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COGNITIVE PROCESSES IN THE FORMATION OF LINGUISTIC TERMS AND CONCEPTS

ABSTRACT

This investigation aims to explore how linguistic terms and concepts emerge and develop across various thematic areas, including concrete objects, abstract concepts, and cultural artefacts.

This work uses a cognitive-semantic approach that draws on various techniques in kernel mean subtraction and semantics, prototype theory, and the framework for semantic activation. The investigation focuses on developing methods for term formation in different domains such as economics, technology, social sciences, and biology. Specifically, we are using diachronic research methods, which contrast traditional synchronous approaches, and integrating this research with text and term analysis across various disciplines to uncover the structure of knowledge evolution models. The research emphasizes that words originate from cognitive processes and communication in professional domains. This approach accounts for the dynamic nature of language, which is influenced by cognitive factors such as prototypicality and metaphorical modelling, setting it apart from other methods of lexical semantics.

The study provides examples of how classifying meanings becomes complex due to ambiguous concept boundaries, context, polysemy, and synonymy in specialized languages.

In summary, mental processes have a significant impact on the formation of language units in individuals. The relationship between cognitive abilities and language plays a crucial role in enabling people to reason and comprehend the world in various fields. This research offers

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TIL ATAMALARI VA TUSHUNCHALARI SHAKLLANISHINING KOGNITIV JARAYONLARI

ANNOTATSIYA

Tadqiqotning maqsadi o'ziga xos obyektlar, mavhum tushunchalar va madaniy artefaktlar kabi ko'plab tematik sohalarni qamrab oluvchi lingvistik atamalar va tushunchalarning paydo bo'lishi va rivojlanishi ortidagi kognitiv mexanizmlarni o'rganishdan iborat.

Mazkur tadqiqot yadro va semantikaning o'rtacha qiymatini, prototiplar nazariyasini va semantik faollashtirish tuzilishini olib tashlashning turli usullariga asoslangan kognitiv-semantik yondashuvdan foydalanadi. Tadqiqot turli iqtisodiy, texnologik, ijtimoiy va biologik sohalarda atamalarni shakllantirish usullarini ishlab chiqishni o'z ichiga oladi. Xususan, biz an'anaviy sinxron yondashuvdan farqli o'laroq, diaxronik tadqiqot usullarini qo'llaymiz va bilim evolyutsiyasi modellarning tuzilishini ochib berish uchun ushbu tadqiqotni turli fanlardagi matnlar va atamalarni tahlil qilish bilan birlashtiramiz. Tadqiqot shuni ko'rsatadiki, so'zlar kasbiy sohalardagi kognitiv jarayonlar va muloqotdan kelib chiqadi. Bu esa mazkur yondashuvni leksik semantikaning boshqa usullaridan ajratib turadi, chunki u prototipiklik va metaforik modellashtirish kabi kognitiv omillar ta'sir qiladigan tilning dinamik tabiatini hisobga oladi.

Maqolada tushunchalar chegaralari va kontekst ta'sirining noaniq tabiati, shuningdek, ixtisoslashgan tillarda polisemiya va sinonimlik muammolari tufayli qiymatlarni tasniflash masalalari qanchalik murakkablashayotganiga misollar keltirilgan.

Xulosa qilib aytganda, aqliy jarayonlar

valuable insight into a more intricate and user-friendly approach to terminological analysis and linguistic theory that is flexible, considering the ever-changing nature of specific languages and the influence of cognitive processes on term development.

Key words: cognitive processes, linguistic terms, concept formation, communication, human cognition, information-cognitive system, knowledge organization, terminology.

haqiqatan ham alohida til birliklarining paydo bo'lishida muhim rol o'ynaydi. U kognitiv qobiliyat va til o'rtasidagi o'zaro ta'sirni tavsiflaydi, bu esa, o'z navbatida, odamlarga turli sohalarda fikrlash va atrofdagi dunyoga ma'no berish imkoniyatini beradi. Tadqiqot muayyan tillarning dinamik va o'zgaruvchan tabiati va atamalarni yaratish uchun kognitiv jarayonlarning ahamiyatini hisobga olgan holda o'zaro moslashuvchan terminologik tahlil hamda lingvistik nazariyaga oid yanada murakkab va foydalanuvchilar uchun qulay bo'lgan yondashuv haqida tushuncha beradi.

Kalit so'zlar: kognitiv jarayonlar, lingvistik atamalar, kontseptni shakllantirish, muloqot, insonning dunyoni idrok etishi, axborot-kognitiv tizim, bilimlarni tashkil etish, terminologiya.

INTRODUCTION

Language serves as a dual-purpose tool that operates bidirectionally. On one front, it acts as the conduit for sender-receiver interaction, facilitating verbal communication between individuals. This facet, often termed its communicative function, takes center stage as it is widely regarded by contemporary scholars as the linchpin defining the very essence of language.

Conversely, language is intrinsically linked to our perception of reality, crafting a tapestry of mental constructs that bridges the chasm between our cognition and the external world. This intricate mental tapestry, ensconced within our consciousness, is in a state of perpetual flux, ceaselessly evolving and adjusting to govern our conduct [Mykhailiuk & Pohlod, 2015]. Language's role transcends mere message transmission; it assumes a pivotal role in accumulating and storing knowledge within the recesses of memory. In doing so, it contributes significantly to the organization and systematization of this knowledge, effectively participating in the cognitive processing of information. This, in essence, represents its cognitive function.

These two facets of language are inextricably intertwined, each contingent upon the other for sustenance and meaning. To fathom these dimensions of language more comprehensively, one must delve into an exploration of the very nature of human cognition and linguistic exchange.

When we conceptualize language as a unique, primarily communicative, and more narrowly defined verbal medium of human behavior, we must acknowledge its remarkable adaptability. Each language possesses a remarkable ability to mould itself to the infinite diversity of real-life scenarios and to articulate an inexhaustible spectrum of meanings. Consequently, mastering one's native language is no mean feat, and unravelling the intricacies of a foreign language (or languages) proves exponentially more daunting.

The challenges inherent in acquiring both native and, particularly, foreign languages stem from the notion that language is not a mere catalog of words or an

assemblage of grammatical rules. Each language is intrinsically bound to the specific context of a particular community, ethnicity, or nation within a given historical epoch [Oakes, 2001]. Standard dictionaries and even comprehensive grammatical guides seldom encapsulate these contextual nuances.

According to R.C. Berwick, language finds itself existing in a paradoxical realm, occupying a space that is at once finite and infinite [Berwick et al., 2013]. The finite aspects encompass the inventories of phonetic elements, morphemes, and even words, along with the finite sets of grammatical rules intrinsic to each language. However, the infinite facet is manifest in the multitude of meanings that a language can potentially convey. Existing linguistic references, such as dictionaries, merely scratch the surface, cataloging but a fraction of conceivable meanings. To grasp the essence of many words and expressions, mere linguistic proficiency proves inadequate; a deeper, encyclopedic comprehension of the world is essential.

In contrast to a mere language, the cultural fabric of a specific ethnic group and the dynamics of a particular society are not opposed by language in isolation; instead, they encounter the holistic and interconnected information-cognitive system inherent to humanity. This system is a construct of intertwined cognitive processes, consciousness, and language [Xu & Taylor, 2021]. To truly discern the nature of language, one must navigate the intricacies of this comprehensive system.

Understanding the cognitive processes involved in the formation of linguistic terms and concepts is a fundamental pursuit in both linguistics and cognitive science. It offers profound insights into the nature of human cognition and its relationship with language. This article embarks on a journey into the intricate terrain of cognitive processes, shedding light on how these processes contribute to the development and evolution of linguistic terms and concepts. The article has two main objectives:

- to explore the cognitive processes involved in the formation and development of linguistic terms and concepts across various domains, including concrete objects, abstract ideas, and cultural constructs;
- to examine the implications of these cognitive processes for linguistic theory, cognitive science, and our broader understanding of human cognition.

The study focuses on analyzing the processes of formation of this information-cognitive system, as well as identifying factors that influence its evolution. Particular attention is paid to the analysis of the processes of formation of terms in the context of discourse and text. As a result of the analysis, a pattern was identified regarding the development of knowledge structures and the principles of their replenishment using information channels.

This analysis made it possible to establish that terms are formed as a result of the interaction of cognitive processes and communication, especially in the field of professional activity. This fact confirms the significant importance of the cognitive-discursive approach to the analysis of terms. This approach expands our ability to understand the function of terms and their place in human linguistic and mental activity.

It is important to note that this article provides both theoretical material that

reveals the conceptual foundations of the study, and practical examples that illustrate real processes and phenomena in this area. This allows us to both deepen our understanding of theoretical aspects and apply the acquired knowledge in practice.

In the globalized and internet-connected world of linguistics, with the advancement of science and technology, active changes are taking place in the lexical system of languages as a whole and in their terminological layer in particular. The study of the nuances of representing different meanings of a single term in linguistics, different types of terminological polysemy, and the reasons for its emergence in linguistic terminology has significant theoretical and practical importance.

The phenomenon of terminological polysemy has repeatedly been the focus of attention for linguists studying various issues in specialized terminology, including linguistic terminology. The regular reexamination of polysemy in the field of terminology is driven by several reasons, the most typical of which is the inherent contradiction of the phenomenon of ambiguity in the essential nature of a term. A term is primarily intended to precisely denote the characteristics of a subject, its properties, actions, or phenomena in the realm of scientific research. The term serves a nominative function. As M.Mirtojiyev [Mirtojiyev, 1984] notes, lexical meanings of words, in some cases, express specific concepts. The terminological meaning of a word possesses precisely this property. As it was given in the work by G.Mukhammadjonova, the meaning of a term is primarily equivalent to a concept [Hajiyev & Ahmedov, 1981]. The meaning of a term is equivalent to a concept due to its monosemantic nature within a given terminology. A polysemous word represents multiple concepts.

As O.A. Bursina writes, “any individual terminological system is a part, a subsystem of the literary language, while also facilitating communication in the field of scientific-professional activity or knowledge. Accordingly, a term, as an element of the lexical composition of the literary language, cannot be opposed to common words, nor can it be equated with them due to its purpose and area of functioning” [Bursina, 2014]. Thus, terminology, regardless of the language in which it operates, constitutes the core of the specialized vocabulary of a language, but it does not lose its semantic connection with its projection in common usage. As a result, this leads to the development of polysemous and homonymous properties of terminological words or phrases.

Linguists evaluate this language phenomenon differently. O.E. Chernikova summarizes existing linguistic views on the nature of specialized vocabulary and groups them into three categories: the psychological (or mentalist) view, which emphasizes the cognitive aspects of specialized vocabulary. It suggests that specialized terms arise from the need to express complex concepts and ideas within a particular field. According to this view, specialized vocabulary is shaped by the mental processes involved in understanding and communicating specialized knowledge.

Social (or societal) view, that focuses on the social dynamics that influence the development and use of specialized vocabulary. It suggests that specialized terms emerge within specific social contexts, such as professional communities or academic disciplines. According to this view, the structure and content of specialized vocabulary

are shaped by social interactions, norms, and conventions.

Functional (or utilitarian) view, that highlights perspective highlights the pragmatic functions served by specialized vocabulary. It emphasizes the role of specialized terms in facilitating communication and conveying precise meaning within specific domains. According to this view, specialized vocabulary evolves in response to the practical needs and communicative goals of users within particular contexts.

Some scholars advocate that a term should be unambiguous and should not extend beyond a specific field of knowledge. In other words, terms should have a narrow focus and be understandable primarily to a limited group of specialists.

Recognition of the potential for each linguistic unit, especially nouns, to serve as a term. As O.E. Chernikova rightly points out, such an approach raises questions about “the recognition of polysemy and polyfunctionality of terminological units that make up the lexical layer of the national language” [Chernikova, 2018].

A “compromise” solution to the problem, acknowledges the objectively existing process of transitioning common lexemes into the category of terms and vice versa, the transition of terms into the category of common words.

Language, as a system of symbols and rules, is a product of human cognition. As for M.Mirolli and D.Parisi, cognitive processes such as perception, categorization, memory, and reasoning play pivotal roles in shaping linguistic terms and concepts. Consider, for instance, the concept of “tree” [Mirolli & Parisi, 2009]. When we encounter a variety of trees – oak, pine, maple, and so forth – our cognitive processes enable us to recognize commonalities and differences among them. We form the abstract concept of a “tree” by extracting shared features, such as a trunk, branches, leaves, and roots while ignoring specific variations.

Terminology, as an academic discipline, is relatively recent but has a significant role in facilitating precise communication, translation, and knowledge exchange. It evolved out of the practical need for effective communication among individuals from diverse language communities and knowledge levels. Theoretical foundations in this field have primarily arisen from practical applications such as glossaries, specialized dictionaries, and terminological resources.

Terminology emerged from the practical necessity for professionals and scientists to establish a shared understanding of concepts and terms within their specific domains [Fathi, 2017]. This common understanding streamlines communication and knowledge sharing. However, terminology has long sought a theoretical framework capable of explaining how specialized knowledge is represented, categories are organized, and terminological units behave semantically and syntactically across languages.

This pursuit has led to questions about whether terminology should be categorized under Philosophy, Sociology, Cognitive Science, or Linguistics. Rather than attributing its origins to a single discipline, the terminology is fundamentally centered around language and cognition. According to Faber, terms, in this context, are linguistic units conveying conceptual meanings within specialized knowledge contexts [Faber, 2012]. Thus, linguistic analysis is a pertinent approach for studying terminology, emphasizing vocabulary, usage patterns, meaning, and conceptual

representation, with cognitive linguistic approaches aligning effectively.

The foundation of general terminology theory rests on the fundamental significance of concepts and the imperative need to distinguish them from one another. This theory delves into the nature of concepts, their conceptual relationships, the intricate connections between terms and concepts, and the process of designating terms to these concepts; all these aspects hold a pivotal position in the realm of terminology studies [Faber, 2012; Bühler, 1982]. Within this framework, concepts are considered autonomous entities, separate and distinct from terms. This perspective grants concepts a natural predominance over terms, setting the stage for a specific approach to terminology work.

In terminology, the journey commences with concepts taking center stage, and the focus remains steadfast on the trajectory from concepts to terms. This unique orientation distinguishes the methodologies employed in terminology from those prevalent in lexicography. Lexicographers typically embark on their work by commencing with a word and elucidating its meaning. Conversely, the terminographer's mission revolves around the task of assigning names to pre-existing concepts. This shift in perspective underscores the essential divergence between the two disciplines, emphasizing that terminology is primarily concerned with naming and organizing concepts while lexicography concentrates on explicating word meanings.

However, examining terminology independently yields insights into specialized language, scientific translation, and language as a whole. It offers valuable opportunities for linguistic analysis within a linguistic framework. Remarkably, this assertion, which would have stirred controversy in terminological circles years ago, reflects the evolution of terminology.

Initially, terminology sought normalization, aiming for unambiguous communication through standardization [Faber, 2012]. This entailed achieving a one-to-one correspondence between terms and concepts, given that most terms represent objects in specialized knowledge domains [Faber, 2009]. Nevertheless, it became evident that this goal was more aspirational than realistic.

These cognitive processes are not confined to tangible entities like trees but extend to abstract concepts, emotions, and relationships. The concept of "love", for example, is not a concrete entity but a complex web of feelings, actions, and meanings, all woven together by cognitive processes. Understanding how these processes operate in the formation of linguistic terms and concepts is essential for comprehending the very essence of language itself.

The study of terminology and its formation processes is inherently linked to the analysis of linguistic structure because a term, as the central object of terminology, has its lexical form and cannot be fully understood without considering the characteristics of this form. In this context, the ideas of cognitivism have had a significant impact on the theory and methodology of terminology. This connection became especially relevant as the issue of the relationship between thinking, language, and knowledge took center stage in terminology research since its recognition as an independent discipline.

An example of this influence can be seen in the definition of a term proposed by B.N. Golovin, which emphasizes that a term is not just a word or phrase but also expresses professional significance and shapes a professional concept [Golovin & Kobrin, 1987]. Such a term is used in the process of comprehending and studying a specific set of objects and their interrelations, viewed from the perspective of a particular profession.

The integration of the cognitive direction into linguistic research has not only changed the approach to traditional areas of linguistic knowledge but has also contributed to the evolution of the science of terminology [Rao, 2021]. This approach actively develops the cognitive aspect in the study of terminology, introducing new methodological tools and perspectives. This is because terminology studies have deep roots in the sciences of cognition and linguo-anthropology, which imply the examination of any element of linguistic structure within the context of the language's worldview.

The cognitive approach in terminology considers how knowledge structures are involved in the selection of a specific lexical form for expressing a particular linguistic unit [Faber, 2012]. It also allows us to understand how language users perceive and interpret signs, providing insights into the personality and consciousness of the communication participants.

Cognitive terminology represents a poly-paradigmatic approach that unites several aspects of terminology description and analysis, including cognitive-semantic, cognitive-grammatical, and linguo-cultural [Grunina, 2010]. These aspects complement each other, creating a more comprehensive understanding of knowledge structures and their role in linguistic and cultural activities. Therefore, cognitive terminology becomes a crucial area of research that helps us understand how we perceive and describe the world through language.

Let's delve into the aspects that are highlighted as a comprehensive set of linguistic parameters capable of representing the linguistic facet within terminology studies [Teleky, 2019]. Terms come into existence through the utilization of language tools, building upon existing notions. The essence of terminological information lies in the fact that one entity contains details about another. Within a term, such information is frequently conveyed through an "expressive" or "motivated" internal structure, featuring terminological elements that encapsulate the pertinent terminological data concerning a specific attribute forming the basis for its naming [Yakovleva, 2014]. In light of this, particular emphasis should be placed, in our perspective, on the description of the material from a cognitive standpoint, specifically focusing on the foundational carrier of concepts that underpins a particular realm of theoretical knowledge.

The "internal structure of the term", as a rule, documents an essential characteristic of the conceptualized concept, delivering essential terminological insights. It's crucial to underscore that the motivating aspect plays a pivotal role during the nomination process. Hence, the "internal structure of the word" or the "motivating feature" serves as a distinguishing trait that language users mentally fix while naming real-world phenomena. "The selection of this feature is an outcome of cognitive activity, as it is

chosen from a myriad of attributes possessed by the entity being named, emerging as the most prominent one in the given context” [Berestnev, 2002].

The cognitive essence of a term resides in its representation as a unit of professional scientific knowledge, which not only serves as an object of comprehension but also as an outcome of cognitive processes linked to understanding. The cognitive process is crystallized through a precise definition of the concept earmarked for terminological treatment. “A term assumes the role of a distinct cognitive-informational structure, wherein professionally-scientific knowledge, articulated through a specific linguistic form, has been accumulated by humanity over its entire existence” [Volodina, 2002]. Consequently, as repositories of professional scientific memory, terms function as instruments of communication within specialized domains of life. They embody distinctive cognitive models indispensable for professional interactions. E. Pollock mark that individuals assimilate and actualize the information contained within a term, they not only apply it but also interpret, optimize, and adapt it [Pollock et al., 2002]. This suggests that terms intrinsically harbor potential, and varying resources for articulating specialized knowledge and are intimately linked to cognitive processes involved in grasping the surrounding world.

The cognitive uniqueness of a term also manifests in its capacity to offer insights into the past, grasp the present, and introduce innovations into the future. Terms, serving as nominative indicators of realities, encapsulate information accumulated within them across numerous epochs [Wierzbicka, 1990]. The information enshrined within a term enables discussions about the presence of corresponding realities, the origins or creation sources, international interactions, and the level of cultural development.

METHODS

Some researchers highlight the processes of terminologization [Danilenko, 1977; Shmeleva, 2009] and detechnicalization [Bursina, 2014]. In the first case, a common word acquires a specific terminological meaning, while in the second case, a term loses its original specialized meaning, or a term may combine both terminological and non-terminological meanings. Detechnicalization of a term is presented as the separation of a term from its specialized conceptual sphere and its penetration into general language. In this interpretation, language evolution is a constant, and these processes are entirely natural.

One of the primary challenges within the realm of terminology is the intricacy of term formulation. Typically, a term comes into existence as a representation of an unelaborated concept, often enduring as a preliminary term for an extended duration [Rashidova, 2020]. It persists as such until the idea behind the designated entity, substantiated through professional experience and societal validation, assumes the essential and comprehensive attributes required to transform into a structured body of knowledge that aligns with a formal term. The genesis of terms is the product of the interplay between cognition and communication within professional domains. This phenomenon becomes particularly evident when dissecting the processes of term

creation in the context of various disciplines or textual contexts.

The methodologies draw heavily from Cognitive Semantics, including prototype structure and metaphor, which have profoundly influenced the field of terminology theory. It is within this framework that we implemented sociocognitive terminology, an approach introduced by Temmerman in the late 1990s [Clas, 2001].

Our research is grounded in the sociocognitive terminology framework, which places a substantial emphasis on the cognitive aspects of terminology within specific domains while exploring the diversity of terminological usage across various communicative contexts. This theoretical framework challenges several fundamental tenets of General Terminology Theory (GTT) and, in doing so, advocates for a more pragmatic and adaptable approach to specialized language.

Central to our methodology is Prototype Theory, an essential component of sociocognitive terminology. Prototype Theory envisions categories as concentric circles centered around a prototypical core. However, we acknowledge the limitations of this theory, including its inability to account for syntagmatic data and challenges in determining the relevant prototypical center.

An intriguing aspect of our research methodology is the exploration of terms and concepts from a diachronic perspective, contrasting with GTT's synchronous approach. For instance, the historical evolution of the term "splicing", examining its usage across diverse cultural contexts and its presence in both general and specialized language. This approach reveals the role of metaphorical modelling in scientific terminology and enhances our understanding of cognition as reflected in scientific terms and descriptions.

As terminology databases evolve into terminological knowledge bases, they enrich their data by establishing meaningful connections between concepts and designations. While traditional generic-specific and part-whole relationships remain, we emphasize other types of relationships, such as cause-effect and object-function, to enhance the knowledge structure. This approach facilitates multidimensional concept representation.

Recent articles describe advanced knowledge engineering techniques and ontology creation processes, seemingly disconnected from the initial cognitive model analysis proposed by R.Temmerman [Temmerman, 2000]. Termontography has become a distinct entity, with computer-implemented ontologies serving as conceptual representations. However, the conceptual relations proposed in Termontography, such as resemble traditional generic-specific relations that sociocognitive terminology intentionally avoids. This suggests that prototypes, while intriguing, may not be a viable method of category organization due to their reliance on the subjective judgment of terminologists.

When we delve into the analysis of texts across diverse fields, we can discern a consistent pattern of how knowledge structures evolve and flourish through a multitude of information channels. This phenomenon is best illustrated through concrete examples that showcase how these principles are at play.

For instance, in the field of biology, the study of genetics has seen a remarkable

evolution in its knowledge structure. Early theories, like Gregor Mendel's work on pea plants, laid the foundation for our understanding of inheritance patterns. Over time, as new information emerged through DNA research, geneticists integrated these findings into the existing knowledge structure, enriching our understanding of heredity.

Similarly, in the realm of technology, consider the development of computer programming languages. The initial creation of languages like FORTRAN and COBOL [Veinott, 1966] marked the inception of this field. As technology advanced, languages like Python and JavaScript emerged, building upon the principles of their predecessors while introducing new concepts like object-oriented programming. This progression exemplifies how the principles of knowledge structure development and enrichment are applied within the field of computer science. In essence, the cognitive approach enables us to identify the internal transformations within the knowledge structure as it evolves in conjunction with advancements in each respective field. Additionally, linguistic factors may contribute to changes in terminology, often related to the semantic nuances in the development of polysemantic words, which are also observed in terminological systems.

The various stages and information channels involved in terminological evolution are encapsulated within the term's internal structure, playing a pivotal role in the cognitive process. These terminological developments have far-reaching implications, extending beyond professional domains and influencing broader linguistic contexts. As terms become more widely used outside their specialized domains, language users may reinterpret them, leading to shifts in their functional roles and broader transformation.

This dynamic process is particularly pronounced in fields like economics, where the discipline's central role in society leads to frequent interaction between specialized economic terminology and everyday language. It's worth noting that while Russian economic terminology is rapidly evolving, it is strongly influenced by international economic terminology, including English terminology.

Once a term steps beyond its original domain of expertise, it goes through a process known as detechnicalization. Linguists argue that during this transformation, the term loses some of its precise semantics, systematic structure, and unambiguousness. Instead, it acquires pragmatic characteristics it previously lacked, essentially evolving into a new word that requires interpretation rather than a strict definition. While a term can still be explained through interpretation, this process differs in certain respects from interpreting common everyday words.

Many scholars who study terminologies believe that when a scientific or technical term gives rise to a new word, it remains within its terminological realm without alteration, similar to how common words in a national language become specialized terms. However, this perspective might not be entirely accurate. During the detechnicalization process, a term primarily loses its specialized meanings, sometimes its systematicity as a term-concept, and begins to conform to the linguistic norms of the national language. Most other attributes associated with the term, including polysemy (having multiple meanings), as we previously noted, are rather context-

dependent. It would be more precise to state that in specialized languages, polysemy exhibits its unique characteristics and constraints, which do not entirely vanish when a term transitions into everyday language.

RESULTS

In the realm of terminology theory, Cognitive Semantics, with a particular focus on prototype structure and metaphor, has wielded considerable influence. This influence is notably exemplified by the introduction of sociocognitive terminology by R. Temmerman [Temmerman, 2000]. Sociocognitive terminology places a spotlight on the cognitive dimensions of terminology within specific domains and explores the diversity of terminological usage across various communication contexts. This approach challenges several foundational principles of General Terminology Theory (GTT) and advocates for a more practical and adaptable approach to specialized language.

Examining the dynamics of language and concepts in specialized fields reveals several key insights, each exemplified by real-world instances. Language actively contributes to the formation of categories. Consider the term “black hole” in astrophysics. The very label “black hole” encapsulates the concept of an astronomical object with a gravitational pull so strong that nothing, not even light, can escape. The language used to describe this concept not only reflects but also shapes our understanding of it, highlighting the symbiotic relationship between language and concepts.

Many specialized fields grapple with fuzzy category boundaries, making precise definitions challenging. In the realm of cognitive psychology, the concept of “intelligence” lacks a universally accepted definition due to its multifaceted nature. Intelligence encompasses various cognitive abilities, and different contexts may emphasize different facets, illustrating the difficulty in drawing precise boundaries around this concept.

The optimal structure of definitions depends on context and varies with the concept in question. In the field of artificial intelligence, the terms “key” or “option” can be defined differently depending on whether one is discussing it in a technical research paper or explaining it to a layperson. The context dictates the level of detail and complexity required in the definition.

Specialized languages often exhibit polysemy (multiple meanings) and synonymy (multiple terms for the same concept). For instance, in the field of linguistics, the term “syntax” can refer to the study of sentence structure or the set of rules governing sentence formation. Synonymy can be observed in the interchangeability of “language acquisition” and “language learning” within the same context. Understanding and managing these linguistic intricacies is fundamental in terminological analysis.

Prototype Theory, a fundamental concept in sociocognitive terminology, visualizes categories as if they were concentric circles, with a prototypical core at the center. Nevertheless, this theory, like any other, has its boundaries and challenges, which become clearer when examining specific examples.

For instance, in the realm of animal categorization, consider the category “bird”. In a prototype-based perspective, a robin or a sparrow, which possess typical bird characteristics like wings, feathers, and beaks, would sit comfortably near the prototypical core. However, anomalies like penguins, which cannot fly, challenge this neat categorization. Prototype Theory struggles to account for such deviations from the norm.

Furthermore, when delving into the world of emotions, Prototype Theory’s difficulty becomes more apparent. Take the category “happiness”. While most people might associate smiling and a sense of well-being with the prototypical center, the diversity of human emotional experiences introduces complexities. For some individuals, happiness might manifest differently, making it challenging to pinpoint a single prototypical center that universally encapsulates the concept.

The discussion of prototypes, idealized cognitive models, and radial categories seems to have faded. While cognitive linguistic representations, aside from frames, may not align neatly with computer applications, reconciling recent ontology engineering with the conceptual representation of sociocognitive terminology presents a challenge. Termontography’s proposed conceptual relations, such as ‘has subtype’ and ‘is kind of’, bear resemblance to traditional generic-specific relations that sociocognitive terminology intentionally avoids. This suggests that prototypes, while intriguing, may not be a viable method of category organization due to their dependence on the subjective judgment of terminologists.

DISCUSSION

The empirical findings of this study have cast an illuminating spotlight on the substantive role that Cognitive Semantics, with a specific emphasis on prototype structure and metaphorical constructs, has played within the realm of terminology theory. This influence is exemplified, most notably, through the inception of sociocognitive terminology as propounded by R. Temmerman [Temmerman, 2000]. This theoretical orientation fundamentally challenges the established edifice of General Terminology Theory and staunchly champions a more adaptable and context-responsive paradigm in the analysis of specialized language. These empirical revelations incontrovertibly underscore the dynamic mien of terminological dynamics within distinct domains, thereby exposing the intricate dialectic between language and the encasement of abstract notions.

One pivotal takeaway from our rigorous examination of specialized lexicons is the catalytic role of language in engendering and shaping categorical demarcations. Consider, for instance, the term “dark matter” in the domain of astrophysics. It not only serves as a semantic label but, more profoundly, it acts as an epistemic scaffold that intricately molds our comprehension of this enigmatic cosmic entity. This interplay between the linguistic token and its underlying conceptual substrate accentuates the pressing need for terminologists to acknowledge the profound ontological ramifications of terminology in facilitating both knowledge construction and the efficacious transmission of erudition within specialized milieus.

Another cardinal observation stemming from our inquiry pertains to the intricate art of delineating concepts with nebulous categorial boundaries. In the sphere of cognitive psychology, the concept of “creativity” provides a poignant exemplar of the multifarious and intricate nature characterizing specialized terminologies. The varying accents placed upon divergent facets of creativity within differing contextual loci ensue in the ineluctable conundrum of precise definitional demarcation. This analytical impasse underscores the inexorable exigency for terminological fluidity to accommodate and elucidate the variances that subtend divergent communicative contexts.

Furthermore, our investigatory endeavors underscore the vicissitudinous adaptability inherent in the optimal structuring of terminological definitions, which is conspicuously context-dependent. In fields like artificial intelligence, where the technical profundity of discourse traverses a vast spectrum, terminological referents such as “algorithm” or “model” are malleably construed. This adaptive character, akin to a chameleon’s response to its surroundings, mirrors the dire necessity of malleable, adaptable lexicon definitions that are calibrated in accord with the discerned exigencies of diverse consumer strata.

Moreover, the pervasive manifestations of polysemy and synonymy in specialized terminologies remain an area of significant scholarly scrutiny. In the domain of genetics, the semantic potency embodied in the term “gene” serves as a quintessential illustration, wherein it encompasses both a holistic categorization and individuated instances, akin to the term “food” encompassing a plethora of gastronomic variants. Synonymic interchangeability mirrors the polysemic proclivities in specialized discourse. Effectively navigating these multifarious linguistic intricacies assumes cardinal import within the ambit of terminological analysis, given the palpable repercussions they bear upon the dissemination and elucidation of knowledge within niche disciplinary spheres.

The empirical corpus and the ensuing scientific discourse proffer a compendious panorama of the dynamic convolution attending terminology theory. The dialectical interplay of terminology, conceptualization, and communication within specialized domains underscores the impetus for novel theoretical trajectories and terminological frameworks. In this evolving terrain, we navigate not merely the signposts of established nomenclature but embark upon the terra incognita of innovative linguistic paradigms, effectuating a nuanced dialectic between tradition and transformative adaptation.

CONCLUSION

In our exploration of cognitive processes in linguistic terms and concept formation through the sociocognitive terminology framework, a profound transformation in understanding specialized language has unfolded. Established theories have been challenged, revealing the intricate interplay between language and cognition. Language, as an active contributor to the formation and categorization of concepts, blurs the traditional boundaries that separate them, prompting a more integrated perspective. Recognizing the dynamic nature of terminology, an acceptance of

fuzziness and context dependence has emerged, illuminating the inherent difficulty of precise definitions. This adaptable approach acknowledges the evolving subtleties of specialized language over time. Polysemy and synonymy, commonplace in specialized language, take on a pivotal role in terminological analysis. An inclusive and nuanced perspective, transcending rigid definitions, is advocated.

The diachronic examination uncovers historical trajectories underpinning terms and emphasizes the role of metaphorical modelling in scientific terminology. This dynamic understanding of terms and concepts beckons for a deeper exploration of their historical contexts. Practical application within the different fields reaffirms the real-world relevance of sociocognitive terminology, offering a solution to the complexities inherent in specialized language. While Prototype Theory remains valuable, its limitations in handling syntagmatic data warrant the development of a more comprehensive model, one that effectively integrates prototype structures with syntagmatic relationships. In the ever-evolving terrain of terminological databases, meaningful connections between concepts are underscored, encompassing cause-effect and object-function relationships. The emergence of units of understanding prompts further investigation, yet their purity remains subject to debate, given the influence of language and culture. The transformation of Termontography into a distinct entity poses a challenge in reconciling ontology engineering with sociocognitive terminology, necessitating further exploration. The deliberate exclusion of syntax in terminology theories remains uncharted territory, ripe for future research.

In conclusion, this journey through the cognitive processes in linguistic terms and concept formation has unveiled the intricacies of specialized language. The sociocognitive terminology framework has redefined our understanding, bridging theory and practice. The path ahead promises continued exploration, offering valuable insights into the ever-evolving landscape of specialized language and terminology theory.

REFERENCES

1. Berwick, R.C., Friederici, A.D., Chomsky, N., & Bolhuis, J.J. (2013). Evolution, brain, and the nature of language. *Trends in Cognitive Sciences*, 17(2), 89–98. <https://doi.org/10.1016/j.tics.2012.12.002>.
2. Bühler, H. (1982). General theory of terminology and translation studies. *Meta: Translators' Journal*, 27(4), 425. <https://doi.org/10.7202/002174ar>.
3. Bursina, O.A. (2014). Terminology of social work: structure, semantics and functioning (based on English-language literature for social workers). *DSc thes. philol. scien.* Saint Petersburg.
4. Chernikova, E.O. (2018). The evolution of the ecological consciousness of society and the reflection of this process in the terminologies of Russian, English and German. *Diss. cand. philol. scien.* Moscow.
5. Clas, A. (2001). Temmerman, Rita (2000): Towards new ways of terminology description. The sociocognitive-approach, Amsterdam/Philadelphia, John Benjamins Publishing Company, xv-258 p. *Meta: Translators' Journal*, 46(3), 582–585. <https://doi.org/10.7202/002265ar>.
6. Danilenko, V.P. (1977). *Russian terminology: experience of linguistic description*. Moscow: Publishing House of 'Science'.

7. Faber, B. (2009). The cognitive shift in terminology and specialized translation. *MonTI - Translation and Interpretation Monographs*, 1, 107–134. <https://doi.org/10.6035/monti.2009.1.5>.
8. Faber, P. (2012). *A cognitive linguistics view of terminology and specialized language*. Berlin, Boston: De Gruyter Mouton. <https://doi.org/10.1515/9783110277203>.
9. Fathi, B. (2017, February 2). Some important reasons for studying terminology. *Terminosophy*. <https://terminosophyblog.wordpress.com/2017/02/02/some-important-reasons-for-studying-terminology/>.
10. Golovin, B.N., & Kobrin, R.Y. (1987). *Linguistic foundations of the doctrine of terms*. Moscow: Higher School.
11. Hajiyev, A., & Ahmedov, A. (Eds.). (1981). *Lexicology of the Uzbek language*. Tashkent: Publication House of ‘Science’.
12. Mirolli, M., & Parisi, D. (2009). Language as a cognitive tool. *Minds and Machines*, 19(4), 517–528. <https://doi.org/10.1007/s11023-009-9174-2>.
13. Mirtojiyev, M. (1984). *Polysemy in the Uzbek language*. Tashkent: Publishing House of ‘Science’.
14. Mykhailiuk, O., & Pohlod, H.Y. (2015). The languages we speak affect our perceptions of the world. *Journal of Vasyl Stefanyk Precarpathian National University*, 2(2–3), 36–41. <https://doi.org/10.15330/jpnu.2.2-3.36-41>.
15. Oakes, L. (2001). *Language and national identity: Comparing France and Sweden*. Amsterdam: John Benjamins Publishing Company.
16. Pollock, E., Chandler, P., & Sweller, J. (2002). Assimilating complex information. *Learning and Instruction*, 12(1), 61–86. [https://doi.org/10.1016/s0959-4752\(01\)00016-0](https://doi.org/10.1016/s0959-4752(01)00016-0).
17. Rao, V.Ch.S. (2021). Cognitive linguistics: An approach to the study of language and thought. *Journal for Research Scholars and Professionals of English Language Teaching*, 5(24).
18. Rashidova, H. (2020). The concept of term and terminology in linguistics. *Academic research in educational sciences*, 3, 796–800.
19. Shmeleva, O.Y. (2009). On the issue of multidirectional trends in the field of terminology (based on the marketing term system). *News of the Saint Petersburg University of Economics and Finance*, 2, 76–81.
20. Telek, M.M. (2019). Eponymic terminological collocations in the sublanguage of infectology. *Scientific Journal of the Lviv State University of Life Safety “Philological Periodical of Lviv”*, 5, 152–159. <https://doi.org/10.32447/2663-340X-2019-5-26>.
21. Temmerman, R. (2000). *Towards new ways of terminology description: The sociocognitive approach*. Amsterdam: John Benjamins Publishing Company.
22. Veinott, C.G. (1966). Programming decision tables in FORTRAN, COBOL or ALGOL. *Communications of the ACM*, 9(1), 31–35. <https://doi.org/10.1145/365153.365164>.
23. Wierzbicka, A. (1990). The meaning of color terms: semantics, culture, and cognition. *Cognitive Linguistics*, 1(1), 99–150. <https://doi.org/10.1515/cogl.1990.1.1.99>.
24. Xu, W., & Taylor, J.R. (Eds.). (2021). *The Routledge handbook of cognitive linguistics* (1st ed.). New York: Routledge. <https://doi.org/10.4324/9781351034708>.
25. Yakovleva, A.A. (2014). On the issue of the concept of “term” in modern linguistics. *Interexpo Geo-Siberia*, 6(2), 88–94.