

**POLYSEMY IN MODERN ENGLISH PUMP ENGINEERING
TERMINOLOGY**

O. A. LYTVYNKO, *PhD in Philology, Associate Professor,*
Sumy National Agrarian University, Sumy, Ukraine

E-mail: oxana.litvinko@gmail.com;

<https://orcid.org/0000-0002-2241-3776>

Abstract. *This article focuses on the problem of polysemy in modern English terminology within the special subsystem of terms – pump engineering. A polysemantic lexical unit has a hierarchically organized structure of meanings. It consists of indivisible elementary semantic units and they are realized simultaneously in each context. The lexical units of the pump engineering terminological subsystem fulfill the requirements for terms. However, this subsystem terminology is not free from polysemy, which is considered undesirable for terminological vocabulary. The polysemantic terms make up 71.9% of the terminological units in our sample. Some pump engineering terms do not have clearly defined semantic boundaries and they enter into semantic relationships with other terms. Sometimes terminological units correspond to two or more different concepts, realizing several related meanings. Metonymy is the primary source of polysemy in the pump engineering subsystem. The metonymic transfer is carried out by transferring the name of a machine, device, tool to the worker who uses them, conveying the name of the whole to parts, transferring the name of a part to a whole, transferring the general name of a technical process to its components. With the ambiguity arising from the metonymic transfer, the connections between the polysemantic word meanings are understandable and visible. Different meanings of the same word complement each other, while each meaning illuminates the characteristics of different objects in its own way. Usually it is possible to trace the relationship between the various definitions of the polysemantic unit of pump engineering.*

Keywords: *pump engineering terminology, polysemy, polysemantic units, key terms, metonymy.*

The relevance of research. Terminological vocabulary is the largest and the most fluid part of the vocabulary in most modern languages. The constant development and enrichment of terminology is a necessary condition and a direct consequence of progress in those areas of human activity with which this terminology is associated. Scientific and technical terminology occupies an important place due to the rapid development of new industrial and social realities. The rapid growth of special information in various fields of science and technology is associated with the quantitative growth and qualitative improvement of terminology. The relevance of this work is due to the lack of special in-depth studies of English pump engineering terminology

Analysis of recent research and publications. The question of the essence of the term and terminology refers to the actual problems of linguistics. At the present stage, scientists pay special attention to the systematization of terminological systems of special industries. They study various aspects of their formation and functioning in the language system. Some issues of industry terminology have been studied: legal and economic terminology [20], [7], computer terminology [14], terminology of automobile industry [3], medical terminology [6], [19], [13]. These works clarify the linguistic criteria for the identification of terms and they are separated from non-terminological language units. The lexical-structural aspects of the corresponding terminological vocabulary are also studied. The study of the nature of the term as a special type of word enriches and expands the understanding of the cognitive aspect of the thesaurus. It is indicated that normalization of terminosystem is relevant area of research. The lack of standardized system of terminology can reduce the scientific value of works and hinders scientific communication in this field of linguistics [5, p.132]. There is a need to pay attention to industry terminology to study the features of the theory of terminological system and the history of the term, its functioning and consolidation in a particular language area [8, p. 8].

This article **aims** to study the problems of polysemy in English pump engineering terminological subsystem. The main concern of the research is to unfold and illuminate the basic categories of polysemantic terms, as well as to determine the role of polysemy in pump engineering terminology.

The **object** of research is modern English pump engineering terminological subsystem.

The **subject matter** of this article is the phenomenon of polysemy in the English terminological subsystem of pump engineering.

The **material** of the research was a corpus of terminological vocabulary with a volume of 5,000 lexical items, selected by continuous sampling from lexicographic sources (explanatory dictionaries of machine-building terms; translation dictionaries of pump engineering terms), from advertising brochures of companies-manufacturers of pump engineering products and from periodicals in the field of mechanical engineering. The total amount of processed material is about 9500 pages of text.

The research **methodology** is complex in accordance with the aim of the work. We use a descriptive method that allows us to describe the lexical units of the terminological subsystem of pump engineering; method of component analysis to describe the meanings of the terms of this subsystem; method of semantic analysis to identify metonymic changes in pump engineering terminology. We also use quantitative analysis to identify trends in the use of term units.

Results and discussion. Polysemous lexical units make up a significant part of the English dictionary. The phenomenon of polysemy is realized in the presence of several interconnected meanings of the same lexical unit. They usually arise as a result of modification and development of the original meaning of the given lexical unit [17,p. 48].

In linguistics, there is an opinion that the polysemy of words in a language is not accidental. On the one hand, the need for a limited amount of vocabulary is associated with the qualitative features of the physiological mechanism of the human brain (memory), and on the other hand - with the nature of human language as means of cognition, reflection of diversity of the world [18,p. 307]. Some scholars do not

deny the positive role of polysemy. In particular, Pumpyansky notes that it is the ambiguity of language forms that contributes to the saving of language efforts, as it allows the use of a limited number of language tools in the communication process to denote an unlimited number of concepts. According to the scientist, polysemy is the basis for language improvement [15,p. 83].

Lexemes, the semantics of which is based on a broad conceptual basis, are especially distinguished among the polysemantic words of the English language. A polysemantic lexical unit has a hierarchically organized structure of meanings. It consists of indivisible elementary semantic units and they are realized simultaneously in each context.

The lexical units of the pump engineering terminological subsystem basically fulfill the requirements for terms. However, the terminology of this subsystem is not free from polysemy, which is considered undesirable for terminological vocabulary.

Some pump engineering terms do not have clearly defined semantic boundaries and they enter into semantic relationships with other terms. Sometimes terminological units correspond to two or more different concepts, realizing several related meanings. They appear, as a rule, as a result of the development of the initial meaning of the given terminological unit.

Over the years, the polysemy of the term develops not only at the level of the entire terminology system, but also at the level of industry terminological subsystems. Sometimes contextual polysemy can be observed [16, p. 104].

The existence of polysemy in scientific and technical terminological subsystems is considered undesirable for term units. Ambiguity is especially unacceptable for scientific terms denoting quantities. It is known that the prominent scientist Helmholtz for 20 years did not suspect that the meaning, which he understood by the term "Weber", is 20 times smaller than that accepted in the English scientific and technical language. The term "amplitude" of the terminological subsystem of pump engineering is still understood as half the swing and full swing, which, of course, complicates communication between professionals. It should be noted that most scholars prioritize the monosemia of terms. Obviously, the implementation of the

principle of "one concept - one sign" ensures the accuracy of the transmitted information, allows you to find the terminological equivalent in the language, which greatly facilitates communication in the fields of science and technology.

Despite the obvious advantages of unambiguous terms, polysemy is present in almost all modern terminological subsystems. The terminological subsystem of pump engineering is not the exception. Polysemous lexical units prevail among the key terms in the industrial branch terminology. Ambiguous terms make up 71.9% of the terms in our sample.

For example:

- *gear* 1) „ *mechanism* ”; 2) „ *gear wheel* ”; 3) „ *gear transmission* ”; 4) „ *handle* ”; 5) „ *reducer* ”;
- *machine* 1) „ *apparatus* ”; 2) „ *machine tool* ”;
- *screw* 1) „ *helix* ”; 2) „ *pintle* ”; 3) „ *feed-screw* ”;
- *shaft* 1) „ *axle* ”; 2) „ *pintle* ”; 3) „ *spindle* ”; 4) „ *rod* ”; 5) „ *bar* ”; 6) „ *traction* ”;
- *tool* 1) „ *instrument* ”; 2) „ *cutter* ”; 3) „ *outfit* ”.

The same linguistic reasons that give rise to ambiguity in common language contribute to the development of the semantic structure of terms. The main cause of polysemy is considered to be the asymmetry of sign and meaning. Arbitrary connection between the plan of expression and the plan of content implies free variation of one of them. In our study, we proceed from the position of asymmetry of the language sign. We recognize that the form of the sign is mostly conservative, and the content of the sign, on the contrary, is dynamic. Another reason for ambiguity is considered to be the limited vocabulary, because the language lacks the root word-forming means for each scientific concept to be nominated by a separate term [4].

The word usually arises with a certain meaning, which is called the primary [11, p. 195]. The primary meaning is direct because it directly names the designated referent. The ambiguity of the word is developed by transferring name from one subject to another. In this case, the new meaning of the lexical unit is figurative and motivated.

The source of polysemy of terms can be the phenomenon of metonymy [11,p. 196]. This phenomenon is one of the oldest in linguistics - its description is found in the works of ancient grammarians. However, in modern linguistics there is no single definition of metonymy, despite the fact that there are works on stylistics, semasiology, semantics, word formation, phraseology, contrastive linguistics, in which researchers pay considerable attention to this phenomenon. Arnold defines metonymy as a trope based on association by contiguity, when instead of the name of one thing the name of another thing is used, which is connected with the first permanent internal or external connection [1,p. 85]. Kronhaus notes that metonymy is the use of a word in relation to a new extralingual object adjacent to the old denotation in time and space or involved with it in the same situation. In this case, we talk about transferring the name from one object to another by contiguity [12,p.156]. Khudorliy qualifies metonymic transfer as an abbreviation, a convolution of a phrase into a word, because the metonymic meaning of a word can be equal to the meaning of the whole phrase [9,p.194].

All interpretations of metonymy are united by the fact that metonymy is one of the types of semantic changes and is a transfer of the name of an object or phenomenon on the basis of real (sometimes imaginary) connections between relevant subjects. This phenomenon involves different types of transfer of nominations: content - form, specific name - abstract, action or state - subject, proper name of the researcher - subject, place of origin - product, reason - consequence, part - whole, whole - part and etc. [2, p. 71]. Metonymic transferences reflect the peculiarities of perception and cognition of certain fragments of reality by consciousness. Each act of nomination is a designation of the object of reality, ie the expression of knowledge about it in symbolic form. Metonymic transferences are due to the speaker's desire for ease of expression and economy of language effort. Metonymy reveals the cognitive algorithms of term-formation and thus promotes better understanding of terminological units and facilitates their memorizing [13, p. 218].

Metonymic transfer in the terminological subsystem of pump engineering occurs in the following ways:

1. By transferring the name of the machine, device, tool to the employee who uses them.

For example:

- *borer „ drilling machine ” – borer „driller”;*
- *caster „ casting machine ” – caster „ moulder ”;*
- *engraver „ engraving tool ” – engraver „ chaser ”;*
- *grinder „ grinding machine ” – grinder „ grinding machine operator ”;*
- *turner „ lathe ” – turner „a person that turns”.*

1. By transferring the name of the whole to the part.

For example:

- *body „ carcass ” – body „ carcass part ”;*
- *compensator „ canceller ” – compensator „ compensation element ”;*
- *gland „ stuffing box ” – gland „ stuffing box cover ”;*
- *lever „ handle ” – lever „ lever shoulder ”;*
- *piston „ forcer ” – piston „ piston rod ”.*

3. By transferring the name of the part to the whole. For example:

- *foot „ pad ” – foot „ support surface ”;*
- *bender „ bending tool ” – bender „ bending machine ”;*
- *changer „ automatic replacement device” – changer „ machine with automatic tool change ”;*
- *subassembly „ assembly unit ” – subassembly „ assembly kit ”.*

4. By transferring the common name of the technical process to its components. For example:

- *attribution „ definition of functions ” – attribution „ function object definition ”;*

- *commutation „changing connections in electrical circuits ” –
commutation „current transition from one valve to the next in rectifiers ”.*

Any polysemy is historically determined. It is always the result of language dynamics. With the ambiguity arising from the metonymic transfer, the connections between the meanings of a polysemantic word are understandable and visible. This coexistence of meanings creates the impression of order. In the implementation of the phenomenon of polysemy, different meanings of the same word complement each other and each highlights the features of different subjects in its own way. It is usually possible to trace the relationships between the different meanings of a polysemous unit. For example, the term *iron* has three meanings: 1) „*iron*”; 2) „*hardware*”; 3) „*firmness* ”, „*hardness*”. The main meaning of the lexical unit *iron* is the meaning of "iron", from which the other two meanings are derived. The meaning of "iron products" arose on the basis of metonymic transfer. The properties of iron served as the basis for the emergence of the meaning of " firmness ", "hardness".

The term of pump engineering *finisher* has the following meanings: 1) „*finishing tool*”; 2) „*finishing machine*”; 3) „*the operator of the machine for finishing*”. The first meaning of the lexical unit *finisher* was the basis for the emergence of the second meaning, which appeared due to the metonymic transfer of the name of the part to the whole (the finishing tool is the part of the finishing machine). The third meaning of “*finishing machine operator*” arose from the second meaning of “*finishing machine*” by metonymically transferring the name of the machine to the worker who uses it. It is worth noting that the polysemantics of term units is most developed in root words and less common in complex lexical formations [10,p. 77]. This trend can be traced in the terminological subsystem of pump engineering. As the components of the term unit increase, the probability of polysemy decreases, as the following examples illustrate. For example:

- *load* 1) „*loading* ”; 2) „*cargo*”; 3) „*download* ”; 4) „*filler* ”; 5) „*refill*”;

- *chip load 1) „the thickness of the removed chips”; 2) „ cutting force”; 3) „ feed per tooth (of cutting tool)”; „ feed per revolution (of lathe)”;

 - *chip load per revolution 1) „ feed per revolution of the lathe)”;**
- *strip 1) „ strip ”, „ tape ”, „ lath ”, „ spline ”; 2) „ gasket ”, „ tie plate ”, „ backing ”; 3) „ adjusting wedge ”, „ adjusting bar (in guide machines)”; 4) „ tire ”;*
 - *adjustable strip 1) „ adjusting wedge ”; 2) „ installation gasket ”;*
 - *adjustable jib strip 1) „ adjusting wedge ”;*
- *valve 1) „ flapper ”; 2) „ faucet ”; 3) „ hydraulic apparatus ”;*
 - *air valve 1) „ vent ”; 2) „ pneumatic valve ”;*
 - *air bleed valve 1) „ air bypass valve ”*

Conclusions. The analysis of polysemantic units of the English terminological subsystem of pump engineering indicates their prevalence in this subsystem, despite the fact that polysemy is undesirable for terminological subsystems. The polysemantic terms make up 71.9% of the terminological units in our sample. A complex approach to this urgent problem allowed discovering specific features of polysemous terms of pump engineering subsystem. This research has also disclosed the specifics of the formation of polysemantic terms of the pump engineering subsystem.

The source of polysemy of pump engineering key terms is the phenomenon of metonymy. In our research, we proceed from the assumption that metonymy is one of the types of semantic changes and is a transfer of the name of an object or phenomenon based on real (sometimes imaginary) connections between relevant subjects. This phenomenon involves different types of transfer of nominations: content - form, specific name - abstract, action or state - subject, proper name of the researcher - subject, place of origin - product, reason - consequence, part - whole, whole - part, etc. Metonymic transfer of pump engineering subsystem is carried out

by transferring the name of a machine, device, tool to the worker who uses them, transferring the name of the whole to parts, transferring the name of a part to a whole, transferring the general name of a technical process to its components. With the polysemy arising from the metonymic transfer, the connections between a polysemantic word's meanings are understandable and visible. Some pump engineering terms do not have clearly defined semantic boundaries, and they enter into semantic relationships with other terms. Sometimes terminological units correspond to two or more different concepts, realizing several related meanings. They appear, as a rule, as a result of the development of the initial meaning of the given terminological unit. We found out that in the presence of polysemy of terms in the studied terminological subsystem, the context can help to understand them correctly. It should be noted that the knowledge of polysemantic terms will help cope with the task of translation.

This study's theoretical significance is determined by its contribution to the general theory of the term and terminology. The results of the research complement the scientific knowledge about the peculiarities of the terminological nomination and the main tendencies of the functioning of the terms in the modern English terminological subsystem of pump engineering. The practical value of the work is the feasibility to use its materials and results in the lexicology of modern English course (sections "Lexical Semantics" and "Vocabulary") and in a special course on terminology (sections "Terminological Nomination" and "The Specificity of the Term"). Our work's **prospect** is the study of antonymic relations in the English terminological subsystem of pump engineering.

REFERENCES

1. Arnold, I.V. (1990). *Stylistyka sovremennoho angliyskogo yazyka (stylistyka dekodirovaniya)* [Stylistics of Modern English (Decoding Stylistics)]. – Moscow: *Prosveschenie* (in Russian).
2. Barnden, J.A. (1997) *Consciousness and Common-sense Metaphors of Mind //Two Sciences of Mind: Reading in Cognitive Science and Consciousness.* – Amsterdam: *John Benjamins*, 311 – 340.
3. Bondarenko, O, Medvedeva E. (2016) *Strukturno-semantichni harakterystyky terminoodynnyts tekhnyky ta osoblyvosti yih perekladu (na materialy tekstiv avtomobilnoyi galuzi)* [Structural-semantic characteristics of technical terms and peculiarities of their translation (based on the texts of the automobile industry)]. *Visnyk Zaporiz`kogo universytetu. Filologichni nauky*, 1, 93-98 (in Ukrainian).
4. Chueshkova, O.V. (2002) *Analitichni nominatsiyi v ekonomichniiy terminosystemi (strukturno-typologichnyi aspekt)* [Analytical nominations in the economic terminology system (structural-typological aspect)]. Dis. ...kand. filol. nauk: 10.02.01 / *Kharkivskiy natsionalnyi universytet im. V.N. Karazina*. (in Ukrainian).
5. Dobropolska, D. (2016). *Metalanguage of terminology as a fragment of metalanguage of linguistics. Bulletin of Zaporizhzhia National University. Philological Sciences*, (1), 131-143. Retrieved from <http://journalsofznu.zp.ua/index.php/philology/article/view/705>
6. Gangemi, A, Pisanelli, D.M, Steve G. (2000) *Understanding systematic conceptual structures in polysemous medical terms. Proceedings of AMIA*, 285–289.
7. Humovska, I.M. (2017). *Aspekty vzayemodiyi yuridychnoyi ta ekonomichnoyi terminoleksyky* [Aspects of interaction of legal and economic terminology]. *Naukovi zapysky Natsionalnogo universytetu. Seriya "Filolohiia"*, 67, 96-99 (in Ukrainian).
8. Ivashchenko, V.I. (2013) *Istoriografia terminoznavstva: metamova i strukturni pidrozdily* [Historiography of terminology: metalanguage and structural subdivisions]. *Terminologichnyi visnyk*. – Odessa, 2(1), 5-20 (in Ukrainian).
9. Khudorlii, A.O. (2002) *Lingvokognityvni osoblyvosti metonimichnogo perenosy v sychasniy amerikanskiy publitsystytsi* [Linguocognitive features of metonymic transference in modern American journalism]. *Naukovyi visnyk kafedry YuNESKO Kyivskogo natsyonalnogo lingvistichnogo universytetu*, 6, 193-197(in Ukrainian).
10. Kiyak, T.R. (2004) *Forma I zmist movnogo znaka* [Form and content of the language sign]. *Visnyk Kharkivskogo natsyonalnogo universytetu im. V.N. Karazina*, 635, 75-78 (in Ukrainian).
11. Kochergan, M.P. (2010) *Vstup do movoznavstva* [Introduction into Linguistics] – Kyiv: *Akademiya* (in Ukrainian).
12. Kronhaus, M.A. (2001) *Semantika: uchebnik dlya vuzov* [Semantics: a textbook for universities]. – M.: *Rossiyskiy gos. Gumanitarn. Universitet* (in Russian).
13. Lysanets, Yu.V. (2015) *Metonymy in English medical terminology. Aktualni problemy suchasnoyi medytyny*, 1, 218-222.

14. Myrosnychenko, V.M., Shiskova, I.S. (2019) Angliyski leksychni novoutvorennia u sferi komp'yuternykh tehnologiy. [English lexical innovations in the field of computer technologies and their translation features]. *Visnyk natsyonalnogo tehnicznego universytetu, Seriya: Aktualni problemy rozvytky ukrayinskogo suspilstva*, 1, 87-92 (in Ukrainian).
15. Pumpyansky, A.L. (1982) Prichina raznykh vzgladov na yazykovuyu mnogoznachnost. [The reason for different views on linguistic ambiguity]. *Morfemika i affiksalnaya kombinatorika yazyka*. – Kalinin: Izdatelstvo KGU, 80-87 (in Russian).
16. Skorokhodko, E.F. (2008) Terminologichnyi profil naukovoho tekstu [Terminological profile of a scientific text]. *Visnyk Kharkivskogo natsyonalnogo universytetu im. V.N. Karazina*, 805, 100-105 (in Ukrainian).
17. Superanskaya, A.V., Podolskaya, N.V. & Vasilieva N.V. (2012) Obschaya terminologiya. Voprosy teorii. [General terminology. Questions of theory] – M.: Librokom (in Russian).
18. Tomusyak, I.M. (2004) Semantyka bagatoznachnykh sliv suchasnoyi angliyskoyi movy [Semantics of polysemous words of modern English]. *Suchasni problemy ta perspektyvy doslidzhennya romanskykh i germanskykh mov i literatur*. – Donetsk, 307-309 (in Ukrainian).
19. Schulz, S, Spackman, K, James, A, Cocos, C, Boeker, M. (2011). Scalable representations of diseases in biomedical ontologies. *Journal of Biomedical Semantics*, 2 (Suppl 2):S6.
20. Yatsyshyn, N.P., 2013. Yurydychna terminologiya yak spetsializovana systema pravovykh ponyat [Terms of law as specialized system of legal concepts]. *Terminolohichni visnyk*. Luts'k, 2, 99-103 (in Ukrainian).

ПОЛІСЕМІЯ У СУЧАСНІЙ АНГЛІЙСЬКІЙ ТЕРМІНОЛОГІЇ НАСОСОБУДУВАННЯ

О.А. Литвинко

Анотація. Стаття присвячена дослідженню проблеми полісемії у сучасній англійській термінології підсистеми насособудування. Наявність полісемії у термінології є очевидною. Полісемічна лексична одиниця має ієрархічно організовану структуру значень, що складається з надалі неподільних елементарних змістовних одиниць, які реалізуються одночасно у кожному контексті. Лексичні одиниці термінологічної підсистеми насособудування відповідають основним вимогам, що висуваються до термінів. Проте термінологія зазначеної підсистеми не позбавлена полісемічних відношень, які визнаються небажаними для термінологічної лексики. Полісемантичні одиниці термінологічної підсистеми насособудування складають 71.9% від загальної кількості термінів. Деякі терміни насособудування не мають чітко окреслених семантичних меж і вступають в семантичні відносини з іншими термінологічними одиницями. Інколи терміни співвідносяться з двома чи більшою кількістю різних понять, виявляючи декілька пов'язаних між собою значень. Більшість ключових термінів насособудування є полісемантичними. У термінологічній підсистемі насособудування метонімія є основним джерелом полісемії. Метонімічне перенесення у термінологічній підсистемі насособудування відбувається перенесенням назви машини, пристрою, інструмента на працівника, що їх використовує, перенесенням назви цілого на частину, перенесенням назви частини на ціле, перенесенням загальної назви технічного процесу на його складові. При багатозначності, що виникла на основі метонімічного перенесення, зв'язки між значеннями полісемічного слова є прозорими і видимими. Різні значення одного і того ж слова доповнюють одне одне, при цьому кожне по-своєму висвітлює риси різних предметів. Зазвичай існує можливість простежити, які зв'язки реалізуються між різними значеннями полісемічної одиниці насособудування. Теоретичне значення даного дослідження визначається його внеском у загальну теорію терміна і

термінологію. Результати дослідження доповнюють наукові знання про особливості термінологічної номінації та основні тенденції термінотворення у сучасній англійській термінологічній підсистемі насособудування. Практична цінність роботи полягає у тому, що її матеріали та результати можуть бути використані у курсі із лексикології сучасної англійської мови (розділи „Лексична семантика” та „Словниковий склад мови”) та у спеціальному курсі з термінології (розділи „Термінологічна номінація” та „Специфіка терміну”).

Ключові слова: термінологія насособудування, полісемія, полісемантичні одиниці, ключові терміни, метонімія.