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THEORETICAL FOUNDATIONS OF TERMINOLOGY AND TERMINOLOGICAL SYSTEMS: DEVELOPMENT, SPECIALIZATION AND INTERRELATION

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Abstract Terminology constitutes an important component of the lexical system of a language and develops in close connection with scientific, technological, economic, and social progress. As new areas of human activity emerge and existing disciplines become increasingly specialized, their terminological systems expand and differentiate into narrower fields. This article examines the theoretical foundations of terminology, focusing on the concept of the term, the development and specialization of terminological systems, and the relationship between terms and the conceptual systems of particular fields. The study employs descriptive, comparative, and system-based approaches to analyze the views of Uzbek and international scholars, including V. P. Danilenko, J. A. Muna, S. Usmonov, G. O. Vinokur, R. Doniyorov, N. Uluqov, M. E. Umarxo‘jayev, Ya. A. Klimovitskiy, and V. M. Leychik. The analysis demonstrates that a term is not merely a specialized lexical unit but an element of a structured conceptual and terminological system. The development of technology, specialization of labour, interdisciplinary integration, industrialization, and advances in linguistics contribute to the expansion and branching of terminology. The study also shows that terms may belong to different parts of speech and can function as important indicators of scientific and technological development. The findings support a system-oriented understanding of terminology in which individual terms acquire their precise meanings through their relationships with other concepts and terms within a particular domain.

Keywords: terminology, term, terminological system, specialized vocabulary, conceptual system, terminological field, specialization, lexical development, interdisciplinarity

INTRODUCTION

The lexical system of a language is constantly developing under the influence of social, scientific, technological, and cultural changes. Terminology represents one of the most dynamic components of this system. As new objects, processes, technologies, and scientific concepts emerge, they require linguistic designation. Consequently, the number of terms increases

together with the development of human knowledge and professional activity. Terminological growth also contributes to the development of the general lexical system because some lexical units may function simultaneously as common-language words and specialized terms in particular fields.

The rapid development of technology in the twenty-first century has considerably accelerated this process. Technological innovations have entered almost every area of human activity, improving efficiency, saving time and resources, and changing professional practices. At the same time, they have introduced large numbers of new terms into specialized vocabularies. This development has created new tasks for terminologists, including the adaptation and standardization of new terms, their incorporation into national languages, classification of specialized vocabulary, and revision of terminological dictionaries.

An important characteristic of contemporary terminology is its increasing specialization. Large fields increasingly divide into narrower branches. Agriculture, for example, has developed specialized terminological areas related to soil science, seed production, plant science, agrochemistry, water management, agricultural engineering, cotton production, and sericulture. Such differentiation reflects the growing complexity of professional knowledge and the specialization of human activity.

Terminological branching is associated with several interconnected factors. One of them is the specialization of labour. As production processes become more complex, individual activities that were previously performed by one person increasingly require specialized professionals. Each professional area consequently develops its own conceptual and lexical field. Another factor is interdisciplinary integration. The interaction of information technology, chemistry, biology, engineering, and agriculture, for example, has contributed to the emergence of such hybrid fields as agrochemistry, agricultural information technology, and agricultural engineering. Industrialization has also stimulated terminological differentiation, particularly in sectors such as cotton production, where cultivation, mechanized harvesting, fibre and lint processing, and seed-oil production have developed into interconnected but increasingly specialized chains.

The concept of the term itself has been interpreted differently in linguistic scholarship. The word *term* originates from the Latin *terminus*, meaning “boundary.” In specialized communication, a term is generally understood as a word or word combination denoting a specific concept in science, technology, art, or another professional field. Qodirova (2019), for example, emphasizes the specialized and domain-restricted nature of terms.

However, terminology studies do not provide a single universally accepted definition of the term. Danilenko (1977) identified numerous definitions of the concept and related this diversity to differences among scholars and linguistic schools. From a lexicographic perspective, she considers terms to be part of the vocabulary of a language and indicators of the subject matter of particular scientific fields.

The present study therefore aims to examine the theoretical characteristics of terms and terminological systems, with particular attention to their development, specialization, systemic

organization, and relationship with conceptual structures. The following research questions guide the analysis:

1. What are the principal characteristics of a term as a specialized lexical unit?
2. What factors contribute to the development and branching of terminological systems?
3. How are terms related to the conceptual systems of particular fields?
4. Why should terminology be regarded as a structured and interconnected system rather than a simple collection of specialized words?

METHODS

The study employs a qualitative theoretical and comparative research design. It is based primarily on the analysis and comparison of linguistic definitions and theoretical observations concerning terminology presented by Uzbek and international scholars.

The source material includes works by Danilenko (1977), Qodirova (2019), Muna (2007), Usmonov (2007), Vinokur (1939), Doniyorov (1973), Uluqov (2016), Umarxo‘jayev, Klimovitskiy (1976), and Leychik (2009). The analysis focuses on recurring theoretical characteristics identified in these works, including specialization, conceptual precision, systemic organization, domain restriction, and the interrelationship of terms.

The analysis is organized around four principal dimensions:

1. Lexical-semantic dimension – the relationship between a term and the concept it denotes;
2. Systemic dimension – the relationship between individual terms and other elements of the same terminological system;
3. Functional dimension – the role of terminology in professional and scientific communication;
4. Developmental dimension – the influence of scientific, technological, economic, and social change on the emergence and differentiation of terminology.

Examples from agricultural and cotton-related terminology are used to illustrate the theoretical principles because these fields clearly demonstrate specialization, interdisciplinary integration, and terminological branching.

RESULTS

The analysis shows that the term possesses several interconnected characteristics. First, it denotes a specialized concept. Second, its use is associated with a particular field or professional activity. Third, it forms part of a larger conceptual and terminological system.

Muna (2007) emphasizes the relationship between a term and a scientifically defined concept. According to this approach, a term identifies a concept precisely and reflects the essential features that distinguish it from related concepts. Thus, a term is not simply a name but a linguistic representation of a scientifically organized concept.

The specialized nature of terminology can also be observed in its domain restriction. Uluqov (2016) defines a term as a word or word combination whose meaning is specialized and whose sphere of use is restricted to science, professional activity, or a particular field. At the same time, the boundary between general vocabulary and terminology is not always absolute. A lexical unit may function as an ordinary word in one context and as a specialized term in another.

For example, everyday lexical items may acquire specialized meanings in professional contexts. This demonstrates that terminological status is determined not only by the formal structure of a word but also by its function within a particular conceptual system.

A significant result of the analysis is that terminology can be regarded as a linguistic reflection of social and scientific development. Usmonov (2007) describes terminology as a “mirror” of its period because innovations in production, science, technology, and culture first receive linguistic expression through terms.

This relationship can be represented schematically:

Social and scientific change - emergence of new concepts - need for designation - creation/adaptation of terms - expansion of terminology.

Vinokur (1939) similarly argues that terms do not simply appear spontaneously; they are created when there is a communicative need to designate a new concept, object, or phenomenon.

Doniyorov (1973) further emphasizes the international and cumulative character of scientific terminology. Scientific and technical terminology represents the accumulated knowledge of different peoples rather than the exclusive product of one linguistic community. At the same time, newly created or borrowed terms are inevitably influenced by the linguistic and cultural characteristics of the language into which they enter.

The analysis indicates that specialization is one of the major mechanisms responsible for the expansion of terminological systems. As scientific and professional activities become more differentiated, broad terminological domains divide into narrower fields.

Agriculture provides a clear example. Its traditional conceptual field has gradually developed specialized branches such as:

- soil science;
- seed production;
- plant science;
- agrochemistry;
- water management;
- agricultural engineering;
- cotton production;
- sericulture.

This branching is not merely lexical. It reflects the differentiation of scientific knowledge and professional responsibilities.

Industrial development reinforces this process. Cotton production, for example, can no longer be viewed exclusively as the cultivation of cotton plants. It encompasses mechanized harvesting, fibre extraction, lint processing, seed processing, oil production, and related industrial activities. Each stage generates specialized concepts and consequently contributes to the formation of a specialized lexical subsystem.

Interdisciplinary integration is another major source of terminological development. The interaction of agriculture with information technology, chemistry, biology, and engineering produces hybrid domains and new terminological combinations. Thus, terminological systems are simultaneously becoming more specialized and more interconnected.

The analysis of Klimovitskiy's and Leychik's approaches demonstrates that a term cannot be adequately understood in isolation. Klimovitskiy (1976) defines a term as a word or expression associated with a corresponding concept within a system of concepts belonging to a particular field.

Leychik (2009) develops this systemic interpretation further by emphasizing two relationships: the concept designated by a term is connected with other concepts in the same conceptual system, and the term itself is related to other terms within the corresponding terminological system.

These relationships can be represented as:

Concept A - Concept B - Concept C and Term A - Term B - Term C

The two structures correspond to each other. A change in one conceptual relationship may therefore influence the organization of the associated terminology.

This systemic approach is particularly important for specialized fields such as cotton production. For example, the concepts of *seed*, *sowing*, *cultivation*, *harvesting*, *ginning*, *linting*, and *fibre processing* are not independent. They represent different stages or components of a larger technological system and consequently form interconnected terminological relations.

The findings indicate that the boundaries of terminology are both necessary and flexible. Terms require a certain degree of domain restriction to ensure precision in professional communication. However, contemporary scientific development increasingly produces intersections between fields.

Umarxo‘jayev emphasizes the broad application of terminology across medicine, technology, metallurgy, space science, information technology, linguistics, pharmacy, politics, sport, and culture.

This suggests that terminological boundaries should not be interpreted as rigid barriers. Rather, they represent areas of specialization that can overlap when scientific disciplines interact.

The following model summarizes the relationship:

Process	Terminological consequence
Scientific development	New concepts and terms
Technological innovation	Expansion of specialized vocabulary
Specialization of labour	Formation of narrower terminological fields
Interdisciplinary integration	Emergence of hybrid terminology
Industrialization	Development of process-specific terminology
Linguistic classification	Systematization of terminological fields

DISCUSSION

The findings support a system-oriented understanding of terminology. Although scholars differ in their definitions, several common characteristics can be identified: a term denotes a specialized concept, functions within a particular domain, has a relatively precise meaning, and is related to other concepts and terms in the same system.

One important theoretical implication is that terminology should not be treated as a simple list of specialized lexical units. The meaning of an individual term is partly determined by its position within a conceptual network. This is particularly important when developing specialized dictionaries or organizing terminology into semantic and functional groups.

The second important finding concerns the dynamic character of terminology. Scientific and technological development continuously generates new concepts, while specialization divides broad fields into narrower domains. The example of agriculture illustrates this process clearly. The emergence of cotton production as a specialized branch and its subsequent connection with engineering, chemistry, information technology, and industrial processing demonstrates that terminological development reflects changes in the structure of knowledge itself.

The third issue concerns the relationship between general vocabulary and specialized terminology. A lexical item does not necessarily possess permanent terminological status. Its function depends on context and domain. This supports the view that terminology should be examined not only structurally but also functionally.

The fourth issue concerns terminological systematization. As terminology expands, the number of relationships among concepts also increases. Without classification and systematization, conceptual overlap and practical confusion may occur. Therefore, the development of specialized dictionaries and terminological classifications is necessary for maintaining clarity within professional communication.

The systemic approach proposed by Leychik is particularly significant in this regard. If terms correspond to interconnected concepts, then terminological analysis should examine not only individual definitions but also hierarchical, associative, part-whole, process-result, and other relations among terms.

For terminology research, this approach has practical implications. When compiling a specialized dictionary, it is insufficient merely to collect words. The researcher should identify the conceptual structure of the field, determine relationships among terms, establish semantic boundaries, and distinguish core concepts from related or peripheral concepts.

Thus, terminology may be conceptualized as a dynamic system in which social development produces new concepts, concepts require linguistic designation, terms enter specialized systems, and the resulting systems are reorganized as knowledge develops.

CONCLUSION

The study demonstrates that terminology is a dynamic and systematically organized component of the lexical system. Its development is closely connected with scientific progress, technological innovation, specialization of labour, industrialization, interdisciplinary integration, and the development of linguistic theory.

The analysis of different scholarly approaches shows that a term should be understood as more than a specialized word. It is a linguistic representation of a particular concept within a structured knowledge system. Its meaning and function become clearer through its relationships with other concepts and terms.

The development of contemporary terminology is characterized by both expansion and specialization. Broad fields increasingly divide into narrower domains, while interdisciplinary interaction produces new hybrid areas. Agriculture and cotton production provide clear examples of this process.

The study further demonstrates that terminological boundaries are specialized but not completely isolated. Terms may move between general and specialized language, while different scientific fields may share or combine terminology. Consequently, terminological systems should be studied as dynamic networks rather than closed collections of words.

From a practical perspective, the systemic understanding of terminology is particularly important for specialized lexicography, terminology standardization, dictionary compilation, and the organization of scientific and technical resources. Identifying conceptual relationships among terms can improve the accuracy and usability of specialized terminological dictionaries and contribute to the systematic study of emerging fields.

In conclusion, terminology functions simultaneously as a linguistic, conceptual, communicative, and historical phenomenon. Its development reflects the evolution of human knowledge and professional activity, while its internal organization provides a linguistic representation of the conceptual structure of specialized domains.

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