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Compound Term-nouns in Electrical Engineering Texts: Structural, Semantic and Functional Peculiarities

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Abstract
This article aims to analyze, systematize, and unify compound term-nouns in electrical engineering by several classifications. The report's significance draws on the modern linguistic trends towards research on the structural, semantic, and functional peculiarities of compound terminological units. Moreover, it is relevant to study compound term-nouns as specific lexical content of English electrical engineering texts. The article's scientific novelty is in integrated and systematic research of compound term-nouns in electrical engineering because of semantics, stylistics, and lexicology. The study used a continuous sampling method and drew on a collection of English scientific and technical texts with 10296 pages. Compound term-nouns have been systematized according to their semantics. In electrical engineering, they consist of seven micro fields. According to the degree of abstraction, compound term-nouns have been classified into abstract and concrete. We revealed that in the texts on electrical engineering, abstract compound term-nouns dominate. Concerning the degree of stylistic features, we have arranged compound term-nouns into stylistically colored and stylistically neutral. As to usage frequency, we have researched that science textbook is the primary source of functioning compound term-nouns in electrical engineering. In respect to functional coloring, compound term-nouns have been classified into neologisms, obsolete vocabulary, archaisms, occasionalisms, and borrowings. We have found that in texts on electrical engineering borrowings, prevail. The results of the study have been summarized in the concluding section.

Keywords: classification, coloring, compound term-nouns, electrical engineering texts, terminological units

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Introduction

In recent decades technological progress has gained new rapid turns, resulting in devices that improve and facilitate human existence on Earth. Such inventions include various means of transport (e.g., *electric cars, gyro scooters, electric unicycles*), household appliances, and small devices (*electric dryers, electronic cigarettes, hot rollers, e-books, smartwatches,* etc.).

The latest technological advances have led to the formation of scientific and technical terminology, particularly in electrical engineering, including compound term-nouns to convey information accurately and concisely.

Over the years, both Ukrainian and foreign linguists have studied compound terminological units as constituent parts of scientific and technical texts. Modern linguistic studies focus on structural and semantic peculiarities of terminological units: Ageicheva & Bolotnikova & Hunchenko & Peredii (2020), Akulshyna (2016), Azarova (2005), Berezhna (2016), Cutler (1998), Doroshenko (2013), Dubuc (1992), Humovska (2000), Jukka & Mitchell (2002), Kizil (2016), Kryshtal (2003), Lapata & Raymond (2008), Litvinko (2007), Loskutova (2016), Mattiello (2017), Myzyn (2016), Nazarova (2014), Rybakova (2012), Yankovets (2019). Some scholarly works describe semantic and pragmatic aspects of terms: Bach (1997), Carston (2002), Dyakonov & Kyiak & Kudelko, 2000, Ischenko (2010), Kashchyshyn (2014), Kolosova & Radetska (2016), Riba (2010), Rybachok (2004), Vovchanska (2014). However, structural, semantic, and functional peculiarities of compound term-nouns in electrical engineering texts have been researched neither in Ukrainian nor in foreign linguistics.

This article aims to analyze, systematize, and unify compound term-nouns in electrical engineering by several classifications. The report's significance draws on the modern linguistic trends towards research on the structural, semantic, and functional peculiarities of compound terminological units. Moreover, it is relevant to study compound term-nouns as specific lexical content of English electrical engineering texts. The article's scientific novelty is in integrated and systematic research of compound term-nouns in electrical engineering given semantics, stylistics, and lexicology.

Theoretical Background of the Research

The formation of compound term-nouns depends primarily on the need of society to name new concepts that arise from the active development of science and technology. As a result, people enriched English with compound term-nouns that denominate subjects, processes, or phenomena, and are formed not only by already existing, but also previously unknown concepts (Humovska, 2000; Kizil, 2016; Kryshtal, 2003; Litvinko, 2007; Nazarova, 2014; Rybachok, 2004).

In the current study, we define a compound term-noun as a lexical unit formed by 1) combining two and more stems or independent words, 2) abbreviating terms of a specific word combination

or sentence according to models already existing in the language. In scientific and technical texts, the compound term-noun correlates with a specific part of speech, acts as a corresponding sentence member, and provides scientific information to society (Akhmanova, 2013; Karaban, 2004; Vovchanska, 2014).

From the semantic perspective, an essential distinctive feature of compound term-nouns is that they belong to a terminological field. The notion of the terminological field was introduced by Reformatsky (1961), who stated that the term is the given terminology because the word loses its characteristics of the term. The term takes a strictly specific place in a matrix of a terminological field. Trier (2008) postulates that the terminological field appears as the paradigmatic unity of interrelated terms able to verbalize the same concept. Within the terminological field, terms are engaged in various paradigmatic relations based on their semantics. All terms that belong to the terminological field are, therefore, further divided into specific groups. Such groups are micro fields or lexical-semantic groups, i.e., groups of words linked by a common concept.

According to Leychik's (2009) definition, every term, particularly compound term-nouns, is a lexical unit of language for special purposes, denoting concrete or abstract notion of the theory of a specific special field of knowledge or activity. Thus, *concerning the degree of abstraction*, all compound term-nouns are subcategorized into concrete and abstract.

Linguistics explains abstraction as a noun category that provides a denomination of intangible realities, i.e., something that cannot be perceived using one of the five senses (taste, touch, sight, hearing, smelling). Scientists consider the abstractional noun category because they take into account the morphological and grammatical indicators of the lexical unit (Alexeyeva, 2007; Kharytonov, 2008). Vorontsova (1960) also claims that abstraction is the noun category marked both morphologically and grammatically. Morphological markers of the category of abstraction are noun-building suffixes -ness, -ment, -(i)ty, -ance, -ence, -ship, -dom, -hood, -ism, -(r)y, -ic(s), -tion. The grammatical marker of the category of abstraction is the uncountability of abstract nouns.

Concerning above mentioned, the current study treats compound term-nouns in electrical engineering as abstract if they: 1) are not able to cause any visual images in human consciousness, 2) do not have a physical representation, 3) are characterized by a generalized meaning of quality, property, state or action, 4) refer to phenomena and concepts in electrical engineering. Scientists consider compound term-nouns in electrical engineering concrete if they denominate things, professions, instruments, devices, and parts.

Linguists regard terms as special words and a specific layer of vocabulary that differs from common words by several features, including accuracy, systematicity, informativeness, a

correlation between concept and meaning, stylistic neutrality (Batsevych, 2004; Bronnikova, 2009; Sydorenko, 2004; Symonenko, 2014). However, some contemporary linguists doubt of stylistic neutrality of terms, arguing that they are still characterized by expressiveness (Berezhna, 2016; Ischenko, 2010; Melnyk & Venhryniuk, 2016; Omelchenko & Vysochynskyi 2000). Thus, expressiveness is a criterion for the classification of compound term-nouns *according to the degree of stylistic features*. This approach divides compound term-nouns into stylistically colored and stylistically neutral.

Over the last five years, there has been heated debate on whether expressiveness is characteristic of compound term-nouns in electrical engineering, that triggered linguists to single out and analyze this feature from the linguistic, lexicological, sociolinguistic and psycholinguistic perspective (Dyakonov & Kyiak & Kudelko, 2000; Kochan, 2004; Kryzhanivs'ka & Symonenko, 1987).

Expressiveness is associated with the ability of a speaker to make their speech more expressive and influential. According to Kharchenko (1976), expressiveness is based on the inconsistency between specific language units and language standards; that is why this category is due to imagery, intensity, etc. Lukyanova (1996) states that expressiveness is both objective and subjective. On the one hand, it is objective because phenomena, actions, attributes, and states differ in qualitative and quantitative characteristics. On the other hand, it is subjective as these characteristics are singled out by the speaker, mediated by his cognitive and emotional perception, and applied to a specific standard scale.

As expressiveness is aimed at intensifying the phenomenon's attributes and facilitating information delivery to the recipient, it performs a pragmatic function. Ishchenko (2010) claims that expressiveness reflects the speaker's intention to persuade the recipient and encourage him to take action. The linguist defines expressiveness as a feature of stylistically colored (as opposed to stylistically neutral) language units characterized by imagery, emotional coloring, ability to express the inner state of the speaker, and influence the interlocutor.

Scientists actualize the pragmatic category of expressiveness in compound term-nouns of the English scientific and technical texts through metaphorical components in the structure of compound term-nouns used in particular communicative situations (Lazebna, 2010).

Kukharenko (2000) believes that "the expressiveness of the metaphor is promoted by the implicit simultaneous presence of images of both objects – the one that is named and the one that supplies its legal name" (p. 23). Metaphorical compound term-nouns are formed with common nouns that denominate subjects, phenomena, or processes. The transference of meaning stems from the subject or functional similarity. In the linguistic studies, metaphorical terms are classified from

the point of analogy that can stem from the similarity of external characteristics (size, shape, consistency, appearance) and functions (Black, 1993).

In the opinion of Ivina (2003), metaphor is often the only way to name specific objects, phenomena, or processes. In some cases, only metaphorical terms can reflect our understanding of the essence of those phenomena or subjects with no established name. Despite its conventionality, the metaphor has substantial information capacity that allows it to function as a term. The assimilation of a new concept to other well-known and more understandable concepts is a typical way of creating new scientific and technical terms.

Within the functional approach, all compound term-nouns in electrical engineering can be systematized into three groups based on their functional coloring. Brandes (1983) defines functional coloring as specific territorial, temporal, social, professional, national, or emotional nuances in the lexical meaning. The first group includes neological, obsolete, and archaic compound term-nouns, i.e., terminological units whose lexical meaning reflects the timeframe of their coinage and functioning. The second group includes occasional compound term-nouns, i.e., terminological units whose lexical meaning contains some information about age, sex, education, occupation, social status of their users. The third group includes borrowed compound term-nouns, i.e., terminological units whose lexical meaning points at their genuine origin.

The scientific and technological revolution has brought the so-called "neological boom", i.e., many lexical units appeared to describe new objects, phenomena, and concepts, particularly in electrical engineering. These lexical units are referred to as neologisms. Christmas (2006) explains neologisms as newly coined terms, words, or phrases to denote a new reality in a particular field of science and technology. Babenko (2014) mentions that neologisms can develop in three main ways: 1) a lexical unit is built with the existing words or morphemes (lexical neologisms); 2) a lexical unit existing in the language can change its meaning to denote a new object or phenomenon (semantic neologisms); 3) a new lexical unit can be introduced to denote a new object or phenomenon (neologisms proper).

There comes a time when terms denoting various electrical engineering realities begin to lose their relevance in language and speech. Such terms are referred to as obsolete, i.e., language units that are no longer in active use and are being replaced with contemporary equivalents (Matiello, 2017).

Obsolete compound term-nouns later turn into archaisms. Kukharenko (2000) defines archaisms as "words, 1) denoting historical phenomena that are no more in use (these are historical words); 2) in the course of language history ousted by newer synonymic words" (p. 16).

The sublanguage of electrical engineering is usually enriched with occasionalisms that are coined with the language units that already exist in the scientific and technical literature. This coinage is a manifestation of constant and diverse lexical and semantic processes. In modern linguistics, occasionalisms are also referred to as "impromptu words", "author's neologisms", "poetic neologisms", "individual-stylistic neologisms", "contextual neologisms", "disposable neologisms", "meteor words", "homemade words" (Lopatin, 1977). Such a wide variety of definitions can be explained by the objective difficulties in distinguishing between occasionalisms and neologisms. However, the main difference between the two stems from their functioning, i.e., occasionalisms, in contrast to neologisms, are created and function outside the lexical system of language.

Borisova (2020) and Nykytchenko (2015) state that several key criteria set occasionalisms apart from neologisms. They are: 1) belonging to speech (occasionalisms are coined by speakers in a particular communicative situation, they do not exist in language and, unlike neologisms, are not registered by dictionaries); 2) creativity or non-reproducibility (occasionalisms, as opposed to neologisms, are not reproduced but re-created for each specific communicative act); 3) word-forming derivativeness (occasionalisms consist of at least two word-forming morphemes, i.e., derivation is their mandatory feature, while neologisms can be created using both word-building means and non-derivative words, for example, borrowings from other languages); 4) expressiveness (this feature stems from the occasionalisms' internal word-forming structure); 5) nominative optionality (occasionalisms are created for one-time use and do not refer to any fixed fragments of reality, unlike neologisms that are historically registered in the language); 6) synchronic-diachronic diffusivity (occasionalisms cannot be analyzed from this perspective as they are created for one-time use, are non-reproductive and, thus, quickly disappear); 7) individual belonging (it is impossible to identify who coined an occasionalism because speech is transient) (Borisova, 2020; Nykytchenko, 2015).

Concerning the abovementioned criteria, occasionalism is defined in the study as a language unit that is created for one-time use and characterized by expressiveness, word-forming derivativeness, and nominative optionality. Occasionalisms are an asset of speech; they are always expressive, created by a specific speaker, and coined concerning a particular communicative situation and goals. Occasionalisms are dependent on context outside that they are non-reproductive. Unlike neologisms, their main function is not nominative but characterizing. Their distinctive feature is a constant novelty (Mattiello, 2016).

The number of English newly formed words can also increase due to borrowings from classical languages, i.e., Greek and Latin, and French. A borrowing is understood as an element (word, morpheme, syntactic construction, etc.) that was imported from one language to another and took root in its vocabulary as a result of close linguistic contacts or due to the society's need for the most

accurate and precise denomination of a specific reality (Basovets & Khomenko & Tsvetkova, 2010). The current study treats borrowed compound term-nouns as lexical units built with foreign language stems or foreign term elements.

Methodology

In the current study, a combination of methods is used to analyze compound term-nouns in electrical engineering texts. *The analysis-synthesis method* is used to collect and familiarize the theoretical data about compound term-nouns and other linguistic phenomena related to the research topic. Under *the quantitative analysis*, the study probes structural, semantic, and functional characteristics of compound term-nouns. The review uses *a continuous sampling method* and draws on a collection of English scientific and technical texts on electrical engineering of various genres represented by scientific and educational (textbooks, manuals), scientific proper (scientific articles), scientific reference (instructions), and technical contracts. The collection of texts understudy has been randomly chosen from 15 textbooks (9725 pages), 15 scientific articles (160 pages), 15 contracts (70 pages), 15 instructions (341 pages) with a total of 10296 pages. *The semantic analysis* is used to single out the main micro fields (lexical-semantic groups) of the compound term-nouns functioning in the analyzed electrical engineering texts. *The componential analysis* is used to pick out the integral and differential semes (components) in the semantic structure of the lexical meaning of the analyzed compound term-nouns; it is also used to identify semantic relations between particular components of the analyzed compound term-nouns. *The word-formation analysis* is used to state the number and type of morphemes that make up the analyzed compound term-nouns. *The stylistic analysis* is used to single out stylistically colored compound term-nouns functioning in the analyzed electrical engineering texts. *The functional analysis* is used to study peculiarities of the functioning of compound term-nouns in the texts on electrical engineering.

Findings and Discussion

The analysis was made on the data that included 2000 compound term-nouns collected with a continuous sampling method from 15 textbooks, 15 scientific articles, 15 contracts, and 15 instructions.

Semantic Classification of Compound Term-nouns in Electrical Engineering

The study's findings show that the terminological field in electrical engineering of the English language has seven micro fields, either of which consists of compound term-nouns. These terminological units are structurally different, still semantically and functionally united due to the connection of subjects, phenomena, processes, and actions they denote.

Figure one presents seven micro fields that compound term-nouns in electrical engineering belong to. Each of the micro fields is an open microsystem whose members bear relations with each other.

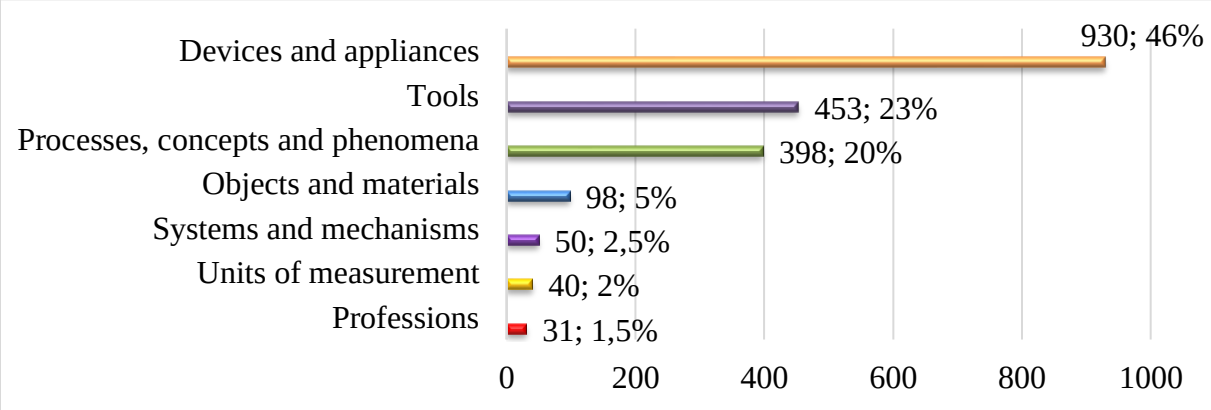


Figure 1. *Semantic Classification of Compound Term-nouns in Electrical Engineering: Quantitative Data*

Data uncovered that the semantic micro fields in electrical engineering include compound term-nouns that refer to: 1) names of devices and appliances (930; 46%), e.g., *hardcard, motorbicycle, percussion-drill, radiomicrometer, phonocartograph*; 2) names of parts of devices and tools (453; 23%), e.g., *phonecamera, tap-switch*; 3) names of processes, concepts, and phenomena (398; 20%), e.g., *cut-off, energy-output, engine-flameout, microshort-defect*;4) names of objects and materials (98; 5%), e.g., *terne-plate, ternesheet, glass-fibre, shield-wire*; 5) names of systems and mechanisms (50, 2,5%), e.g., *telesoftware*; 6) names of units of measurement (40, 2%), e.g., *kiloohm, megavolt, nanosecond*; 7) names of professions (1,5%), e.g., *programmer-engineer*.

Research data reveal that compound term-nouns in electrical engineering are chiefly represented by two-component terminological units, e.g., *carry-current*, while three-, e.g., *valve-in-head* and four-component units, e.g., r*adioelectrocardiograph* are less frequent. They are built with word-formation patterns, including word-composition, e.g., *push-pull*, stem-composition, e.g., *automodem* and conversion, e.g., *cut-off*. There are specific semantic relations between components of compound term-nouns in electrical engineering: 1) subordinative of which the components are the semantic center and can act as identification of another, e.g., *antenna-converter*; 2) coordinative where both components are semantically independent, e.g., *transducer-amplifier*.

From a lexical perspective, each component of compound term-nouns is extremely important. Let us consider the two-component terminological units in that the first component '*robot*' is of generalized nature and refers to the functional characteristics of the depicted object. In contrast, the second component specifies the type of work performed by the object: *robot-placer, robot-plane, robot-polisher, robot-rover, robot-satellite*. The given examples illustrate that the first component forms a terminological field, while the second component specifies the meaning of the

entire term for functional purposes, thus narrowing the terminological field. In other words, the meaning of a compound term-noun is the sum of meanings of its components.

Classification of Compound Term-nouns in Electrical Engineering according to the Degree of Abstraction

The study's findings show that abstract compound term-nouns in electrical engineering are built with specific derivative suffixes that denote the generalization of phenomena and concepts. These suffixes are: *-ity (thermoelectricity); -ment (engine-displacement); -ance (transconductance); -tion (underconsumption).*

Also, data uncovered that the most productive derivative suffixes used to coin concrete compound term-nouns in Modern English are: *-er (rocket-launcher, pipe-cleaner); -or (fuse-isolator, microinjector*).

Figure two illustrates the proportions of abstract and concrete compound term-nouns in electrical engineering texts.

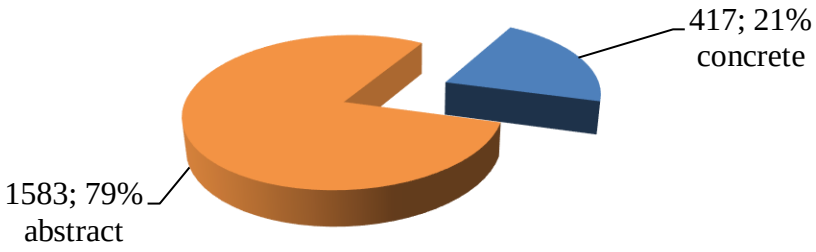


Figure 2. *Classification of Compound Term-Nouns in Electrical Engineering according* to the Degree of Abstraction*: Quantitative Data*

As Figure two shows, the group of concrete compound term-nouns prevails (1583 units), while abstract compound term-nouns are less frequent (417 units).

Classification of Compound Term-nouns in Electrical Engineering according to the Degree of Stylistic Features

Research data reveal that electrical engineering texts include both stylistically neutral and stylistically colored compound term-nouns. Stylistically neutral compound term-nouns of electrical engineering texts have no stylistic meaning and coloring, are used in any communicative situation, and are understandable for specialists of any scientific and production sphere. They are common terms that denominate processes, phenomena, and engineering professionals, e.g., *antenna-coil.* Stylistically colored compound term-nouns are terminological units with functional or expressive coloring in scientific and technical texts on electrical engineering.

Figure three presents the proportions of stylistically colored and stylistically neutral compound term-nouns in texts on electrical engineering.

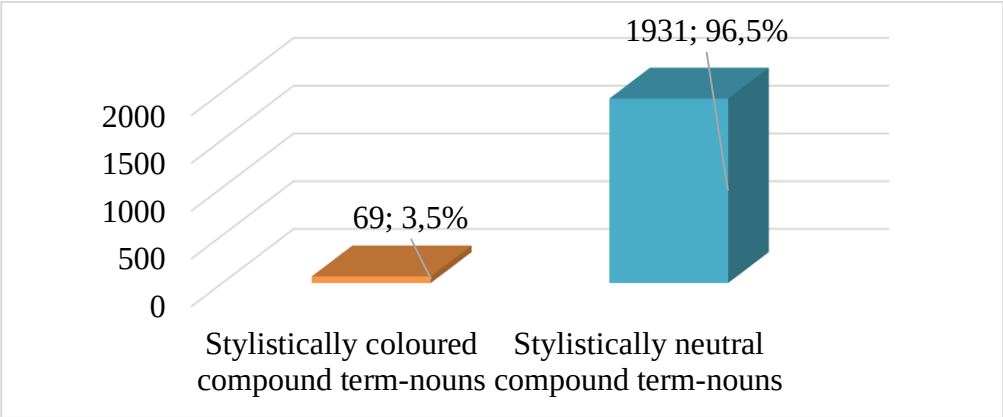


Figure 3. *Classification of Compound Term-nouns in Electrical Engineering according* to the Degree of Stylistic Features*: Quantitative Data*

As Figure three reveals, stylistically colored compound term-nouns are infrequent in 69 (3,5%) electrical engineering texts.

Data show that stylistic coloring of the collected compound term-nouns is actualized through the metaphorical reinterpretation of one of their components, e.g., *tooth-voltage, butterfly-antenna, pig-tail, bottle-neck*. In the given examples, the underlined word components (*tooth, butterfly, pig, tail, bottle, neck*) render figurative (metaphorical) meaning. Each of the abovementioned components can function in the English language as an independent word and, therefore, has its direct meaning. It is the presence of this direct meaning that evokes associations (analogies) in the recipient's mind, helps to interpret the meaning of a new compound terminological unit, and creates the desirable pragmatic effect.

Metaphorical compound term-nouns are highly informative, relatively compact, economical, and easy-to-understand. Thus, their existence adds expression, vividness, and originality to the sub-language of electrical engineering and meets the communicative needs of the corresponding industry sector.

Thus, compound term-nouns in electrical engineering, their components, and common words have specific, pragmatic potential, i.e., a set of semantic layers that depend on the speaker, special communicative goals, and communicative situation. In other words, pragmatic potential depends on specific linguistic and extralinguistic factors. It has been specified that compound term-nouns in electrical engineering are characterized by expressiveness, even though it contradicts the general standardization and stylistic restraint of compound terminological units. In the modern sense,

however, expressiveness of compound term-nouns is an essential means of influencing the recipient.

Classification of Compound Term-nouns according to the Degree of Frequency

Recently there has been a dramatic increase in the number of compound term-nouns in electrical engineering due to the dynamic development of this industry. This research work used compound term-nouns collected from English scientific and technical texts on electrical engineering, including textbooks, articles, instructions, and contracts. After compound term-nouns had been collected, an attempt was made to classify these nouns by the usage frequency in the genres of scientific and technical literature. It should be mentioned, however, that the factual material sources were only one article, one contract, one textbook, and one instruction, i.e., only one text representing each genre of scientific and technical literature. Other texts of the same genre include common terminology that could hinder accurate quantitative analysis.

Scientific Textbook

The first factual material source was a scientific textbook with 287 pages (Bonamy, 2001). Applying continuous sampling method, 132 compound term-nouns (69%) were collected and further divided into four groups: 1) compound term-nouns built with borrowed stems of Greek and Latin origin as the initial element, e.g., *turbocompressor, electromotor, electromagnetism*; 2) compound derivatives built with word-forming suffixes such as *-er (lawn-mover, body-scanner, chest-freezer), - ance (scratch-resistance*); 3) compound term-nouns built with word-composition: *grass-box, cut-blade, brake-pads, laser-display*; 4) converted compound term-nouns where the verb followed by a preposition turns into a compound terminological unit, e.g., *breakdown, breakthrough, cut-out, send-out, slide-down.*

Scientific Article

The second factual material source was a scientific article full of terminological units in electrical engineering (Csanyi, 2018). Compound term-nouns are infrequent in scientific articles. This conclusion was drawn from the conducted analysis as a result of that 39 (20%) compound term-nouns were collected: *backfire, flashover, out-hang, hand-crank.*

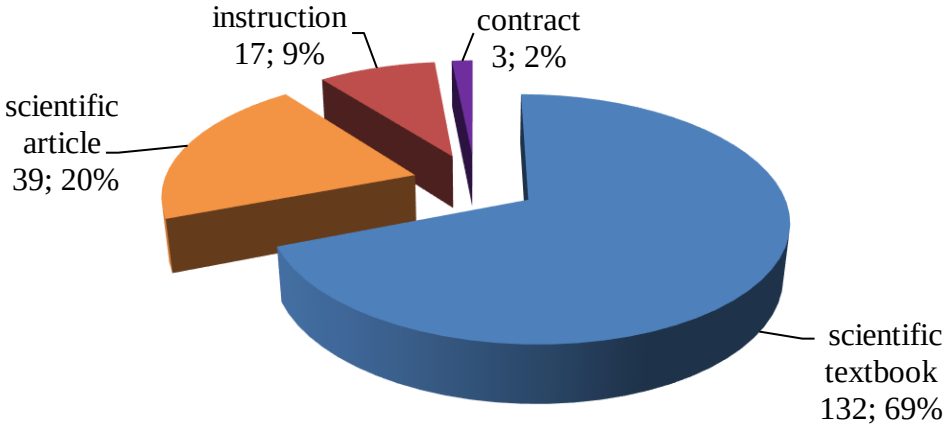
Maintenance Instruction Manual

The third factual material source was a maintenance instruction manual for generators (FG Wilson Generator Set Operator & Maintenance Instruction Manual, 2019). As a result of the conducted analysis, 17 (9%) compound term-nouns in electrical engineering were collected: *emergency-stop-button, shutoff* (devices), *electrolyte, thermostat, output, serviceability, pipework, forklift, base-frame, startup, shutdown, voltmeter, engine-handbook, set-point, overvoltage, battery-auto-chargers, troubleshooting.*

Contract

The fourth factual material source was a 13-page bilingual Anglo-Russian contract (ND DATEX LLD, 2018). Only 3 (2%) compound term-nouns were collected. A characteristic feature of compound terminological units in this genre of scientific and technical literature is their multiple uses. A detailed analysis of the contract showed that the compound term-noun *smartcard* was used 55 times; moreover, once or twice in the same syntactic construction. Other examples of compound terminological units are *fuel-card*, and *microchip* used 18 and eight times, respectively.

Figure four illustrates the proportions of compound term-nouns in electrical engineering texts according to the degree of their usage frequency.



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As Figure four shows, scientific textbooks are the most active source of functioning compound term-nouns in electrical engineering (69%), scientific articles (20%) are less active, instructions and contracts are the least active sources (9% and 2%, respectively).

Classification of Compound Term-nouns according to Functional Colouring

Neological Compound Term-nouns

Data uncover that neologisms are moderately used in modern electrical engineering texts (45 language units; 4,5%). They are represented by lexical neologisms (*multi-cooker, steam-cooker,* etc.); semantic neologisms (the word *"record-player*" developed the meanings "*CD player,*" "*video player," "MP3 player*"); neologisms proper (*mono-wheel, hydro-scooter, power-bank,* etc.).

Obsolete Compound Term-nouns

Table one illustrates six obsolete compound term-nouns (0,6%) in electrical engineering that were collected in the course of the study.

Table 1. *Obsolete Compound Term-nouns in Electrical Engineering of Modern English*

№	Obsolete compound term-noun	Contemporary equivalents
1.	*self-phone*	*telephone, smart-phone, iPhone*
2.	*printing press*	*computer, notebook, iPad*; *e-book, pocketbook*
3.	*e-book*	*Pocketbook*
4.	*Millimicron*	*Nanometer*
5.	*Gigahertz*	*Gigacycle*
6.	*Gigabit*	*Billibit*

Archaic Compound Term-nouns

Since our study is focused on compound term-nouns in modern scientific and technical texts, the total number of collected archaisms is only 28 (2,7%), e.g., *print-punch, radio-tube, telephonograph, video-card*. The analyzed compound term-nouns in electrical engineering show that the degree of their obsolescence depends on the following factors: 1) place of a compound term-noun in the lexical system, 2) usage frequency of a compound term-noun; 3) the ability of a compound term-noun to be in line with scientific and technological progress.

Occasional Compound Term-nouns

Research data show that occasional compound term-nouns are infrequent in electrical engineering texts. Only eight occasional compound term-nouns (0,7%) were collected in the course of the study. They are: 1) *book-reader* – a versatile textbook for students that contains an entire school curriculum; 2) *ultra-e-book/ pocketbook/ touch-pad* – an extremely thin and compact computer, yet more functional than an ordinary one; 3) *travel SIM* – an upgraded SIM card that facilitates mobile communication abroad, giving users additional functions of account recharge in any part of the world; 4) *smartcard* – a plastic rather programmable card with large storage capacity used for storing information on portable devices; 5) *scarab-cycle* – a mode of transport that combines the functions of a motorcycle and is shaped like a scarab beetle; 6) *sky-train* – a capsule moving at the height of 6 meters on magnet ropes; although similar to a funicular, it is engineered for long-distance air travel; 7) *dream-liner* – a specially equipped super-fast aircraft that is comfortable to fly in; 8) *jet-pack* – a flying backpack that facilitates movement without weighing a schoolchild's shoulders down

The abovementioned language units help to conclude that occasionalisms, particularly those that refer to technical innovations and function in scientific and technical literature, expand the conceptual structure of Modern English.

Borrowed Compound Term-nouns

The study results reveal that Modern English texts in electrical engineering contain many borrowed compound term-nouns (950 language units; 91,5%). Data show that new compound

term-nouns are often formed with borrowed stems of Greek and Latin origin. In our opinion, this is because different language subsystems are imperfect and have no adequate word-formation means when it comes to the denomination of new realities. Many borrowed stems of Greek and Latin origin are frequently used to create new terminological units that can lead to structural, semantic and stylistic changes in these newly formed words. Common word-forming stems that compound-term nouns in electrical engineering are built with include: 1) stems of Latin origin that refer to the size (*micro, macro, nano*), quantity (*multi, poly, mono, mega*), method of receiving information (*audio, video*), control mode (*radio, tele, auto, phono*), physical phenomenon that underlies the principle of operation (*electro, aero, thermo, photo, hydro, pneumo, turbo*; e.g.,*electro-radiometer, radio-tube*); 2) stems of French origin (*antenna-array, machine-cast, battery-cable*); 3) stems of Czech origin (robot-camera).

Figure five presents proportions of compound term-nouns in scientific and technical texts on electrical engineering according to functional coloring.

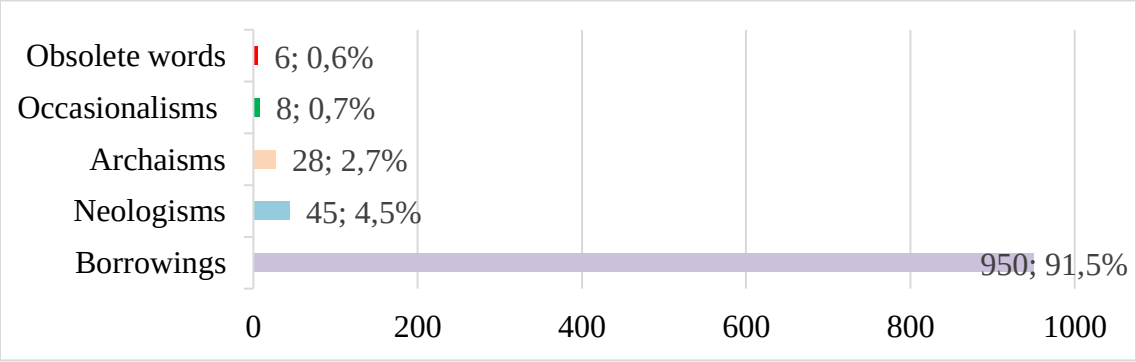

Figure 5. *Classification of Compound Term-nouns according to Functional Colouring: Quantitative Data*

It is evident from Figure five that in the electrical engineering texts prevalent are borrowings (950; 91,5%), while neologism (45; 4,5%) and archaisms (28; 2,7%) are less frequent. Infrequent are occasional (8; 0,7%) and obsolete (6; 0,6%) compound term-nouns.

Conclusion

This study focused on structural, semantic, and functional characteristics of compound term-nouns in electrical engineering texts.

The findings of the study show that English compound term-nouns in electrical engineering comprise seven micro fields: 1) names of devices and appliances (930; 46%); 2) names of parts of devices and tools (453; 23%); 3) names of processes, concepts, and phenomena (398; 20%); 4) names of objects and materials (98; 5%); 5) names of systems and mechanisms (50, 2,5%); 6)

names of units of measurement (40, 2%); 7) names of professions (1,5%). Each of the micro-fields is an open microsystem whose members bear relations with each other.

Concerning the degree of abstraction, compound term-nouns in electrical engineering are represented by abstract and concrete. The quantitative analysis results illustrate that the first group of nouns prevails (1583; 79%).

Concerning the degree of stylistic features, compound term-nouns are arranged into two groups, i.e., stylistically colored (69; 3,5%) and stylistically neutral (1931; 96,5%). Stylistically colored nouns in texts on electrical engineering have expressive or functional coloring. The category of expressiveness is an essential means of influencing the recipient that is actualized through the metaphorical components of compound term-nouns.

It has been specified that compound components of terms can obtain a specific, pragmatic potential, i.e., a set of semantic layers that depend on the communicative situation (time and place of communication, speaker's and recipient's communicative goals, age, social status, etc.).

According to the degree of frequency of compound term-nouns' usage, it has been found that the scientific textbooks are the main source of functioning compound term-nouns (69%), scientific articles are less effective (20%), and the least effective sources have been found instructions and contracts (9% and 2% respectively).

Because of functional coloring, lexical and semantic changes of compound term-nouns are expressed in five notions: neologisms, borrowings, occasionalisms, obsolete vocabulary, and archaisms. In texts on electrical engineering prevalent are borrowings (950; 91,5%), while neologism (45; 4,5%) and archaisms (28; 2,7%) are less frequent. Infrequent are occasional (8; 0,7%) and obsolete (6; 0,6%) compound term-nouns.

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