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### LEXICAL, STRUCTURAL AND SEMANTIC PECULIARITIES OF THE TERMINOLOGY IN H. G. WELLS' NOVEL "THE TIME MACHINE"

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*The article is devoted to the study of English scientific terminology and the identification of lexical, structural and semantic features of terms in Herbert Wells' novel "The Time Machine". Science fiction novels are full of terminological units which describe the latest achievements of mankind and depict future technologies. Highlighting mainly the scientific developments and technological advances, the science fiction novel under study is still relevant.*

*The bulk of science fiction vocabulary is naturally based on terminological lexis which expresses the concepts of different scientific processes and phenomena in detail. The study and functioning of terminological systems is under the umbrella of terminology studies which deal with special vocabulary in terms of its typology, origin, form, meaning, as well as its usage, classification and formation.*

*The analysed terms from different branches of science are an integral part of the science fiction novel "The Time Machine". They are perceived and described in their nominative meaning as specific details of scientific and technical processes and phenomena. Terms are constantly evolving and these changes are actively reflected in science fiction, increasing the role of terminological vocabulary in it. Herbert Wells' novel "The Time Machine" highlights a large group of scientific terminological vocabulary which is semantically related to the concepts of various social sciences – Maths, Physics, Chemistry, Biology, Geography, and Astronomy. The terminological vocabulary used in Herbert Wells' science fiction novel is characterized by simple terms (noun terms, adjective terms, verb terms, adverb terms) and complex terms.*

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**Keywords:** Herbert Wells, science fiction, structural type, simple terms, complex terms, terminological vocabulary.

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## ЛЕКСИЧНІ, СТРУКТУРНІ ТА СЕМАНТИЧНІ ОСОБЛИВОСТІ ТЕРМІНОЛОГІЇ В РОМАНІ Г. ВЕЛЛСА "МАШИНА ЧАСУ"

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Статтю присвячено дослідженню англомовної наукової термінології та виявленню лексичних, структурних та семантичних особливостей термінів у романі Герберта Веллса "Машина часу". Науково-фантастичні романи насичені термінологічними одиницями, які описують новітні досягнення людства та зображують технології майбутнього. Популярність науково-фантастичного роману зумовлена висвітленням наукових розробок та технологічних досягнень.

Основна частина науково-фантастичної лексики базується на термінологічній лексиці, яка докладно описує поняття різних наукових процесів та явищ. Вивченням та функціонуванням термінів та терміносистем займається термінознавство, яке досліджує спеціальну лексику з позиції її типології, походження, форми, значення, а також використання, класифікації та формування.

Проаналізовані терміни з різних галузей науки є невід'ємною частиною науково-фантастичного роману "Машина часу". Вони сприймаються та описуються у своєму номінативному значенні як конкретні деталі науково-технічних процесів і явищ. Терміни постійно змінюються, і це активно відображено в науковій фантастиці. У романі Герберта Веллса "Машина часу" проаналізовано велику групу наукової термінологічної лексики, яка семантично пов'язана з поняттями різних соціальних наук – математики, фізики, хімії, біології, географії та астрономії. Термінологічна лексика, використана в науково-фантастичному романі Герберта Веллса, виражена простими (терміни-іменники, терміни-прикметники, терміни-дієслова, терміни-прислівники) та складними термінами.

**Ключові слова:** Герберт Веллс, наукова фантастика, структурний тип, прості терміни, складні терміни, термінологічна лексика.

**Introduction.** The research of modern linguistic studies, which are devoted to the principles of lexical and semantic groups, are based on the doctrine of the systemic nature of vocabulary. This way of analysing such groups makes it possible to trace the ways of formation and lexical content of terms and the processes of their transformation into structurally organized complexes – terminological systems.

Terminological vocabulary is widely and variously used in works of fiction, particularly in the language of science fiction novels. With the development of science and technology an increasing number of lexical units that denote objects and phenomena, technologies and processes of various technical and scientific fields of knowledge are constantly enriching the language. Terminological units not only penetrate into scientific texts, but also appear in unusual spheres of their functioning – in works of fiction. Authors use terms in literary texts not only to describe certain

scientific phenomena, subjects of technical fields of knowledge, but also to express the characteristics of heroes, their preferences and occupations.

**Analysis of previous research.** The notions of term and terminology evoke great interest, mostly due to rapid development in technologies and the growth of social awareness of scientific issues. The number of linguists involved in studying terms and their lexical and semantic potential is constantly increasing (Condamines 2010; Budin 2001; Felber 2002; Kristiansen 2006; Vakulenko 2013).

There are different approaches to the definition of a term and in this article we appeal to Pearson's interpretation and view a term as a word or phrase which has been assigned an agreed meaning and has been officially approved and published in a standard [9: 23]. Not all terms are standardized; thus, non-standardized terms are worth including in a definition of a term, and according

to Pearson should be called subject-specific terms [9: 25].

In this research, the classification of terms is based on the findings of Dubuc [5] and Gaivenis [7]. The terms can be divided into two main groups – simple (consisting of one word with or without affixes) and complex (consisting of at least two words).

**The aim of the article.** The goal of the research is to single out and analyse lexical, semantic, and structural peculiarities of the terms in Herbert Wells' novel "The Time Machine" and to distinguish their functional potential for revealing author's intentions.

**Results.** The term is considered to be a verbal definition of a concept that is part of the system of concepts of a particular field of professional knowledge. Terms are the most changeable layer of the vocabulary of any language. In the special literature, they have the main semantic meaning and are essential elements; in fiction – terminological vocabulary is crucial for both creating the background and understanding the issues of the work. Author's aesthetic taste and skill determine the use of terms in their novels. Terms can perform certain stylistic functions in the texts. Terminological units also serve to vividly convey thoughts, to create a genuine

image. It is worth mentioning that the term acquires a special expression when the author uses it along with non-stylistic linguistic elements (for example, with colloquial and everyday words) for stylistic and expressive purposes. The frequency of terms use also depends on the genre of literature. For instance, the language of science fiction describes the latest achievements of mankind in the field of physics, astronomy, chemistry and others. It leads to the constant use of a significant number of terms in texts. Authors use terms in order to give a general idea of the facts of social, industrial, scientific and other activities depicted in novels.

Appealing to the division of scientific terminological vocabulary, presented in the monograph "Modern Ukrainian literary language. Vocabulary and Phraseology" [1], we agree that terms are often related to concepts used in various social sciences such as: Mathematics, Physics, Chemistry, Biology, Physiology, Zoology, Geography, Geology, Astronomy. Thus, in the studied novel "The Time Machine" the following semantically related groups of words are distinguished: biological, chemical, astronomical, technical, medical, geographical and mathematical ones. The statistical data of the usage of terms in the novel are presented in Table 1:

**Table 1.**

**The use of terminological units in the novel**

<b>Terms</b>	<b>Frequency of usage in the novel (%)</b>
Technical terms	14.7
Chemical terms	14.5
Astronomical terms	12.2
Biological terms	18.8
Medical terms	13.3
Geographical terms	8.8
Mathematical terms	17.7
<b>Total</b>	<b>100</b>

The number of technical terms used in the novel is high because the main character of the book tells his friends about the possibilities of time travel. He shows them a big vehicle, shares with them the principle of its operation and claims that he will definitely visit

different eras and return at the specified time. To do this, it was necessary to describe the principle of operation of the time machine in detail, and this presupposes the need to use technical terms in the novel. Such type of terms in general literary language is a natural and

usual necessity and the result of the development of science and technology. Herbert Wells describes his time machine and the principle of its functioning, so technical terminology is an integral part of the science fiction genre. The following lexical units make up the group of technical terms: *starting lever, invention, subterranean / underground ventilation, incandescent lights, machine, telephone, telegraph, velocity, drains*:

"I took the *starting lever* in one hand and the stopping one in the other, pressed the first, and almost immediately the second";

"That is what dismayed me: the sense of some hitherto unsuspected power, through whose intervention my *invention* had vanished";

"The fire burned brightly, and the soft radiance of the *incandescent lights* in the lilies of silver caught the bubbles that flashed and passed in our glasses";

"Putting things together, I reached a strong suggestion of an extensive system of *subterranean ventilation*, whose true import it was difficult to imagine" [10].

The given sentences exemplify the usage of the most vivid technical terms in the context under study. The technical terms in the language of science fiction is the result of the development of author's thinking under the influence of new technologies, so that his work does not lag behind the technical innovations of the time, but also ahead of them.

The novel is full of biological terms as the author tries to give the detailed description of imaginary worlds from the future with their inhabitants and environment: *organism, human race, fungi, minerals, mineralogy, bacteria, species, nocturnal Thing, daylight race, evolution, extinction, Ichthyosaurus, Brontosaurus, Megatherium, a fossil Belemnite, etc.*:

"I came out of this age of ours, this ripe prime of the *human race*, when Fear does not paralyse and mystery has lost its terrors";

<...> the inevitable process of decay that had been staved off for a time, and

had, through the *extinction* of *bacteria* and *fungi*...;

"It reminded me of a sepia painting I had once seen done from the ink of a *fossil Belemnite* that must have perished and become fossilized millions of years ago";

"I recognized by the oblique feet that it was some extinct creature after the fashion of the *Megatherium*" [10].

As it can be seen from the examples, some terms are easily understood even without any specific scientific knowledge (*human race, extinction, bacteria, fungi*), while the comprehension of others calls for further investigation of the subject (*Megatherium, a fossil Belemnite*). The usage of such terms doesn't interfere with the general understanding of the plot but gives the lively picture of the science fiction world.

Although chemical terms can make it difficult for readers who are not very familiar with chemistry to understand the text properly, without the use of these terms the author would not have been able to describe the various chemical processes in detail. We distinguish the following chemical terms in the novel: *molecule, atom, rust, sulphur, gunpowder, saltpeter, nitrates, nickel, chemical reaction, explosives, fermentation, camphor, paraffin wax, volatile substance, etc.*:

"This appeared to be devoted to minerals, and the sight of a block of *sulphur* set my mind running on *gunpowder*";

"I found no *explosives*, however, nor any means of breaking down the bronze doors";

"I fancied at first that it was *paraffin wax*, and smashed the glass accordingly. But the odour of *camphor* was unmistakable. In the universal decay this *volatile substance* had chanced to survive, perhaps through many thousands of centuries" [10].

The diversity of such terms contributes to the image of the main character – an outstanding scientist who is profoundly aware of chemical elements functioning.

The author utilizes a wide range of astronomical terms in his novel: *Milky Way, solstice, sun's disk, Mercury, Sirius, sun belt, planet, pole of earth, constellation, moonlight, etc.*:

"But the *Milky Way*, it seemed to me, was still the same tattered streamer of star-dust as of yore";

"Presently I noted that the *sun belt* swayed up and down, from *solstice* to *solstice*, in a minute or less...";

"Either the moon or the *planet Mercury* was passing across the *sun's disk*" [10].

Astronomical terms are perceived in the language of the novel "The Time Machine" quite naturally and contribute to the connotation of the title itself. Therefore, in the novel under study, the use of astronomical terminology plays a special role representing the individual style of the author, his thematic ideas and style of narration.

Like the above mentioned groups of terms, medical terms contribute to the general scientific atmosphere of the novel: *arteries, blood, retina, hypertrophied, preventative medicine, contagious disease, skeleton, skull, putrefaction, languor, nausea, etc.*:

"I won't say a word until I get some peptone into my *arteries*";

"And I shall have to tell you later that even the processes of *putrefaction* and decay had been profoundly affected by these changes";

"With the last twenty or thirty feet of it a deadly *nausea* came upon me";

"The ideal of *preventive medicine* was attained. Diseases had been stamped out. I saw no evidence of any *contagious diseases* during all my stay. And I shall have to tell you later that even the processes of *putrefaction and decay* had been profoundly affected by these changes" [10].

The main purpose of the author's nominative use of medical terms is creating the picture of the professional world and giving credibility to the images in the novel.

The geographical terms of the novel also include the units from geological

science: *surface of the earth, scale, bronze, granite, carbuncles, aluminum, quartz, rust, iron, lignite, etc.*:

"Even now, does not an East-end worker live in such artificial conditions as practically to be cut off from the natural *surface of the earth*?";

"I went through gallery after gallery, dusty, silent, often ruinous, the exhibits sometimes mere heaps of *rust* and *lignite*, sometimes fresher";

"There in the flickering light of the lamp was the machine sure enough, squat, ugly, and askew; a thing of brass, ebony, ivory, and translucent glimmering *quartz*" [10].

The analysis of this group of terms makes it clear that some units are marginal, that is they may belong to more than one scientific sphere – either Chemistry or Geology. This often depends on context and author's intentions to give readers the valid picture of the science fiction world.

As mathematics is a fundamental science and the basis for many other sciences, mathematical terms are often used in science fiction mostly for the most preserving its direct meaning: *mathematical line, mathematical plane, cube, direction, dimension, length, breadth, thickness, duration, figure, geometry, right angle, diagram, vertical line, etc.*:

"You know of course that a *mathematical line*, a line of thickness NIL, has no real existence";

"There is, however, a tendency to draw an unreal distinction between the former three *dimensions* and the latter, because it happens that our consciousness moves intermittently in one *direction* along the latter from the beginning to the end of our lives";

"*The geometry*, for instance, they taught you at school is founded on a misconception" [10].

The analysis of lexical and semantic peculiarities of terms is not complete without studying their structural characteristics in the novel. Appealing to the research of Gaivenis and Dubuc, the following classification is applied in this

article: simple and complex terms [5; 7]. Simple terms consist of one word with affixes or without them, while complex terms can be subdivided into terms consisting of two words and terms consisting of three words and more words [7].

The analysis of the simple terms in the novel made it possible to subdivide them into noun terms, adjective terms, verb terms, and adverb terms.

The noun terms form the largest group of simple terms. This structural group includes the lexical units from all above mentioned thematic groups. For example: *radiance, paradox, cube, direction, duration, dimension, diagram, barometer, velocity, surface, laboratory, bar, lever, nickel, quartz, arteries, rod, skull, switchback, dial, solstice, substance, vapour, molecule, atom, explosion, creature, machine, theory, blood, invention, telephone, telegraph, granite, aluminum, rust, moss, planet, catastrophe, camphor, wax, sulphur, gunpowder, saltpeter, nitrates, mineralogy, mechanism, evolution, hypothesis, underworld, race, retina, science, disease, putrefaction, decay, drains, ventilation, etc.*:

"Our mental existences, which are immaterial and have no *dimensions*, are passing along the Time-Dimension with a uniform *velocity* from the cradle to the grave" [10].

The group of adjective terms is characterized by the diversity of its units: *vegetarian, subterranean, preventative, contagious, biological, underground, nocturnal, educational, industrial, zoological, carnivorous, airtight, mechanical, transparent, leprous, etc.*:

"Plainly, this second species of Man was *subterranean*";

"The Morlocks at any rate were *carnivorous*!" [10].

Some adjectives are used only once in the novel and perform the descriptive function, while others are exploited several times to emphasize the peculiarities of the setting in the novel:

"I thought of the flickering pillars and of my theory of an *underground*

*ventilation*. <...> There were three circumstances in particular which made me think that its rare emergence above ground was the outcome of a long-continued *underground* habit. <...> There is a tendency to utilize *underground* space for the less ornamental purposes of civilization; <...> there are *underground* workrooms and restaurants, and they increase and multiply. <...> I mean that it had gone deeper and deeper into larger and ever larger *underground* factories, spending a still-increasing amount of its time therein, till, in the end! <...> Such of them as were so constituted as to be miserable and rebellious would die; and, in the end, the balance being permanent, the survivors would become as well adapted to the conditions of *underground* life..." [10].

The importance of the term *underground* in the novel can be justified also by the fact that it formed a new derived word:

"What had happened to the *Undergrounders* I did not yet suspect" [10].

It is obvious that verb terms play a significant role in the description of some technical, chemical, biological and other processes to create an accurate picture of scientific world in the novel "The Time Machine": *to deliquesce, to accelerate, to economize, to fossilize, to accumulate, to illuminate, to desolate, to decay, etc.*:

"He can go up against gravitation in a balloon, and why should he not hope that ultimately he may be able to stop or *accelerate* his drift along the Time-Dimension, or even turn about and travel the other way?";

"But I could find no saltpetre; indeed, no nitrates of any kind. Doubtless they had *deliquesced* ages ago" [10].

It was noticed that some lexical units, for example *decay*, may belong to different structural groups:

"The Eloi, like the Carlovingian kings, had *decayed* to a mere beautiful futility";

"I presently recognized as the *decaying* vestiges of books";

"<...> these would be vastly more interesting than this spectacle of old-time geology in *decay*" [10].

Such flexibility of the mentioned term enables the creation of the gloomy atmosphere of certain scenes in the science fiction novel.

Though the group of adverb terms is rather sparse, it still contributes to the formation of a convincing picture of scientific world, indicating different directions, movement, the nature of some phenomena: *vertically, physically, artificially, hermetically, etc.*:

"It was of white marble, in shape something like a winged sphinx, but the wings, instead of being carried *vertically* at the sides, were spread so that it seemed to hover";

"I found it in a sealed jar, that by chance, I suppose, had been really *hermetically* sealed";

"At intervals white globes hung from the ceiling – many of them cracked and smashed – which suggested that originally the place had been *artificially* lit";

"I judged, then, that the children of that time were extremely precocious, *physically* at least" [10].

The complex type of terms is formed as a result of combining several words that express a certain terminological concept. These lexical units are preferable when one word fails to render the essential features of the given scientific notion.

Two-word complex terms can be presented by the following combinations: noun + noun (e.g. *time traveller, time machine, Plane of Time*), adjective + noun (e.g. *mathematical plane, solid body, right angle, flat surface, experimental verification, starting lever, stopping lever, Jurassic times, Triassic Age*):

"So that it was the Psychologist himself who sent forth the model *Time Machine* on its interminable voyage";

"Its evil eyes were wriggling on their stalks, its mouth was all alive with appetite, and its vast ungainly claws, smeared with an *algae slime*, were descending upon me" [10].

Herbert Wells is the master of creating science fiction texts and the terms used in his works are characterized by rich lexical, semantic and structural diversity. That is why complex terms found in the novel consist not only of two words but also three and more elements. What is more, these terms are crucial for the composition of the novel as they contribute to generating the complete images of the characters and setting of the story. The most eloquent examples of such complex terms are: *Three-Dimensional representations, Four-Dimensioned being, higher educational process, an old-world savage animal, Age of Unpolished Stone*:

"All these are evidently sections, as it were, *Three-Dimensional representations* of his *Four-Dimensioned being*, which is a fixed and unalterable thing";

"And this same widening gulf – which is due to the length and expense of the *higher educational process* and the increased facilities for and temptations towards refined habits on the part of the rich...";

"It may be that he swept back into the past, and fell among the blood-drinking, hairy savages of the *Age of Unpolished Stone*" [10].

**Conclusions.** It is natural that the language of science fiction comprises a wide range of terms through which the concepts of different spheres of science are expressed, various processes and phenomena are described in detail. The study of terms and terminological systems are studied by way of analysing their typology, origin, form, meaning and functioning. In the article semantic, lexical and structural peculiarities of terms in the novel "The Time Machine" are studied. The terms singled out in the novel belong to such branches of science as Mathematics, Physics, Chemistry, Biology, Geography, Geology, Astronomy. The novel was written at the end of the 19<sup>th</sup> century – the period of rapid industrial development and this found its reflection in the book. The carried out analysis shows that medical, technical and chemical terms predominate in the

text. Structurally the terms from the book fall into two groups – simple and complex. The simple terms are represented by the noun + noun and adjective + noun structures. The complex terms comprise mostly two words but also some three and more word structures can be found. Further research presupposes the analysis of terms in the author's other novels and determinological processes in particular.

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