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Terminology and Specialized Languages: - A Study on Importance and Fundamental Concepts -

Dr. Abdelmajid Kedideh [1]

[1]: University of Muhammad Al-Bashir Al-Ibrahimi- Bordj Bou Arreridj (Algeria). abdelmadjid.kedideh@univ-bba.dz

Abstract:

Terminology is considered one of the fundamental modern concepts in the field of linguistics in general, and lexicography in particular. It seeks to establish stable rules and precise standards for contemporary scientific and technical terms to benefit the Arabic language in its scientific expressions. This discipline—terminology—can be viewed as an interdisciplinary field, as it is linked to various sciences (logic, semantics, translation, etc.). It addresses how terms are formed and generated, and it focuses on their representation in general and specialized knowledge structures. Terms are, as we know, the keys to all sciences and the gateway to accessing them. Given their importance, it is essential to have specialized languages that express these scientific terms with precision and specificity.

Based on this general premise, this paper aims to elaborate in detail the significance of terminology and its position within specialized languages, as well as the relationship between them.

Keywords: Terminology; Terminology Science; Specialized Languages; Scientific Languages.

Introduction

Terminology is considered one of the fundamental modern concepts in the field of linguistics in general, and lexicography in particular. It aims to establish stable rules and precise standards for contemporary scientific and technical terms to benefit the Arabic language in its scientific expressions. This discipline—terminology—can be viewed as an interdisciplinary field, as it is linked to various sciences (linguistics, logic, ontology, epistemology, semantics, translation, etc.). It addresses how terms are formed and generated, and it focuses on their representation in general and specialized knowledge structures. Terms are, as we know, the keys to all sciences and the gateway to accessing them. Given their importance, it is essential to have specialized languages that express these scientific terms with precision and specificity.

In addition to being a field that examines the relationship between scientific concepts and linguistic terms, terminology is not an independent science like others. It focuses on various sciences with which it is related, as previously mentioned. Specialists in sciences and technologies, translators, and those responsible for language planning (local, national, and global) benefit from the results of this specialized science. Furthermore, its results also

Corresponding Author e-mail: abdelmadjid.kedideh@univ-bba.dz

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contribute to the advancement of translation, the transfer of science and technology, and their development.

Based on these premises, this paper aims to define the position of terminology within specialized languages and the relationship between them. Before delving into this relationship, it is necessary to define terminology, determine its scope, and highlight its importance as these are crucial aspects of the research since understanding terms is half of the science.

I. Fundamental Concepts of Terminology Science:

1. Definition of Terminology Science:

One researcher defines it as "the scientific study of concepts and terms expressed in specialized languages; its purpose is to produce specialized dictionaries, and its goal is to provide precise scientific and technical terms that facilitate the exchange of information and the dissemination of knowledge. Therefore, it is considered an essential element of language planning. The modern scientific and technical renaissance required new terms to express its concepts because the language of science crucially depends on terminology" (Khasara, 2008, p. 14).

With the explosion of scientific revolution and the abundance of terminological resources, and the growing need for more, terminology has become a significant area of study within the field of applied linguistics (Khasara, 2008, p. 15). It is considered "one of the latest branches of applied linguistics that deals with the scientific foundations of terminology creation and standardization" (Hegazi, 1986, p. 62). Foster identified the role of terminology within branches of knowledge as a field that connects linguistics with logic, ontology, information science, and various other branches.

Terminology, like other linguistic sciences, is divided into General Terminology and Specialized Terminology. The former addresses the nature of concepts, conceptual systems (definitions and explanations), the nature of terms and their possible relationships, term abbreviations, relationships and symbols, standardization of concepts and terms, international terminology keys, terminology dictionaries, intellectual entries, and word entries, among others (Hegazi, 1986, p. 63).

The latter, Specialized Terminology, refers to "the specific rules for terms in a particular language, such as Arabic or French" (Hegazi, 1986, p. 63). This distinction between General Terminology and Specialized Terminology parallels the distinction between general linguistics and specific linguistics (general linguistics versus applied linguistics).

2. The Scope of Terminology Science

The scope of terminology science is extensive because it is "a field that intersects linguistics, logic, ontology, epistemology, documentation, and various scientific disciplines... Therefore, Russian scholars refer to it as the 'science of sciences'" (Hegazi, 1993, p. 23).

3. Importance of Terminology

The importance of terminology lies in its role as the keys to sciences, as expressed by Al-Khwarizmi. It is said: "Understanding terminology is half of science, for a term is a word that represents a concept, and knowledge consists of a set of concepts interconnected in a systematic form" (Hegazi, 1993, p. 20).

4. The Nature of Terminology

In philosophy, logic, and other fields, the term "nature" often refers to that which is understood or conceptualized. "What is conceived by humans is the speaking animal, regardless of external existence; what is conceived in terms of its answer to 'what is it?' is called 'nature,' while its existence in the external world is termed 'reality,' its distinction from others is termed 'identity,' its essential characteristics are termed 'essence,' its implication from language is termed 'denotation,' and its role as the locus of events is termed 'substance'" (Al-Jurjani, 1983, p. 195).

As for the nature of a thing, it is said: "It is that by which a thing is itself; and as it is itself, it is neither existent nor non-existent, neither universal nor particular, neither specific nor general" (Al-Jurjani, 1983, p. 195). The term 'nature' is attributed to 'what,' and the original term is 'mā’iyya,' with the 'hamza' transformed into 'hā' to avoid confusion with the source derived from the term 'what.' It appears to be related to 'what is.'

5. Concept versus Term

A concept is an idea or mental image formed through the cumulative experiences an individual undergoes—whether direct or indirect. For example, the 'correct concept' of 'prayer' is formed through the learner's experience acquired in various educational stages and through performing the prayer correctly. Similarly, the concept of 'spending' is developed from the knowledge presented in Islamic education curricula and through various life situations. Each concept has a set of attributes and characteristics that distinguish it from others. For instance, the concept of 'zakat' differs from the concept of 'hajj' (Khidr, 2024, p. 155).

Thus, a concept differs from a term in that the concept focuses on the mental image, whereas a term emphasizes the verbal representation of the concept. Moreover, a concept precedes a term; every term represents a concept but not vice versa. It is crucial to note that a concept is not a term; rather, the concept is the content and meaning of the term in the learner's mind. Consequently, the definition of a word or term is the verbal representation of the concept.

3. Between Meaning and Concept

In linguistics, meaning is the mental image associated with a term, while a concept, according to logicians, refers to what can be apprehended in the mind. In other words, both meaning and concept refer to the mental image, but "Tahanawi" in his lexicon differentiates them based on intent. He states: "Insofar as the image is intended by the term, it is called meaning; whereas, insofar as it exists in the mind, it is called concept. This distinction prevents confusion between the terms concept and meaning, where every meaning is a concept, but not every concept is a meaning" (Tahanawi, 1996, p. 129).

4. Between Word and Term

A word that denotes a concept is not called a term; it is simply called a word. Several ways to differentiate between a word and a term are outlined (Khidr, 2024, p. 155):

a. A word is referred to as "meaning," while a term is referred to as "concept."

b. A word belongs to general language, whereas a term belongs to specialized language, such as the scientific or technical language of a specific knowledge domain. For instance, the term "water" in the sentence "I felt thirsty, so I drank water" pertains to general language. However, in a chemistry lesson where it is stated, "Water consists of two hydrogen

atoms and one oxygen atom," the term "water" functions as a specialized term within the scientific language of chemistry.

We cannot precisely define a concept unless we specify its position within the conceptual system of the scientific domain to which it belongs. "Concepts are organized into conceptual systems that provide them with meaning and significance. For example, the phrase 'yellow light' in isolation pertains to general language; however, when 'yellow light' is integrated into a known system, it becomes a symbol or term for a specific concept. When we place red, yellow, and green lights in a specific arrangement at an intersection, we have a traffic signal system, and each light has its specific meaning. This falls under a broader conceptual system or field, which we might call the traffic system or transportation field" (Khidr, 2024, p. 155). Such examples are numerous.

5. Types of Definitions in Terminology Science

There are three types of definitions mentioned in several academic studies (Tama'i, 2014, p. 14):

a. **Linguistic Definition**: Some refer to this as a relational definition because it clarifies the meaning of a word within its linguistic context, specifically through its relationships with other words in a sentence. For example, the word "eye" has different meanings in the following sentences: "He looked at his situation with an eye of compassion" and "He drank water from a spring." The first instance denotes mercy, while the second indicates a source of water.

b. **Logical Definition**: Some call this a substantial definition because it aims to determine the essential characteristics of a thing or entity, rather than the term that denotes it. This type of definition can be formulated in one of two ways:

- **Definition by Genus and Difference**: This defines the type of the defined thing and its distinguishing characteristics. For instance, defining a human as "a rational animal" involves specifying the genus (animal) and the distinguishing characteristic (rationality), which differentiates humans from other animals. These are the essential characteristics of humans as a species.
- **Definition by Description**: This includes both essential and non-essential characteristics of the defined thing. For example, defining a human as "an upright animal that walks on two legs, hears, and speaks" uses a descriptive definition.

c. **Terminological Definition**: This does not define the term itself nor the thing denoted by the term, but rather the concept or mental image of the thing. This concept consists of the logical and existential characteristics shared by a group of objects. For example, the concept we have in our minds of a car does not represent a specific model like a blue Mercedes or a red Peugeot, but rather the common characteristics shared by all such cars. This is what is referred to as the concept in modern terminology science.

Second: Terminology Science and Specialized Languages

Languages used to express the content of scientific disciplines are described as specialized languages or languages of specialization. These terms are synonymous in that they denote the specialization of these languages in specific scientific fields (Hegazi, 1993, p. 23).

Since terminology is the gateway to science, as confirmed by Abdel Salam Al-Massadi's assertion, "The keys to sciences are its terminologies," it is essential for these languages to

use methods that include scientific terms. These specialized languages are also characterized by specific scientific features, including:

a. Characteristics of Specialized Language:

1. Precision:

Precision is a defining feature of the cognitive content of specialized language before it characterizes the language itself. For languages in fields such as science, law, economics, or technology, there is no room for lexical ambiguity or synonyms; the goal is to convey content, not form, with a single term for a single concept. Scientific terms in specialized languages follow a form of deliberate generation based on standard principles, such that each term represents a single concept within a field, and one concept is not represented by multiple terms within a given scientific domain. Literary language, on the other hand, does not require this level of precision and often embraces it, as poetry, for instance, seeks to break away from conventional linguistic patterns and innovate new uses of words, which we refer to as linguistic creativity.

2. Simplicity and Clarity:

Simplicity and clarity imply avoiding obscure, ambiguous terms, and figurative language such as metaphors, similes, and allusions that open the door to multiple interpretations. The language of science is devoid of imagination and poetic elements. Simplicity and clarity in scientific texts encompass all known linguistic levels: lexical, morphological, syntactic, semantic, rhetorical, and others. Scientific researchers aim to convey their messages in a straightforward and clear manner, free from complications or rhetorical embellishments.

3. Objectivity :

Objectivity is a feature where scientific phenomena and facts are presented independently of the author's or translator's personal desires. It describes facts as they are, free from personal impressions, biases, or emotional responses. General language often expresses individual desires, fantasies, and emotions, while specialized language conveys concepts related to external entities. Thus, general language is closer to the self, whereas specialized language is closer to the objective subject.

4. Conciseness:

Conciseness refers to the reduction of content to its essence, using the minimum number of words possible to convey the concept effectively. Some scholars argue that conciseness in terminology is achieved through symbolic representation, where symbols promote standardization and widespread use but are less clear than terms. The principle of conciseness falls under the broader principle of linguistic economy, which means expressing scientific content with the least number of words without compromising meaning. Both terminology and definitions, as well as the text itself, are subject to this principle.

Third: The Role of Terminology in Specialized Languages

Discussing the role of terminology within specialized languages, according to Ali Al-Qasimi, "involves several issues aimed at uncovering the relationship between terminology and all components of specialized language. It highlights the central role of terminology in distinguishing specialized linguistic systems from general linguistic systems, as terminology is

considered the foundation of that distinction. The position of terminology in specialized language can be examined from the following levels" (Al-Qasimi, 1995, p. 120):

1. Lexical Level:

The position of terminology within specialized language can be identified as representing its lexical aspect. Terms are the verbal assets that provide specialized language with the necessary words to name and connect concepts within a specific knowledge system. However, there is no variation or distinction between terms within the lexicon; they are linguistic indicators for naming concepts. The value and degree of specialization of a term are granted by its use within the specialized linguistic system.

2. Semantic Level:

The most significant feature of the relationship between terminology and specialized language at the semantic level is the influence of the principle of univocality on specialized language. This principle drives the language away from being a subset of natural language by establishing a one-to-one relationship between term and concept.

3. Contextual Level:

"Context plays an important role in specialized language by highlighting how a term is used in scientific texts, defining its meaning, and its relationship with adjacent terms. However, in classical terminology science, texts in specialized languages were merely fields for designating terms and classifying concepts, regardless of how the term was used" (Suhaila, 2005, p. 43). Context refers to the phrase in which a term appears within the text. We distinguish between three types of context based on the term's position:

- Descriptive Context: In this context, the term serves as a descriptive or defining tool.
- Definitional Context: Here, the term occupies the position of the described entity.
- Meta-descriptive Context: Focuses on describing the term from a morphological perspective, its referential form, usage, or its relationship to other terms. "We can assert that terms play a crucial role in specifying the language of specialization and in classifying various specialized languages, which are distinguished primarily by their lexicon and general semantic features" (Al-Atrash, 2012, pp. 9-13). Thus, context, in its various forms, is essential for determining the meaning of a term within different specialized languages, establishing a relationship of mutual dependence between them.

Fourth: General Language vs. Specialized Language

Ibn Jinni defined language as "sounds by which every people express their intentions." The primary purpose of language use is communication, conveying information, and expressing needs and desires. Since language is used within society in diverse environments and by groups of varying levels, it is influenced by these environments and levels. This influence results in various linguistic types, including regional dialects (e.g., Algerian, Tunisian, Iraqi, Egyptian, Moroccan) and social levels (e.g., language of the upper class, middle class, lower class), as studied by American linguist Charles Ferguson in his work on diglossia.

"A language that contains many specialized terms or scientific and professional terms can be termed a specialized language. Some linguists refer to it as a language of specific purposes to distinguish it from general language, which is used for various everyday life purposes. Others call it sectorial language because it is used in a specific sector of life, with

terms related to the scientific field it encompasses" (Authors, n.d., p. 219). In other words, each scientific field has its own specific terminology.

The Prague School of Linguistics preferred to discuss linguistic functions rather than purposes, defining four types of language, each with a different function:

- Everyday Language: Serves a communicative function.
- Technical Language: Serves a practical, technical function.
- Scientific Language: Serves a theoretical/technical function.
- Literary Language: Serves an aesthetic function (Estitiyah, 2008, p. 382).

"Each type of language is characterized by a specific style: general language has a communicative style used for daily life interactions, literary language has an aesthetic style used in poetry, prose, and other literary genres, scientific language has a practical style used for documenting research results, and technical language has a professional style used for creating guidelines and professional instructions. The difference between scientific and technical languages lies in their level of abstraction and thinking; scientific language tends to be more theoretical and abstract, while technical language focuses on practical applications" (Hegazi, 1993, p. 23).

This distinction between the aforementioned linguistic systems becomes more pronounced during linguistic communication and daily use, leading to the emergence of aesthetic, functional, and technical levels in actual language use.

Conclusion

In summary, terminological science examines the relationships between intertwined concepts that materialize as conceptual systems forming the foundational framework for the creation of classified and specialized terminologies representing these concepts. In this sense, terminological science is a specialized branch of logic and ontology. However, if terminological science investigates linguistic terms and their relationships with the means of their formulation and representation systems within a particular field of study, it becomes a specialized branch of lexicology and semasiology (the study of the evolution of word meanings). Furthermore, if terminological science explores the general methods leading to the development of specialized scientific languages, it becomes an interdisciplinary field encompassing linguistics, semantics, logic, epistemology, informatics, and specialized topics.

Thus, the relationship between terminological science and specialized languages is based on the principle of co-dependence—there are no specialized terms without specialized languages, and no specialized languages without specific terms.

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