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THE IMPACT OF HISTORICAL CONTEXT ON THE DEVELOPMENT OF MINING TERMINOLOGY

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Abstract

This article explores the historical development of mining terminology, focusing on the creation of a lexicographic resource - a dictionary of mining industry terms. It examines the professional and social speech units used in English, Uzbek, and Russian languages. From prehistoric times, humans have employed mining techniques to extract minerals from the Earth's surface, making it essential to understand the evolution of mining to fully appreciate the modern world we live in today. Mining continues to provide the fundamental resources that sustain contemporary civilization, underscoring its ongoing importance in both historical and modern contexts.

Keywords

mining terminology, mining industry, geological science, etymology of mining terms, professional language

INTRODUCTION

Mining is regarded as one of the earliest human activities, originating from the initial efforts to identify stones suitable for tool-making. Over time, it has evolved into a fundamental and crucial industry in the development of early civilizations, providing essential materials for construction, agriculture, and craftsmanship. As human societies advanced, mining played a pivotal role in the growth of trade and the establishment of urban centers. It also facilitated the rise of metallurgy, which became central to technological innovation and the production of weapons, tools, and infrastructure. As a result, mining has not only been integral to economic and cultural development but has also driven significant technological advancements, shaping the trajectory of human civilization from ancient times to the present day.

Since prehistoric times, humans have employed mining techniques to extract minerals from the Earth's surface. Understanding the history of mining is crucial to appreciating the modern life we enjoy today, as mining remains a vital industry, continuing to supply the basic resources essential for the functioning of contemporary civilization. Mining is central to numerous sectors, from construction

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to manufacturing, and plays a foundational role in the technological advancements that shape our world. The term "mining" in this context refers to the extraction of naturally occurring mineral substances, whether solid, liquid, or gas, from the Earth or other celestial bodies, for utilitarian purposes.

Historically, early mining activities were driven by the need for raw materials, such as flint for tools, precious metals like gold and silver, and later, coal and iron to fuel the rise of industrialization. As human societies developed, mining became more sophisticated, with the use of tools and techniques that allowed for the extraction of deeper and more diverse mineral deposits. Over the centuries, mining methods advanced alongside the technological innovations of each era, from the invention of the steam engine to modern-day automation and robotics.

DISCUSSION

Today, mining is not only focused on terrestrial resources but has expanded to include the exploration and extraction of materials from space, with increasing interest in mining asteroids and other celestial bodies. This broad and expanding definition of mining underscores its importance in both past and future human development, demonstrating its ongoing impact on technological progress, economic growth, and the sustenance of modern life. For example:

HUMANS' USES OF MINERALS

Need or Use	Purpose	Age
Tools and utensils	Food, shelter	Prehistoric
Weapons	Hunting, defense, warfare	Prehistoric
Ornaments and decoration	Jewelry, cosmetics, dye	Ancient
Currency	Monetary exchange	Early
Structures and devices	Shelter, transport	Early
Energy	Heat, power	Medieval
Machinery	Industry	Modern
Electronics	Computers, communications	Modern
Nuclear fission	Power, warfare	Modern

Mining, in its most basic form, began with Paleolithic humans approximately 450,000 years ago, as evidenced by the flint tools discovered alongside the remains of early humans from the Old Stone Age. These early humans extracted flint from loose deposits or easily accessible outcrops, utilizing primitive techniques of chipping and shaping the material into tools and weapons. As time progressed, by

the New Stone Age, humans advanced to underground mining, creating systematic openings that were typically 2 to 3 feet (0.6 to 0.9 meters) in height and over 30 feet (9 meters) deep.

The oldest known underground mine, a hematite mine at Bomvu Ridge in Swaziland, dates back to the Old Stone Age and is believed to be approximately 40,000 years old. Early miners employed rudimentary methods for ground control, ventilation, haulage, hoisting, lighting, and rock breakage. Despite the crude nature of these techniques, mining operations reached impressive depths of up to 800 feet (250 meters) by the time of the ancient Egyptian civilization. This historical progression highlights the significant advancements made in mining methods over time, laying the foundation for the complex mining techniques used in subsequent eras.

Mining's early practices, though rudimentary, played a critical role in the development of human societies, providing essential materials for tools, weapons, and trade. These early mining activities, combined with ingenuity and resourcefulness, ultimately paved the way for the sophisticated mining operations we see in modern times.

Uzbekistan's mining industry is deeply rooted in a rich historical background, dating back to ancient times. The presence of gold deposits in Central Asia, particularly within the territory of modern Uzbekistan, has long been recognized. Early references to the use of these gold deposits can be found in the writings of Greek scholars such as Herodotus and Strabo. These ancient Greek philosophers and historians documented the existence and exploitation of gold deposits in Central Asia, specifically within the region that is now Uzbekistan, highlighting the region's significance in the early history of mining and resource extraction.

Herodotus, often referred to as "The Father of History," in the fifth book of his nine-volume *History of the Greece-Iranian Wars*, noted that the peoples residing between the two rivers did not use gold and silver due to the abundance of gold in the region. In his writings, the ancient historian described the nomadic Massaget tribes, who inhabited the Kyzylkum deserts, stretching from the Aral Sea to Nurata, and highlighted that their ornaments were made of gold. He further reported, "They do not use iron or silver at all, but they are rich in gold and copper."

Strabo, the geographer who lived five centuries later, reiterated this observation, stating, "There is no silver in their land, nor iron, but plenty of copper and gold." The accounts provided by these early scholars regarding the gold and copper wealth in Western Uzbekistan have been corroborated by modern scientific evidence, reaffirming the accuracy of their observations over 2,500 years later. This historical confirmation underscores the long-standing importance of the region in

the development of ancient mining activities. [7, p. 17]

In modern society, nearly every aspect of life depends on minerals or mineral products, including base metals, precious metals, coking coal, iron sands, aggregates, limestone, and industrial minerals. These essential materials are crucial for a wide range of industries, such as construction, vehicle manufacturing, fuel production, electronics, communications, healthcare and dentistry, food production, and energy generation and transmission. Beyond meeting the mineral needs of modern society, mining plays a significant role in creating employment opportunities and is a direct contributor to economic prosperity.

Today, Uzbekistan's mining industry stands as one of the country's most vital and strategic sectors. The nation ranks among the largest global producers of gold and uranium, holding the ninth and seventh positions, respectively. Additionally, Uzbekistan produces a variety of other minerals, including copper, silver, coal, phosphate, molybdenum, potassium, tungsten, lead, and zinc. The Republic of Uzbekistan is recognized as one of the top five countries globally in terms of confirmed gold reserves and is also ranked among the top ten nations for gold production. Furthermore, Uzbekistan is a leading country worldwide in uranium reserves and mining. Key gold mining regions in Uzbekistan include the Kyzylkum, Samarkand, and Near Tashkent mining areas, which serve as major hubs for the country's gold mining industry.

Since the second half of the twentieth century, large-scale mining and metallurgical production has changed the industrial image of Uzbekistan. For example, the industrial development of the Kyzylkum desert districts necessitated the emergence of gold and uranium mining, where the construction of the Navoi Mining and Metallurgical Combine stimulated the development of the copper and lead-zinc industries.Uzbekistan became a leader in gold mining industry. Its first ingot was obtained in June 1969 at the Zarafshan gold mining plant. By the end of the 1980s, up to 50 tons of "yellow metal" were smelted annually in the Republic. The republic was the largest supplier of gold to the former USSR, supplying about 50% of the Union's gold.[7]

The rapid development of the mining industry and technology, the achievements of scientific and technological progress - all this has an impact on the emergence of mining terminology, which is an integral part of the progressing mining industry. Therefore, the study of special mining terminology is one of the most significant and urgent tasks, which is aimed at achieving adequate translations, contributing to the acceleration of the exchange of information in the field of the latest achievements in mining science among specialists and scientists in most developed countries.

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Having considered certain moments of the origin and formation of the Uzbek mining industry, one can come to the conclusion that it has deep historical roots.Yet the terminological system in this area is not sufficiently developed and studied by Uzbek linguists. Consequently, the main tasks of the work could be defined as following:

- To study mining terminology of foreign-language countries (English, Russian);
- To look through their historical origin and formation of mining terms;
- To analyze and compare etymological resources;
- To conduct lexicographic analysis of mining term;
- To compile English-Uzbek- Russian terminological dictionaries of mining terms.

An active start to the development of Russian mining industry was laid by Peter the Great in 1698 after returning from Saxony. Exactly then he met a mining expert - a mining foreman Enderlin and the ore maker Bluer, who were able to carry out successful mining and processing of minerals. Rapid development of the geological industry was also associated with the of Peter The first Decrees about the free activity of foreign miners. Such kind of approach to the development of the mining industry in Russia contributed to the active introduction of foreign concepts and definitions into Russian language. Among these borrowings, mainly there were definitions from German, Dutch and English.

The 19th century there was a huge leap forward in the study of geology; accordingly, terminology develops along with science. Progress and achievements appeared in geological science required new terms for designation. In1841 - 1843 the first "Mining Dictionary" was published in Russia, which included 3850 mining, geology, metallurgy, construction, physics, chemistry terms.

The last period of the development of the geological system of terms began at the end of the 19th century and continuous up to the present day. This period defined as the time of rapid technological progress that also implies the rapid development of mining terminology in Russian language.

The term "mining science" (горная наука), a key concept in the mining terminological system, was introduced into the Russian language by M.V. Lomonosov. In the mid-17th century, at the St. Petersburg Academy of Sciences, Lomonosov laid the foundations for national mining science, outlining its objectives for the era. He emphasized that "mining science teaches us to identify, locate, and refine minerals to a state that is beneficial to human society." As a result, the term "mining science" is attributed to M.V. Lomonosov. [6]

The history of English geological science dates back to 1815, when the English

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geologist William Smith created a large-scale map that depicted the geological composition of a vast region—the Geological Map of England and Wales. This map illustrated the rock layers identified based on the fossils contained within them. In 1822, through the study of the Carboniferous and Cretaceous systems, a new scientific field emerged—stratigraphic systematics. The primary divisions of the modern stratigraphic scale were officially established in 1881 during the 2nd International Geological Congress in Bologna. [6]

A significant portion of mining terminology across various linguistic systems consists of borrowed terms. This characteristic is common to almost all specialized terminological systems. Borrowing from other languages is a natural process in the development of terminology and professional language. This phenomenon fosters the internationalization of language, thereby contributing substantially to the expansion of the terminology used by different language groups.

In the development and formation of mining terminology, a significant number of terms have been borrowed from other languages. These borrowed terms form an important group of words that have entered the mining lexicon of a particular language, often accompanying new scientific and technical advancements in the industry. For example, the term "anchor" (***анкерное крепление*** – qoziqli mustahkamlagich) was introduced into English mining terminology from the German language. It originated from the practical application of the fixing process, where the fixing bolt was referred to as "anker," and was later adopted by other languages. Similarly, the term "aerage" (***вентиляция*** – shamollatish) was borrowed from the French word "aérage," where it is used with the same meaning. [4]

Many English mining termshave come into the use through the common language, for example the term ***drift*** **(**in modern English language***to drive*****)** appeared in 1300 in the meaning of driving and transformation. Since 1711 it is used in mining terminology in the meaning of mining production, in Russian language ―горная выработка‖, but in the Uzbek terminological dictionary of Russian –English mining terms it is given in a bit different way.

Russian	**English**	**Uzbek**
горная выработка	mine working [maɪn ˈwɜːkɪŋ]; opening [ˈəʊpənɪŋ]; entry [ˈentri]	Kon lahimi: Yer ostida qazish ishlar olib borilishi natijasida hosil bo‘lgan sun'iy g'or-yo‘lak.

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Today in modern Russian mining terminology instead of the term ***"горная выработка"***whichis used in the meaning of mining production, the specialists use the term ***"штрек"*** it coincides with the term ***drift*** in English mining terminology.

Russian	English	Uzbek
штрек	drift [drift] roadway [rəudwei]	Shtrek: Shaxtani shamollatish, yuklar va odamlarni tashish uchun xizmat qiluvchi yer yuzasiga bevosita chiqmaydigan gorizontal lahim.

Analyzing the two examples from the Uzbek terminological dictionary of Russian-English mining terms, we have identified two distinct forms of the term "drift." This phenomenon results in the creation of doublet terms, which, in some instances, can lead to confusion among specialists. Therefore, it can be concluded that Uzbek mining terminology is still underdeveloped and requires more in-depth investigation, despite its ancient origins.

Given the historical context outlined above, it is evident that the Uzbek mining terminology warrants further comprehensive research. Mining terms have been part of the Uzbek language since prehistoric times, and a thorough study of these terms is essential to better understand their evolution and usage in the modern mining industry.

Trade and transit routes played a crucial role in the origin and development of mining during the primitive period. By the third century BC, much of Central Asia was inhabited by local populations. During the Bronze Age, nomadic tribes dwelling in the deserts and steppes established closer connections with the settled communities of the oases. Historical sources indicate that long before the emergence of the Great Silk Road, several trade routes already existed across the Ancient East and Central Asia.

One such route during the Bronze Age (III-II millennium BC) was the Lozhuvard (lapis lazuli) road, which connected regions such as Badakhshan, Bactria, and Margiyana with Khorezm, the Sughd region, Central Kazakhstan, and the Urals. This route facilitated the exchange of valuable resources, including minerals, and played an essential role in the growth of mining activities across these regions. [7]

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Semi-precious stones mined in the mountains of Central Asia were highly valued in the East, consequently the discovery and expansion of valuable deposits of lapis lazuli, jade, onyx and turquoise served to the broader development of trade and exchange affairs. This means that the names of mining minerals such as lapis lazuli, jade, onyx and turquoise, which are the means of the mining terminology, had already existed in the common vocabulary of the Uzbek people in the era of the primitive communal system.

Russian	English	Uzbek
Лазурит- $Na_6Ca_2(AlSiO_4)_6(SO_4, S,Cl)_2$ также: *лазуревыйкамень,ля пис-лазурь* или *лазурик*[1], реже ***бухарский камень*** — сульфатсодержащий непро зрачный минерал от синего до голубовато-серого или зеленовато-серого цвета, подкласса каркасных силикатов.	**Lapis lazuli** (/ˈlæpɪs ˈlæzjʊli, - laɪ/), or lapis for short, is a deep- blue metamorphic rock used as a semi-precious stone that has been prized since antiquity for its intense color. As early as the 7th millennium BCE, lapis lazuli was mined in the Sari Sang mines, in Shortugai, and in other mines in Badakhshan province in northeast Afghanistan	**Lozhuvard** – (fors. – moviy), lazurit, lyapis-lazur – mineral. Kimyoviy tarkibi (Na, Ca)g[$AlSiO_6(SO_4$, Cl, S). Kubsingoniyadakristallan adi. Asosan, to‘q ko‘k, binafsha va ko‘kimtir-yashil-yaxlit, zich tusdagi mayda donador ma’salar ko‘rinishida, ba’zida kristallar holida uchraydi.

Summarizing the definitions of the given term, we can formulate the following general definition: *Lapis* is the Latin word for "stone," and *lazulī* is the genitive form of the Medieval Latin *lazulum*, which itself is derived from the Arabic *drawazāl* originating from the Persian *dravejāl* , the name for the stone in Persian and also a place where lapis lazuli was mined. Etymologically, *lazulum* is related to the color blue and serves as the root for the word for "blue" in several languages, including Spanish and Portuguese (*azul*).

Comparing the definitions, it is evident that the original form of the term "ложуврд" has been preserved in modern Uzbek mining terminology, having been borrowed from Arabic and Persian. This reflects the deep historical and cultural influences of these languages on the development of mining terminology in the region. Similar instances can be observed with a number of other terms, such as "gold," "diamond," "jade," and others, where the terms have been adopted into

Uzbek from various languages, including Arabic, Persian, and Turkish. These borrowed terms not only reflect the historical exchange of knowledge and goods but also highlight the linguistic evolution and cultural connections that have shaped the mining lexicon in Central Asia.

CONCLUSION

The process of forming specialized terminology typically occurs in two historically established stages: spontaneous and purposefully organized. The first stage is linked to the initial implementation and realization of professional and scientific practices within an industry, while the second stage corresponds to a more advanced level of development, involving systematic construction and refinement of terms. In both stages, however, it is characteristic that only those objects or concepts to which human activity is directed are named.

Given the rich historical background of the Uzbek mining industry, it is evident that a well-developed and comprehensive professional mining terminological system is essential. The dictionaries of English-Russian mining terms should encompass the units of professional language used by mining industry specialists, as well as more specialized terms and concepts employed by professionals in various sectors of the mining industry, including coal mines, quarries, open-pit mines, and underground construction projects such as tunnels and metro construction. This would ensure the terminology reflects the diverse aspects of the mining industry and meets the needs of specialists in these fields.

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