок-апарат*, *вакуум-апарат*, *гамма-апарат*, *рентген-апарат*, *торкрет-апарат* → *апарат*.

Analyze the mechanism of establishment of hyper-hyponymic connections between the components of noun-juxtapositions. Consider the series of words *дуплекс-процес*, *крекінг-процес*, *триплекс-процес*, *шевінг-процес*, *скрап-процес*. All lexical meanings of these nouns have one in common: *the process* which is “the set of sequential actions and means that are aimed to achieve a certain effect” [45]. The word *процес* is a hyperonym, common, generic name in relation to the words of this series and all juxtapositions of the series are hyponyms to the word *процес* (see *Figure 2*).



*Figure 2.* Hyponyms for a hyperonym *процес*

Compare the definitions of these concepts through the dictionary:

*дуплекс-процес* – “in metallurgy it is steel or cast iron **manufacturing** sequentially in two units” [45];

*крекінг-процес* – “**decomposition** of oil and heavy oil products (fuel oil, etc.) in special units at high temperature and pressure to produce gasoline, etc.” [45];

*триплекс-процес* – “**manufacturing** of steel consistently in three melting units” [45];

*шевінг-процес* – “**finishing** (scraping of thread-like chips) of teeth of non-hardened gears by shaver” [45];

*скрап-процес* – “open-hearth steelmaking **process** in which the main component metal part of the charge is steel scrap” [46].

Now it is important to identify common and distinctive semantic components (sems) of these definitions. Highlighted core words – **manufacturing, decomposition, finishing, process** can easily be combined by sem ‘process’. This semantic component, as you can see, is typical for all named juxtapositions and we will define it as *i n t e g r a l* semantic component or *i n t e g r a l s e m* as it was suggested by L. Kasatkin [47: 147]. The same semantic components that help the meaning of the words that are the names of the processes to differ one from another, we will define as *d i f f e r e n t i a l* semantic components or as *d i f f e r e n t i a l s e m s* [47, 147].

In this example 3 groups of processes are clearly distinguished – the processes that are related to the manufacturing of steel (*дуплекс-процес, триплекс-процес, скрап-процес*), refining processes (*крекінг-процес*) and machine-building process (*шевінг-процес*). Semantic component ‘steel manufacturing process’ is common, integral for the meaning of the first three juxtapositions. At the same time it is the distinctive feature that can be opposed to the other two – ‘refining processes’, ‘machine-building process’.

Thereby, the sem ‘steel manufacturing process’ on the one hand is an integral sem within „its” group and on the other hand next to the sems ‘refining process’ and ‘machine-building process’ is differential sam that distinguishes the meanings of words *дуплекс-процес, крекінг-процес, триплекс-процес, шевінг-процес, скрап-процес* from the meanings of the words that indicate names of other processes.

### 3. MAIN SEMANTIC GROUPS OF NOUN-JUXTAPOSITIONS OF UKRAINIAN TERMINOLOGY

Noun-juxtapositions of Ukrainian terminology characterized by hyper-hyponymic relations between components (over 1000 units) are quite diverse by meaning. The criteria for enrollment of noun-juxtapositions to some semantic groups

served: 1) analysis of dictionary definitions in terms of the semantics of the term; 2) conditional value of hyperonym; 3) noun-juxtaposition's belonging to one of the terminological. The main semantic groups of noun-juxtapositions with hyperhyponymic relations include the following concepts:

A. The names of substances, compounds and materials. In this group the highest number of terms-juxtapositions is recorded. From among them, the most productive are microgroups of hyponyms – names of chemicals and compounds (35 microgroups), the most common hyperonyms – chemical names: sodium (12 hyponyms), lithium (10), magnesium, manganese (in hyponyms 9), samarium, chromium (8), iron, cobalt, thorium, cesium (6 hyponyms): *натрій-ацетат, натрій-карбонат; літій-нітрит, літій-силікат; магній-бромід, магній-карбонат; самарій-карбід, самарій-сульфід, самарій-форміат; залізо-нітрит, залізо-силікат; торій-бромід, торій-йодид, торій-карбід; золото-бромід, золото-йодид, золото-сульфід, золото-фосфід, золото-ціанід; рутеній-нітрат, рутеній-селенід, рутеній-флюорид; антимон-бромід, антимон-сульфіт, антимон-хлорид, etc.*

B. The names of devices, equipment, machinery. This group has slightly fewer noun-juxtapositions. As a part of a test, the group juxtaposes three semantic groups which are determined: 1) the names of instruments and devices (*фільтр-компенсатор, фільтр-конденсатор, фільтр-помпа; гамма-апарат, рентген-апарат, торкрет-апарат; грот-щогла, кабель-щогла; факс-адаптер, факс-плата; альфа-спектрометр, бета-спектрометр, etc.*); 2) the names of complex mechanisms (*дерик-кран, кабель-кран; мотор-компресор, мотор-конвертер, мотор-редуктор; трансформатор-редуктор, зигзаг-трансформатор, etc.*); 3) the names of vehicles (*вагон-майстерня, мотор-вагон, салон-вагон, вагон-рефрижератор; літак-винищувач, літак-заправник; автомобіль-тягач, автомобіль-самоскид, etc.*).

C. The names of effects. Among them were singled out five semantic groups: the names of physical and mathematical phenomena, the names of financial and economic concepts, healthcare phenomena, astronomical concept names, phenomena – generalized abstract concepts. In their stock there were fixed juxtapositions with often used names of letters in the Greek alphabet in preposition to signified component *альфа-, бета-, гамма-, дельта-, ета-, мю-, ксі-, ікс-* та ін.: *гамма-функція, дельта-функція, ета-функція, ксі-функція; альфа-проміння, бета-проміння, гамма-проміння, дельта-проміння, ікс-проміння* etc. In the special literature the use of parallel forms with the names of some letters and forms with pictogram is reported: *альфа-проміння* та *α-проміння*, *мю-частинки* та *μ-частинки, etc.*

D. The names of people by the profession. The most efficient microgroups – with hyperonyms *doctor* (of 68 hyponyms), *technician* (36 hyponyms), *engineer* (of 29 hyponyms), *apparatchik* (17 hyponyms), *locksmith*



(13 hyponyms), *painter* (of 12 hyponyms) and others: *лікар-бактеріолог, лікар-гомеопат, лікар-лаборант, лікар-стоматолог-ортодонт; технік-агрометеоролог, технік-ортезист-гіпсовиливальник, технік-радіолог, технік-дизеліст; інженер-будівельник, інженер-випробувач, інженер-нафтовик, інженер-проектувальник; слюсар-електромонтажник, слюсар-механік, слюсар-сантехнік; апаратник-індуліновар, апаратник-нейтралізаторник, апаратник-сульфітувальник; художник-конструктор, художник-модельєр, художник-реставратор; юрист-консультант, юрист-правознавець, юрист-практик, etc.*

E. The names of people by the position or status. For the called semantic group characteristic is that almost all noun-juxtapositions are formed on the model of the Ukrainian language when a component-exponent of generic concept is in preposition. Mostly juxtapositions of this group belong to the terminology of jurisprudence and law: *власник-бенефіціарій, власник-користувач, власник-розпорядник; дитина-делінквент, дитина-правопорушник; член-кореспондент, член-засновник; директор-розпорядник, директор-виконавець; міністр-соціаліст, міністр-резидент* and others.

#### 4. CONCLUSIONS

According to the research, it is possible to make the following conclusions. Hyper-hyponymic relations are the main type of semantic relations between the components of noun-juxtapositions of Ukrainian terminology (it was analyzed more than two thousand of terms, the most of them – 52% – are connected to be generic-species relations). The establishment of these semantic relations between components of juxtapositions is similar to their establishment between independent words with the help of integral and differential sems. The most productive semantic groups of terms-juxtapositions connected by hyper-hyponymic relations are the names of substances, compounds and materials, the names of devices, equipment, machinery, the names of effects.

Further investigation of hyper-hyponymy can be connected with the research of hyper-hyponymic relations between the components of juxtapositions of general vocabulary.

#### BIBLIOGRAPHY

- Azarova L. Y., *Compound words in Ukrainian language: structure, semantics, the “golden” proportions*, Vinnytsya 2000.
- Azarova L. Y., Radomska L. A., *The problem of the status of noun-juxtapositions in modern linguistics*, [w:] *Scientific Bulletin of Kherson State University. Series “Linguistics”*, iss. IX, Kherson 2009, p. 238–242.



- Busel V. T., *Big Glossary of the Ukrainian language*, Kiev Irpen 2005.
- Chorna O. V., *Ukrainian terminology of tax field: structure, function, formation*, Kiev 2009.
- Citkina F. A., *Terminology and translation (comparative to the basics of terminology)*, Monograph, Leningrad 1988.
- Danilenko V. P., *About terminological composition*, [w:] *The Questions of linguistic*, № 4, 1973, p. 76–78.
- Danilenko V. P., *Linguistic aspect of terminology standardization*, Moscow 1993.
- Dontsova O. H., *Composites attribute to describe the characteristics of people in Ukrainian language*, Donetsk 2014.
- Filyuk L. M., *Dynamic processes in the formation of Ukrainian science terminology (derivational aspect)*, Odesa 2007.
- Golovin B. N., Kobrin R. Y., *Linguistic foundations of the theory of terms*, Moscow 1987.
- Gontar M. O., *Ukrainian terminological of journalism: formation, structure, organization and functioning*, Kiev 2011.
- Horodens'ka K. H., *The structure of compound nouns in the context of semantic syntax*, [w:] *Linguistics*, № 3, 1988, p. 27–34.
- Karaulov U. N., *Russian language. Encyclopedia*, Moscow 1997.
- Karpilovs'ka Ye. A., *Construction of compound word-units*, Kiev 1990.
- Kasatkin L. L., *Russian Language*, Moscow 2001.
- Klymenko N. F., *Derivative structure and semantics of compound words in modern Ukrainian language*, Kiev 1984.
- Kochan I. M., *Dynamics and codification of terms of international components in modern Ukrainian language*, Lviv 2004.
- Kocherhan M. P., *General Linguistics*, Kiev 2006.
- Kochetkova T. I., *Compounding as a means of nomination and predication in modern Russian*, Moscow 2005.
- Kottsova E. E., *Hyponymic system of the Russian language (based on the verb)*, Arkhangelsk 2010.
- Kozak L. V., *Ukrainian electrical terminology (derivational aspect)*, Kiev 2002.
- Kryzhanivska A. V., Symonenko L. O., *The composition and structure of terminological vocabulary of Ukrainian language*, Kiev 1984.
- Kytyarova N. K., *Ukrainian steel industry terminology*, Dnipropetrovsk 2000.
- Lepekha T. V., *Lexical-semantic and word building and structural features of forensic terminology*, Dnipropetrovsk 2000.
- Lotte D. S., *Fundamentals of building of scientific-technical terminology*, Moscow 1961.
- Lotte D. S., *Questions of borrowing and ordering foreign-language terms and terminoelements*, Moscow 1982.
- Lubarsky S. B., *System organization and creation of modern Ukrainian terminology of agriculture*, Kiev 2008.
- Lyons J., *Introduction to theoretical linguistics*, Moscow 1978.
- Maslov U. S., *Introduction to Linguistics*, Moscow 1987.
- Myslyva-Bun'ko I. Ya., *Compound words in modern Ukrainian language press: structure and stylistic features*, Luts'k 2014.
- Novikov L. A., *Antonymy in Russian: Semantic analysis of opposites in the lexicon*, Moscow 1973.
- Novikov L. A., *Semantics of Russian Language*, Moscow 1982.
- Ovcharenko V. M., *The structure and semantics of scientific and technical terms*, Kharkiv 1968.
- Panko T. I., Kochan I. M., Matsyuk G. P., *Ukrainian terminology*, Lviv 1994.
- Pavlova O. I., *Hyponymy in musical terminology in English, French, Russian and Ukrainian languages*, [w:] *Journal of Dnipropetrovsk University. Series "Linguistics"*, iss. 15, № 11, vol. 2, Dnipropetrovsk 2009.

- Reformatsky A. A., *Introduction to Linguistic*, Moscow 1967.
- Reformatsky A. A., *Term as a member of lexical language system*, [w:] *Problems of structural linguistics*, Moscow 1968, p. 103–126.
- Shapran D. P., *Hypero-hyponymic relations in Ukrainian marketing terminological system*, [w:] *Linguistic studies*, № 16, Donetsk 2008, p. 205–208.
- Smirnov A. N., Verzylov A. P., Antonov B. A., *Metallurgical Dictionary*, <http://uas.su/glossary/glossary.php>.
- Superanskaya A. V., *Common terminology. Problems of the theory*, Moscow 1989.
- Symonenko L. O., *Formation of Ukrainian biological terminology*, Kiev 1991.
- Tur O. M., *Ukrainian terminology of Land Management and Cadastre*, Kiev 2008.
- Versta I., *The microfield of term language policy*, [w:] *Bulletin of Lviv university. Series Philology*, iss. 38, part I, Lviv 2006, p. 89–94.
- Vyuster E., *International standardization of language in the technic, Leningrad*, Moscow 1935.
- Lysyakova M. V., *Hyponymy in Russian language*, Moscow 1986.
- Yartsevov V. N., *Linguistic Encyclopedic Dictionary*, Moscow 1990.
- Zakrenytska L. A., *English Christian Theological terminological system: genesis, structure, semantics*, Odesa 2011.
- Zenina A. V., *Adaptation Anglicisms in Ukrainian banking terminology*, Donetsk 2014.

#### SUMMARY

In the article the nature of hyper-hyponymic relations is analyzed, their meaning for organizing and systematizing of the terminology vocabulary is found. The features of hyper-hyponymic relations between the components of noun-juxtapositions of Ukrainian terminology are established. The basic terminology of semantic noun-juxtapositions by reference “hyper-hyponymic” is provided.

**Keywords:** noun-juxtapositions, hyper-hyponymic relations, hyperonym, hyponym

#### STRESZCZENIE

W tym artykule są rozpatrywane relacje między składnikami semantycznymi rzeczowników, które stanowią część ukraińskiej terminologii. Na podstawie zależności hiponim – hiperonim i hiperonim – hiponim rzeczowniki klasyfikowane są do grup semantycznych, określona zostaje specyfika takich zestawień oraz hierarchia członów tworzących zestawienia.

**Słowa kluczowe:** rzeczownik-zestawienie, hiper-hyponymiczne stosunki, hiperonym, hyponym