

**TILTM 2020**  
**Topical Issues of Linguistics and Teaching Methods in Business and Professional  
Communication**

**TERMINOLOGY IN SPACE SCIENCES**

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*Abstract*

This article analyzes the coinage and evolvement of linguistic and terminological expressions in the field of space sciences, as well as the correlation and interaction of lexical notions of different languages, which are a relevant and significant subject of research for present-day Russian and foreign engineers and students studying foreign languages. The present article emphasizes the urgency of studying space terminology in both Russian and English languages. The key reasons behind the importance of this specific terminology in modern-day space sciences are outlined. This paper also provides examples of terms which the English language has borrowed from Russian, and vice versa. In particular, the study cites a number of neologisms, which are currently actively utilized in the sphere of space research, such as microgravity, retrorocket, penguin suit, etc. Apart from that, the article considers such terms as space and cosmos, which have Latin and Greek origin respectively. For reference, this study provides information about space objects and phenomena, such as gravity, nebulas, planets, stars, the Universe, etc. According to the results of the research conducted, and particularly after studying the English-language articles, the most frequent methods of translating the English terms into Russian were revealed: replication, transcription, compression, and expansion. Finally, the article raises the issue of the expediency of a more in-depth study of space terminology in the Russian and English languages, which is conditioned by a limited number of educational materials devoted to this lexis.

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**Keywords:** Foreign languages, space sciences, cosmos, terminology of space sciences, etymology, linguistics.



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## 1. Introduction

Today we can observe the development of space research programs all over the world, but especially in Russia. The study of space is shifting to a new level, which creates the need to reconsider the significance of space for all sciences and humanity in general. The study of space terminology is an essential part of this research, since it may bring benefit to both the space industry and to the understanding of languages development in general.

## 2. Problem Statement

It is an undeniable fact that studying the terminology used in modern sciences is both relevant and necessary. The function of terminology is to provide a link between different areas of knowledge. This is particularly important since the English vocabulary **accurately** represents significant aspects of a certain kind of activity. In the sphere of terminology, two concepts are **considered** important: the first one is the establishment of communication in various problem situations, whilst the other one is the division of the field of concepts that are used in a particular area. Today, science is developing very rapidly, so it is necessary to pay greater attention to the scientific apparatus of different sciences, which should exchange information on various topics. Along with sciences, the terminology is developing too: its pace is synchronized with the development of new sciences and the elaboration of their research subjects. This research topic is relevant as the terminology used in space research is constantly evolving. Besides, it is a unique area of study, which is constantly updated and which is the basis for communication in the course of the space industry development.

## 3. Research Questions

The main questions of the present article are: the origin and evolution of space terminology in science, the interaction of different languages in creating and sharing precise lexical terms and neologisms.

## 4. Purpose of the Study

The purpose of this research is to reveal the features of translating English space terminology into Russian.

The object of the research is the English terminology, used in the space industry.

The subject of the research is the use of English terms in international communication practice during space exploration.

This study sets the following objectives:

- a review of literature on the given topic;
- an analysis of methods of use of English space terminology.
- a description of nuances in the translation of English and Russian terminology.

## 5. Research Methods

Research methods: analysis, synthesis, generalization, and the comparative method.

Research hypothesis: the English space terminology has particular characteristics when translated into the Russian language.

## 6. Findings

The concept of space has become the source of numerous neologisms that have entered our lives, and sometimes we may forget that it was also caused by the development of cosmonautics. Since Russia (earlier – the Soviet Union) has always been a leader in the development of space research, the country should have credit for providing a number of terms related to the mentioned topic. Words of Russian origin are found in all languages of the countries where scientists conducted, and still conduct, space research. A common example is space research in the United States. The English language has borrowed precise terms from Russian, such as sputnik, cosmos, cosmonaut, “lunokhod”, “planetokhod”. The English language, in turn, introduced terms with the root “space” that are now regularly used all around the globe. These include words like “spaceship”, “spacenic” – “spacecraft”, “spacefaring” – “flights to space” (which resembles “seafaring”), even if a number of neologisms such as “satellite” – “artificial satellite”, or simply “astronaut” emerged in the language as well. After testing the vehicle for traveling in space outside the spacecraft, the word “autolet” had such synonyms as space-bike and mini-bike (Tulenev, 2004).

A number of neologisms of space origin includes such terms as microgravity, zero gravity, aerocapture - “braking device of the spacecraft”, retrorocket - “returning rocket”, link up - “docking spacecraft”, cargo module - “cargo compartment of the spacecraft”, penguin suit - “spacesuit of the astronaut”, “stellar brothers - “cosmonauts sharing a space flight ” and others (Antipov, 2011).

We can therefore conclude that space has provided scientists with an opportunity to do much research in which specific terminology is being used; without this, it would be impossible to imagine the development of this type of industry. However, space is also a separate field of study, in which space objects have specific names. Since the birth of modern astronomy, it is known that the Earth revolves around the Sun. This discovery was officially made by N. Copernicus in the sixteenth century, in a time when people did not even think that one day spaceships would fly into space. With the use of spacecraft technology, people later made many discoveries that once were impossible to make without the presence of human activity in space able to set special equipment at orbital level. Nowadays, a large number of artificial satellites, shuttles, and other types of spacecraft (spaceships) are permanently located in space in orbits of different levels and explore both terrestrial surface and extraterrestrial space (to travel in the outer space) (Leychik, 2014).

It might be fair to say that today, humans feel a strong necessity to conduct research (exploration) in the field of location and movements of various space objects and to explore celestial bodies. In the field of cosmological scientific research, there is a debate about the existence of other universes (parallel universes), and, meanwhile, people especially want to know if it is possible to find anywhere an Earth-like life (intelligent life). In addition to this, cosmological problems include the question of the origin of the Universe, but scientists seem not to have reached a consensus on this matter so far. Besides, a large number of objects in space could make us assume that humanity is only at the beginning of its journey to study the Universe.

Objects in the universe have different properties. Among these objects, we can find nebulas, or mysterious objects that so far have been understudied: they are called black holes. There are various processes constantly occurring in the sky above the Earth: in fact, it is not as that calm as one might think. The sky is dotted with stars, and all year round, especially in August, one can observe high activity of objects like comets or asteroids.

The Solar system is different from those star systems that have already been sufficiently studied. For example, one of the distinguishing features of the Solar system is gravity. It has a great impact on all the celestial bodies within this system. For example, many satellites and other celestial bodies that one can find in the Solar system do not move randomly. Instead, their movements are ordered in a certain way, when these objects rotate around different planets and the Sun. Occasionally, celestial bodies, which have increased activity and certain movement patterns, collide with some obstacles and break into many parts, which are called meteoroids; we might be familiar with this phenomenon, as sometimes we have a chance to observe meteoroids' glow, as they enter the Earth's atmosphere. When it happens, they emit a bright light. Such objects are called meteors, or shooting stars (a shooting/falling star) (Features of translation of space terminology, n.d.).

The Universe where we live is undoubtedly large; however, it is not infinite. The Universe is an ordered set of celestial bodies, each of which moves in its own orbit, or trajectory. This allows us to consider the cosmos as a system in which most of interactions are well established. The English language represents in detail the nuances of such a phenomenon as space. The first example is the word Universe, which includes all the possible cosmic bodies and objects that we can think of.

The second word, which is equally important to the previous one, is space (outer space). This word comes from the Latin "spatium", which means space, or wide space. The use of this word has its own nuances, as it implies referring this term to everything that is outside the Earth's atmosphere, for instance objects such as planets, stars, asteroids, etc.

Another well-known word that is used as a synonym for the first two is "cosmos". This term comes from the Greek word "κόσμος", which sounds identically; this word means order, collectivity, and obeying objective laws. If none of the listed above is present, then we can talk about "χάος" (chaos), which is the antithesis of "κόσμος".

In terms of cosmology, we live in the Solar system with the Sun in its center. A characteristic feature of planets is that they move around (to orbit around) the Sun. All the planets of the Solar system can be divided into two types: the four terrestrial planets (inner/terrestrial planets) and the four giant planets (outer/giant planets). The terrestrial planets have such a name because their structure is similar to the one that the Earth has. In this regard, the structure of the Earth has rocks and metals. Mercury, Venus, Earth, and Mars (Gorelikova, 2002) are all terrestrial planets.

What seems interesting is, for example, that the density of Saturn is less than the density of water, and that the planet consists mainly of hydrogen and helium. The Earth has only one "natural" satellite that orbits around it: the Moon.

## 7. Conclusion

The study of English and Russian space terminology is of great importance in both its theoretical and practical aspects. Making such a statement seems to be fair due to an acute shortage of textbooks and dictionaries for specialists who use English and Russian space terminology in their professional environment.

The analysis of English-language articles helped to reveal different methods of transmission terms from English to Russian; the most frequent methods are those which in linguistics are known as replication, transcription, compression, and expansion; this is attributed to the fact that most terms in the field of cosmonautics are non-equivalent vocabulary.

Some of the widely used translation techniques, such as replication, have served as the basis for many different types of borrowings in cross-cultural communication. When translating a term from English to Russian, a translator should stick to the most optimal method after considering the structure of the translation language and the stylistic and communication specifics of the text.

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