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LEXICOGRAPHY IN IT&C: MAPPING THE LANGUAGE OF TECHNOLOGY

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ABSTRACT:
THIS PAPER INVESTIGATES THE DYNAMIC EXPANSION OF VOCABULARY IN THE INFORMATION TECHNOLOGY AND COMMUNICATIONS (IT&C) FIELD, EXPLORING THE INTRICATE PROCESSES INFLUENCED BY TECHNOLOGICAL PROGRESS, RESEARCH, COLLABORATION, USER EXPERIENCES, STANDARDIZATION EFFORTS, EDUCATION, AND MEDIA DISSEMINATION. FOCUSING ON 50 IT&C TERMS, THE STUDY ASSESSES THEIR REPRESENTATION IN GENERAL ENGLISH DICTIONARIES, EMPHASIZING THE VITAL ROLE DICTIONARIES PLAY IN STANDARDIZATION AND ACCURATE COMMUNICATION. THE ARTICLE OFFERS INSIGHTS INTO THE ROLE OF DICTIONARIES IN FACILITATING INTERNATIONAL COMMUNICATION AND THE DETERMINOLOGIZATION OF SPECIALIZED TERMS IN BROADER LINGUISTIC CONTEXTS. THE ANALYSIS DELVES INTO THE DEFINITIONS OF THESE TERMS IN MERRIAM WEBSTER DICTIONARY AND CAMBRIDGE DICTIONARY, EVALUATING THEIR CLARITY, ACCURACY, AND ACCESSIBILITY FOR NON-EXPERTS AND NON-NATIVE SPEAKERS. FINALLY, IT EXPLORES LINGUISTIC FEATURES, INCLUDING NEOLOGISMS, COMPOUND NOUNS, AND POLYSEMY, HIGHLIGHTING THE EVOLVING NATURE OF LANGUAGE IN RESPONSE TO TECHNOLOGICAL INNOVATIONS.

KEY WORDS: IT&C TERMS, DICTIONARY ENTRIES, DETERMINOLOGIZATION, DEFINITIONS, LINGUISTIC OVERVIEW

INTRODUCTION

The expansion of vocabulary from the field of Information Technology and Communications (IT&C) is a complex process shaped by various factors such as technological progress, research, collaboration, user experiences, standardization efforts, education, and media dissemination. Ongoing advancements in technology drive the creation of novel devices, systems, and processes. As these technologies emerge, new terms and terminology are coined to describe and define them. Many terms that describe IC&T technologies, for example, *smartphone, social media platforms, QR codes, online shopping platforms, video streaming, search engines, video calling apps, smart home devices* have become familiar to the public due to their widespread use in everyday life. The collaborative nature of open-source development accelerates the creation of new software and tools, with corresponding terminology. Consequently, the development of industry standards and regulations entails the establishment of standardized terminology. Researchers exploring and

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innovating in the field introduce new terms to highlight their findings and inventions. Likewise, students learning about emerging technologies become acquainted with the associated terminology, carrying this knowledge into the workforce. International collaboration, bringing together diverse perspectives, frequently leads to the creation of universally accepted terms. Ultimately, the adoption of specific technological terms can be influenced by popular culture, including movies, TV shows, and media coverage.

Since many of the terms represent very specific IT&C concepts that are predominantly used in expert-to-expert communication, we do not expect the general language dictionaries to contain all. The following analysis is based on a list of 50 terms denoting technology tools, technology devices and terms referring to social media communication, advanced technology and cybersecurity. In order to be as specific as possible, I should mention that the selected terms are classified as belonging to the field of IT&C based on the concepts they refer to. This may sound obvious, but some of the lemmas have more than one meaning and only the meaning connected with IT or involving computers and communications is relevant.

Firstly, I check if the selected terms have entries in two internationally well-known dictionaries of English, the Merriam-Webster Dictionary and the Cambridge Dictionary. These dictionaries are relevant objects of study because they cover a significant part of the international lexicographical panorama. Secondly, I compare the definitions of the terms with entries in both dictionaries to see if the explanations allow non-expert and non-native users to understand the meaning of the terms and to distinguish the IT&C words from other words. Thirdly, I make a linguistic overview of the terms to highlight the dynamic nature of language in response to the technological innovations.

SPECIALIZED TERMS IN GENERAL ENGLISH DICTIONARIES

Dictionaries serve as invaluable cultural and historical documents as they capture the language used during specific periods and provide insights into the development of technology and scientific knowledge throughout history. Languages evolve continually so the inclusion of technical terms in dictionaries is paramount. Moreover, dictionaries play a crucial role in language standardization, particularly when dealing with technical terms and abbreviations. This standardization is essential for effective communication and helps eliminate confusion arising from inconsistent terminology, particularly when technical terms carry specific meanings within particular contexts. The examination of dictionary functions becomes crucial when assessing the information contained in dictionaries, as these functions significantly influence all practical decisions, encompassing choices of lemmas, data types, and presentation methods, as argued by [1]. This author emphasizes the importance of understanding the dictionary functions by referencing Bergenholtz and Tarp's succinct definition of dictionary functions as the "satisfaction of the specific types of lexicographically relevant needs that may arise in a specific type of potential user in a specific type of extra-lexicographical situation."[2]

Most dictionaries stay abreast of the ever-evolving vocabulary across diverse fields, including technology, science, and industry thus reflecting the dynamic nature of language. For example, by defining and incorporating IT&C terms, Merriam-Webster Dictionary and Cambridge Dictionary contribute to the establishment of universally accepted language usage and ensure that the technical terms and abbreviations are accessible to a wide audience and that their meanings are articulated with utmost clarity. This inclusivity fosters a broader comprehension of these terms among diverse audiences, including the public, students, and professionals from unrelated disciplines.

As for the educational and research settings, dictionaries serve as indispensable tools, providing essential support to students and educators in ESP contexts, and researchers. For example, a teacher can use the dictionary to show and practise in class the pronunciation of the respective words, to present the various meanings of words through the examples provided for each meaning or to highlight important aspects related to the spelling influences of a word. For example, one can find in the Merriam-Webster Dictionary useful information about a word and a warning message, urging the readers to be cautious: "the *ph* spelling of the word *phishing* is influenced by an earlier word for an illicit act: *phreaking*. *Phreaking* involves fraudulently using an electronic device to avoid paying for telephone calls, and its name is suspected of being a shortening of phone freak. A common phishing scam involves sending emails that appear to come from banks requesting recipients to verify their accounts by typing personal details, such as credit card information, into a website that has been disguised to look like the real thing. Such scams can be thought of as fishing for naive recipients." [3]

In the context of an increasingly globalized world, the inclusion of IT&C technical terms in dictionaries becomes instrumental for fostering international communication. This incorporation serves as a reference point for individuals whose primary language may not be English or who may not be familiar with specialized jargon. It also facilitates a shared understanding among students who participate in exchange or mobility programs and among professionals who collaborate across borders, contributing to global communication.

The transfer of terms in widely circulated texts and contexts involves a process of determinologization of the specialized meaning in different degrees [4]. Several researchers admit that some terms are subject to determinologization through wider use, beyond the strictly specialized discourse. Numerous examples of technical terms used in the online environment are characterized by different degrees of determinologization, which cannot be totally separated from the strict core of the specialized meaning such as *applet, captcha, cryptography, hyperlink, multitasking*, etc. The determinologization model put forth by Meyer and Mackintosh is presented by [5] in a comprehensive study on determinologization in the dictionary. The model outlines a two-fold manifestation, as follows:

- Retention of the fundamental domain sense. This occurs when individuals outside the expert community who use a term still refer to the same concept, albeit with a shallower understanding. Additional connotations may be infused into the meaning, as exemplified by the instance of "peroxide", where laypersons might associate this chemical with "hair coloring."
- Dilution of the original domain sense. This involves the word no longer refers to the original scientific concept, or the lay individuals using it do not intend to do so, although some connection to the original field persists. For instance, the medical term "anorexic" is employed with the meaning "weak" in expressions like "anorexic plot" or "anorexic dollar." As pointed out by the authors, this type of determinologization results in a new meaning of the word in general dictionaries.

The determinologization process is observable in the emergence of new words in general language, as shown by [6]. The reuse of the COVID acronym as a formative element actively contributes to the determinologization process, wherein the fundamental meaning is employed in a superficial manner. Instances like "covidiota", "covideiro", "covidices", and "covidivórcios" are employed in a COVID-related context, but these terms lack specialized features and do not align with the conceptual framework of any specific domain.

The broad interest in technical language has increased in the last decade due to the evolution of technology that has influenced all fields of activity. Experts claim that the

specialized lexicon represents almost half of the entries in general dictionaries [7]. The general dictionaries, Merriam-Webster Dictionary and Cambridge Dictionary include all terms used in this study and define them to bring them closer to an ordinary knowledge or to an average knowledge of devices, characteristics or methods of operation and digital communication tools. By recording the specialized meanings of IT&C terms, these general dictionaries legitimize and correct the lexical and extralinguistic knowledge. It is admitted, however, that the decoding of the definition of a specialized term by non-specialized speakers is, in general, partial [8]. Consequently, [9] points out that lexicographers need to create definitions that are understood by non-native speakers to avoid any misinterpretations. A relevant example is the term "viral" as it has different meanings, depending on the context in which it is used. In the context of Information and Communication Technologies (IC&T), particularly in the realm of digital content and online activities, "viral" commonly refers to the rapid and widespread dissemination or popularity of content, often facilitated by social media sharing or online platforms, for instance, a viral video, meme, or post is one that spreads quickly and widely across the internet, gaining significant attention and engagement. However, outside the IC&T context, "viral" is a term often associated with biology and medicine. In the medical field, it refers to the nature of viruses and their ability to rapidly replicate and spread within a host organism. The potential for confusion arises when individuals familiar with the medical or biological usage of the term encounter it in the IC&T context. Some readers or speakers may initially associate "viral" with the characteristics of a *virus* rather than with the *rapid spread of digital content online*. To address potential confusion, it is essential for communicators and content creators to provide sufficient context when using the term "viral" in IC&T discussions. Also, general dictionaries have to provide clear and precise definitions of this term so that readers could understand the intended meaning within the specific technological or digital context rather than interpreting it through the lens of its biological definition.

DEFINITIONS OF IC&T TERMS IN GENERAL DICTIONARIES

The definition of specialized terms includes information of various types, according to A. Stoichiţoiu-Ichim, whose finding is cited in [10]. In the complex process of decoding the definition, both the system of knowledge of things and that of words (terms) are engaged, to which are added the importance of situational and linguistic contexts [11]. Several experts argue that significant distinctions exist between lexicographic and terminographic definitions. Lexicographic definitions provide only the essential information for identifying the referent, whereas terminographic definitions consider the quantitative aspect of the concept and its integration into the precise system of the field [12]. These distinctions become apparent in the relationship between the concept and its meaning; as shown by [13], the lexicographic definitions combine features that are relevant to both common language and specialized language. The aspects of interest concern the similarities and differences between the definitions of the terms in the Cambridge and Merriam-Webster general dictionaries, and their degree of accessibility for non-native English speakers and laypeople. I will also have a look at the phrasing requirements for clarity and accuracy and at the stylistic choices.

Non-Expert and Non-Native Readers' Understanding of the Definitions

Currently, novel tools aimed at facilitating the management of vast amounts of data offer a mechanism to manage the data, allowing lexicographers more time to apply their expertise in crafting entries that are more meaningful and precise [14]. The definitions of the 50 IT&C terms in the Merriam Webster Dictionary and the Cambridge Dictionary generally

align in providing clear explanations for non-native and non-expert speakers. For instance, the definitions of "virtual reality (VR)" and "augmented reality (AR)" delineate the specific experiential aspects, emphasizing the need for clarity in conveying nuanced technological concepts. A straightforward language is used in many definitions, providing understanding of the terms, without assuming expert knowledge. However, the comprehension of the definitions below among non-expert and non-native readers differs as the terms are more understood than others are. Concepts like "blockchain" and "encryption" may also pose greater challenges for these audiences, requiring additional explanation and clarification.

Feed: "an Internet service in which updates from electronic information sources (such as blogs or social media accounts) are presented in a continuous stream (an RSS feed); also**:** the information presented by such a service" [15]
Adware: "software that automatically puts advertisements onto a computer screen when a person is using the internet" [16]
Machine learning: "the process of computers improving their own ability to carry out tasks by analyzing new data, without a human needing to give instructions in the form of a program, or the study of creating and using computer systems that can do this" [17]

Regarding the role of hyponymy in shaping the lexicographic discourse, we note that, in some lexicographic definitions, the defined word is a hyponym, and the lexicographic discourse contains the hypernym at the beginning of the defining sequence, which has the role of facilitating the ordinary reader's understanding and interpretation of the specialized meaning. Therefore, the hypernyms are hierarchically close to the hyponyms, that is, to the terms defined in the two dictionaries, ensuring the non-expert and non-native reader's access to the specialized meaning:

App: "*a computer program or piece of software* designed for a particular purpose that you can download onto a mobile phone or other mobile device" (Cambridge Dictionary)
Game console: "*a piece of electronic equipment* for playing games on" (Cambridge Dictionary)
App: *an application* designed for a mobile device (Merriam-Webster Dictionary)
Game console: "*an electronic system* that connects to a display (such as a television set) and is used primarily to play video games" (Merriam-Webster Dictionary)

Obviously, terms such as "app", "podcast", "smartphone", "tablet" and "influencer" can be considered *despecialized terms* because they have become part of everyday language, due to the widespread adoption of the associated technologies and their integration into various aspects of daily life. People from various backgrounds now use these terms without needing technical knowledge. Thus "podcast" can be easily grasped by individuals with varying degrees of technological familiarity while "smartphone" is now widely recognized and used to refer to a category of mobile devices that go beyond basic calling and texting functions.

Several definitions reveal interconnectedness among terms. For instance, a "smartwatch" is designed to work with a "smartphone," emphasizing the linguistic coherence in the description of technology-related devices and their functionalities. However, certain nuanced differences exist in emphasis and detail. The Cambridge Dictionary tends to offer more detailed descriptions, often providing additional information about the use or context of the terms. For instance, in defining "tablet or tablet computer," the Cambridge definition

focuses on the control methods such as touching the screen or using a special pen. Similarly, in defining "adware," the Cambridge Dictionary specifies that it puts advertisements on the screen automatically while the user is on the Internet. Moreover, it tends to incorporate practical use cases or scenarios in its definitions, offering a contextual understanding of the terms. For instance, in defining "URL (Uniform or Universal Resource Locator)," the Cambridge Dictionary mentions it as a "website address," emphasizing its practical use. Similarly, in defining the term "influencer", it specifies that the influencer is someone "paid by a company to show and describe its products and services on social media."

On the other hand, Merriam-Webster's definitions are succinct and to the point. While providing clarity, it often offers concise definitions, without delving into specific applications or scenarios. By contrast, the Cambridge Dictionary tends to include more extensive phrases or clauses within its definitions, contributing to a slightly longer overall explanation compared to the compact definitions provided by Merriam-Webster. For instance, the Merriam Webster-Dictionary provides more context about the purpose of an "Application Programming Interface" or API, while the Cambridge Dictionary outlines the communication aspect.

Linguistic Overview

From a linguistic standpoint, the selected terms and their definitions underscore the dynamic evolution of language in response to technological progress. These definitions not only articulate precise meanings but also highlight the adaptive linguistic tendencies of the Digital Age, specifically addressing the communication requirements within the field of Information Technology and Communications (IT&C). Obviously, terms such as "smartphone," "smartwatch," and "app" exemplify the lexicon's propensity for neologisms and compounds, manifesting the fusion of existing words and roots to generate novel lexical entities. This linguistic phenomenon, pervasive in technological language development, attests to the creative linguistic constructs inherent in this field. The terms subject to analysis consist of nouns and compound nouns. The prevalence of nouns and compound nouns in the list of terms shows the dynamic nature of language to convey new concepts and innovations. Some nouns represent tangible objects, devices, or systems commonly found in the field of IT&C (e.g. "smartphone," "tablet," "game console," and "server") while others represent abstract concepts or processes related to technology and information management. Compound nouns like "data mining" and "machine learning" express activities, processes or methods rather than physical objects. Other morphological features are evident, such as the application of prefixes and suffixes in "data mining" and "encryption," pinpointing the strategic deployment of linguistic elements for the construction of technical terms. This deliberate morphological structuring contributes to a systematic and cohesive language framework, characteristic of the precision required by the IT&C field.

Furthermore, many of the terms in the list are polysemantic. In the IT&C context, these terms have precise meanings associated with technology and communications. However, outside this context or in everyday language, they acquire varied meanings. For example, the term "domain" (IT&C meaning: "a group of computers or websites organized by purpose") can have other meanings: in Mathematics it refers to "the set of values for which a function is defined" while in the general language it means "a territory." Similarly, the term "server" (IT&C meaning: "a central computer from which other computers get information"), has other meanings: in computing, it refers "to a software or a program that provides services to other programs or devices" whereas in the food service industry (restaurants), it means "a person who serves food and drinks to customers."

Consequently, the semantic broadening of several terms is attributed to polysemy since they undergo semantic changes in the digital context. Traditionally associated with a source of nourishment, "feed" assumes a novel connotation within IT&C, transforming into an Internet service providing continuous updates. Similarly, the term "streaming," once linked to fluid flow, has evolved to denote the real-time transmission of digital data. Noteworthy is the semantic broadening of the term "follower," traditionally referring to a person, who adheres to a leader, now representing an individual who subscribes to a "feed", highlighting the adaptability of language to changing social dynamics in the realm of social media.

The term "hashtag" introduces a symbolic linguistic element, wherein the "#" symbol precedes a word or phrase, serving to classify or categorize accompanying text. This symbol, transcending its conventional role as a pound sign, has emerged as an appealing linguistic tool in the social media communication. The widespread adoption of "hashtags" in popular culture and social media has made the concept familiar to people of various expertise levels and language backgrounds. Platforms like Twitter, Instagram, and Facebook commonly employ hashtags to organize and categorize content. Consequently, individuals worldwide, including those with limited proficiency in English, have come across and utilized hashtags in their online engagements.

Furthermore, the metaphor and analogy employed in terms like "cloud computing" and "firewall" to convey technological concepts are noteworthy. "Cloud computing" metaphorically delineates data storage on remote servers, while "firewall" draws an analogy to a protective barrier impeding unauthorized access, aligning with the physical structure of a firewall. Furthermore, the linguistic phenomenon of borrowing and adapting words is evidenced in terms like "vlog" (video blog) and "podcast" (a blend of iPod and broadcast), illustrating the capacity of language to amalgamate existing words to meet the exigencies of technological communication.

In the swiftly evolving landscape of IT&C, characterized by rapid technological advancements, the continual introduction of novel terms is usual. Abbreviations emerge as nimble linguistic tools, enabling professionals to assimilate and communicate these new terms without the burden of employing their complete forms. This is particularly evident in the field of software development and coding, where precision and brevity are paramount, and abbreviations are ubiquitously employed for variable names, functions, libraries, and other elements, contributing to the streamlined code and enhanced readability. The prevalence of acronyms and abbreviations in the IT&C lexicon, such as "API" and "URL," "SEO", etc. reflects the need for succinct and efficient communication. These linguistic shortcuts enhance brevity and streamline technical discourse, emphasizing the indispensability of concise language within this specialized field.

To conclude with, as in several investigated terminologies [18], the dynamics of IT&C terminology is conditioned by the continuous evolution of extralinguistic realities. The dominance of IC&T terminology is innovation, which, depending on the subfields of IC&T, is not limited to denotative mobility, but it includes names with specialized meanings appropriate to the digital era, which have an international affiliation. The analysis undertaken highlights the fact that all the terms selected for this study have entries in the general dictionaries, Merriam-Webster and Cambridge, whose constant efforts to keep pace, as inventory, definitions and contextual uses, with the dynamics of the IT&C field are important.

CONCLUSIONS

The paper emphasizes the indispensable role of dictionaries in standardizing IT&C language, ensuring accurate communication, and fostering international understanding. The analysis of the 50 IT&C terms highlights degrees of determinologization, wherein general dictionaries play a crucial role in offering clear and precise definitions for non-native speakers and non-experts. The linguistic features of neologisms, compounds, polysemy, metaphor, analogy, and the prevalence of acronyms underscore the evolving nature of language in response to technological innovations, shaping a lexicon characterized by brevity, precision, and adaptability. Overall, this research contributes valuable insights into the multifaceted processes influencing the language of technology and its implications for effective communication in a globalized and rapidly evolving digital landscape.

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