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Mapping conceptual spaces in contemporary linguistics: Insights from lexical analysis

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Abstract
Contemporary linguistic studies have shown an increasing interest in conceptual spaces as a helpful tool for comprehending how meaning is organized and represented. This study focuses on the mapping of abstract areas through lexical analysis techniques. Drawing upon a diverse range of linguistic data, including corpora, dictionaries, and semantic networks, this study explores the interconnectedness of concepts within various domains. Through the identification of co-occurrence patterns and semantic associations, we examined how words and concepts relate to one another in multidimensional spaces. By analyzing the distributional properties and semantic relationships, this research provides beneficial perspicuity into the organization and structure of conceptual spaces, clearing the cognitive processes involved in language comprehension and production. The results offer implications for linguistic domains, including lexical semantics, cognitive linguistics, and natural language processing, emphasizing the potential of mapping conceptual spaces in advancing our understanding of language and cognition. This linguistic study contributes to the growing body of research on conceptual spaces, paving the way for further investigations into the nature of meaning representation and its implications for language acquisition, translation, and computational modeling.

Keywords: contemporary linguistic studies, linguistic data analysis, meaning representation, semantic associations

Public Interest Statement

This study explores the organization and representation of conceptual spaces in language using lexical analysis techniques. It uses data from corpora, dictionaries, and semantic networks to identify co-occurrence patterns and semantic associations. The research provides insights into the structure and organization of conceptual spaces, enhancing our understanding of language and cognition. It contributes to the growing body of research on conceptual spaces.

Introduction

In contemporary cognitive semantics research, conceptual analysis serves as a generalization of cognitive analysis in a broad range of directions and problematics. The nature, direction, and content of conceptual analysis are extensively examined by leading linguists as crucial questions in modern linguistics. There is an emphasized need for a more precise definition of the terms "concept" and "conceptual analysis," as their popularity among researchers does not sufficiently contribute to their clear understanding. As commonly known, a concept implies structured knowledge: representation, image, notion, cultural scenario, frame, personal attitude, belief, cultural meaning. The most relevant and justified interpretation of a concept emerges as an analogue of a notion in a discursive and effective aspect, involving the activation by the discourse subject of the mental conceptual content when actualizing the corresponding knowledge and consciousness 'quantum' in current conditions and processes of meaning formation and formulation (Lewis & Vasishth, 2013).

The task of discovering knowledge encoded in language forms is accomplished through conceptual analysis as the reconstruction of a concept. The reconstructed everyday knowledge can be directly associated with a linguistic form or sign (intentional value), as well as with the cognitive context generated by the usage of signs. In such cases, conceptual content is established by inference using associative mechanisms of metaphor and metonymy (implicational component of semantic linguistic expression).

The incorporation of onomasiology and semasiological semantic analysis techniques into cognitive semantics is not coincidental; rather, it is fundamental to the field's essence and core principles. Semantics, by nature, is inherently conceptual and cognitive in its methodology (Franco, 2022). The boundaries of semantics have expanded to encompass knowledge that surpasses language expression and includes the relationship between language and consciousness. This knowledge, which constitutes the conceptual system, is presumed to be the content of consciousness and is predominantly expressed through sign systems.

An essential characteristic of knowledge embedded in concepts is its activated nature. Consciousness, in differentiating between conceptual and linguistic worldviews, represents knowledge that operates during the process of human perception and comprehension of reality. The involvement of the conceptual model of the world, conceptual system, and concept within operative consciousness has been emphasized by researchers (Wilson, 1991; Bulmer, 2017). The conscious understanding of the conceptual content of linguistic units is a prerequisite for their semantic and conceptual analysis. Conceptual analysis aims to reveal the cognitive content, the knowledge extracted and consciously apprehended during the perception of language units. Semantic analysis uncovers meaningful features of linguistic elements, units, their forms, and combinations, which indicate the underlying cognitive content they represent.

This article explores the possibilities of interpreting the concept of cognitive scenes from the perspective of knowledge and understanding of object-related situations, which are captured both in concept-meanings of lexical items and in concept-propositions. The problem of representing knowledge in language is potentially inexhaustible, despite its association with the philosophical issues of the relationship between thought and language dating back to antiquity. From the standpoint of conceptual analysis of

language expressions, this issue can be considered from two planes. On one side of the issue, the presence of knowledge is judged based on the representation of a specific conceptual domain – the domain of designates – evident in the content of language expressions (Faber & Cabezas-García, 2019). Language mapping of the conceptual domain is carried out by linguistic elements – designators, where objects from the non-linguistic world are represented by objects from the linguistic world. They are denoted by nominative means, implied in metaphoric and metonymic nominations, or their references are discovered through inference during the cognitive processing of information contained in communicative and cognitive contexts. Inference or semantic deduction is possible when the recipient has mental representations activated which led to such deductions. These mental representations take the form of cognitive models (schemas, frames, scenarios, and other ways of organizing knowledge) that are linked to language.

Therefore, the second essential aspect of representing knowledge in language is how this conceptual domain is linguistically represented, and how it is "unfolded" in the minds of speakers of the language – that is, what cognitive models, schemas, and other types of mental representations are found in the consciousness of language users through the prism of the language itself (Krawczak et al., 2022). A direct, immediate link between how language delineates a conceptual domain and the underlying "reality of thought" may not exist since linguists cannot definitively ascertain what is perceived as beautiful by individuals from different linguistic backgrounds, such as Ukrainians or English speakers. Rather, our focus lies in conducting a linguosemiotic analysis, wherein we explore the syntactic, semantic, and pragmatic aspects of language used to discuss various concepts, including the concept of beauty, while considering the contextual factors and circumstances in which such discussions occur.

Materials and Methods

The analysis of language expressions from a conceptual standpoint involves two primary objectives. The first is to uncover the "conceptual encoding," which refers to what is being represented in the language (Kewenig et al., 2022). The second objective focuses on the "procedural encoding," which pertains to how the conceptual domain and concepts are represented in the language (Sasamoto et al., 2019). The distinction between conceptual and procedural encoding in discourse is driven by the need to structure discourse content in a way that facilitates easy interpretation for speakers with minimal effort. Discourse encodes two types of information crucial for inference: the representational (conceptual) information and the computational (procedural) information. These encompass knowledge about the manipulated representations and the manner in which they are handled.

Consequently, conceptual representations are accompanied by manipulative representations that are responsible for packaging and unpackaging them. The nature of these manipulative representations may not be immediately evident, as they could potentially be concepts or rule-based representations. As Klix (1988) suggests, human knowledge encompasses three key elements: 1) concepts and the relationships between them, often mediated through words or signs; 2) operational rules governing the use and manipulation of static systems; and 3) rules for objectifying and expressing the outcomes of manipulation in verbal form, either through written records or within communicative acts.

In relation to the division of information into two types, language resources representing a concept should include not only primary designators but also markers, reflexes, and traces that indicate the concept (Widdowson, 2019). These additional indications can be seen as manipulative representations that assist in processing conceptual representations. While lexical nominative resources, forming the lexical-semantic field and reflecting ontological categories, are central to concept representation, other linguistic elements such as grammatical meanings, sentence meanings, and discourse patterns can also explicitly or implicitly express a concept.

In the context of conceptual analysis, the structure of a concept, underlying its designations, is of primary interest in cognitive semantics (Fernández-Domínguez, 2019). Rather than focusing solely on the sensory image of a typical representative of a category, this analysis aims to capture the idea or prototype and its cognitive structure.

When correlating a situational context, knowledge about it, and the linguistic representation in which this knowledge can be discovered, it is important to emphasize the distinction between multiple "levels" that encompass the world of ontology projected into the space of language, reflecting thought, and language itself:

- The objectual (denotative) situation: the real (imaginable) situation, perceived by consciousness in the form of an image, impression, gestalt, or similar representations.
- The cognitive scene: the conceptualization of the objectual situation, which plays a role in "planning" a specific content of thought about the objectual situation and choosing a perspective for its presentation, in extracting the meaningful basis of a value. This can be compared to the "deep semantics" of an utterance or, in the terminology of Fillmore (1975), a "scene-prototype." The cognitive scene reflects the speaker's awareness of the "state of affairs" and fixes the knowledge of a typical situation (prototype).

- Proposition: the semantic structure of a specific utterance in which the cognitive scene is interpreted using specific semantic and structural devices for organizing language units and entire texts (discourses). This allows us to consider the proposition as the "surface semantics" of an utterance, the semantic form of representing its meaning. The strategy of proposition development from a mental representation is largely determined by the speaker's knowledge about the described denotative situation, i.e., the cognitive scene that has formed in their consciousness. The proposition should ideally be maximally approximated to what it denotes. This applies to two aspects: the selection of nominations based on their ability to correspond to the object of thought, and the choice of modality based on its correspondence to the speaker's knowledge of the state of affairs.

When discussing the varying accessibility of conceptual content expressed through language forms, Talmy (2006) notes that when one considers a specific concept, their thinking may suggest one or two lexical forms that express it, and upon introspection, several additional lexical forms for presenting the concept may be discovered, but not all of its representatives. A complete list of these forms can be obtained through analytical procedures involving corpus and lexicographic research. He concludes that such is the organization of (linguistic) thinking – the conceptual content expressed through language has different degrees of «accessibility» in introspection. Lexicalized conceptual content is found to be more accessible when called upon in introspection (Löhr, 2022), whereas grammatical meanings of word forms or the meanings of function words such as prepositions and articles are less accessible. Consequently, the content that serves to present not itself, but other content (such as the grammatical meaning that shapes the lexical meaning), is less accessible to consciousness, performing a manipulative representational function. As an example, let us consider the representation of the concept 'vision' in the English language. To determine the boundaries of its representation, it is necessary to extract a series of «episodes» or «frames» within the cognitive scene that correspond to specific areas of knowledge about perception and are lexically represented. These «episodes» include the domain of the perceiving subject (the observer), the domain of the perceived fragment of reality (the object of perception), and the domain of a specific spatio-temporal context of perception. These fragments can be identified within the cognitive scene as it is the consciously delineated and sensorily processed aspect of the situational context.

This cognitive representation can be referred to as a "chronotope" – a concept that describes the spatial-temporal arrangement of a situation, reflecting in the mind the real "topochronos," which encompasses filled space and time along with the entities that inhabit it, interact within it, and undergo dynamic changes

(Tomaselli, 2022). Within the Cognitive Scene, one can identify distinct "episodes" as individual features or characteristics of the perceptual process (event), such as duration, spontaneity, directionality, intensity, and more. Furthermore, combinations of these individual episodes can form "frames" that encompass multiple components of the cognitive scene, categorized according to the subject-perceiver: they can be seen as an observer (visual observer) actively engaged in perceiving a specific object or event, or as a witness who becomes an involuntary participant in the act of perceiving the perceptual object. Depending on the subject's interpretation, these "frames" are enriched with specific elements, and so forth.

The explicit representation of perception through verb predicates (e.g., glance, look, behold, examine, peep, see) is combined with the nominalization of events using deverbal nouns and dependent clauses that carry implicit implications. This combination is achieved by activating the conceptual component of "attention" within the frame of 'perception' or by activating the sense of "being visually accessible" in certain contexts.

Perception can be embedded within another event, where the act of looking triggers an action and is represented as a causal factor (Fuchs, 2023). Alternatively, perception can frame the presence of events or the characteristics of objects or individuals, presenting them as observable. The cognitive scene of 'vision' serves as the conceptual foundation for these expressions, playing a role in presenting the spatial-temporal order (as previously discussed) and functioning as a manipulative mental representation shaping the representation of existence.

Examples:

(i) *She couldn't help but frequently glance at Mr. Darcy, with each glance confirming her dreaded suspicions. Although his gaze wasn't always directed at her mother, she was convinced that he was consistently fixated on her* (Austen, 1813).

(ii) *No sooner had he and his companion bid their farewells, than Jane's inviting glance signaled Elizabeth to follow her upstairs* (Austen, 1813).

(iii) *While traversing these vast expanses, the eye sporadically catches sight of scattered groups of cattle attended by solitary herdsmen, motionless like statues, their long slender pikes tapering into the air. Similarly, the eye beholds the slow procession of mules across the barren landscape, reminiscent of camels in the desert. It may also come across a lone horseman, armed with a blunderbuss and stiletto, silently prowling the plain* (Washington, 1865).

The nominal representation can encode the perceived quality of an object in relation to perception – its lack of attractiveness, as exemplified by the phrase «a sight to look at» (iv). It can also capture the affective states causally induced by the visual perception of a scene – horror or fear, as seen in the phrase «they saw a sight which sent them flying» (x). Furthermore, it can denote the limits of one's field of vision, as seen in the expression «out of sight» (v). The external appearance of objects that arises during the act of perception can be represented by phrases such as «to know someone by sight» (vi) and «love at first sight» (vii). Lastly, the visually retained image stored in memory can be alluded to by phrases like «to rub from one's sight» (viii).

Examples:

(iv) *He had been drunk over in town, and laid in the gutter all night, and he was a sight to look at. A body would a thought he was Adam – he was just all mud* (Twain, 1885).

(v) *The boat floated on and went out of sight around the shoulder of the island. I could hear the booming now and then, further and further off…* (Twain, 1885).

(vi) *That first day passed pleasantly enough in a whirl of excitement, meeting all the new students,*

learning to know the professors by sight and being assorted... (Montgomery, 1908).

(vii) *Who ever loved, that loved not at first sight?* (Marlowe & Chapman, 1598).

(viii) *The scent of apples: I am drowsing off.*

I cannot rub the strangeness from my sight

I got from looking through a pane of glass

I skimmed this morning from the drinking trough

And held against the world of hoary grass.

It melted, and I let it fall and break.

But I was well (Frost, 1914).

The inclusion or exclusion of an external observer can be encoded not only deictically (whether the speaker is included or excluded from the cognitive scene) but also through a range of propositionally realized meanings based on the notion of «being visually accessible,» implying the presence of an observer-interpreter. This is exemplified by the phrase «with disappointment enough to advise a spectator» (ix):

(ix) *Often, while making the circuit, he paused, and, shading his eyes with his hands, examined the desert to the extremest verge of vision; and always, when the survey was ended, his face clouded with disappointment, slight, but enough to advise a shrewd spectator that he was there expecting company, if not by appointment; at the same time, the spectator would have been conscious of a sharpening of the curiosity to learn what the business could be that required transaction in a place so far from civilized abode* (Wallace, 2016).

Furthermore, the phrase «*they saw a sight which sent them flying, with white faces, into the village*» (x) showcases the affective response evoked by the perceived scene and highlights the subsequent actions taken by the individuals involved: *Peeping into the open door they saw a sight which sent them flying with white faces into the village. Within an hour I was on the spot and had taken over the case* (Doyle, 1905).

The implicit presence of an observer-interpreter, often referred to as a "background observer," who is not explicitly mentioned in the proposition but is part of the cognitive scene, is formed through the activation of the sense of "being visually accessible" in the statement. This sense is encoded not only in the semantics of lexical values such as adjectives and verbs but also in certain nouns. For example, verbs like emerge, emanate, expose, and issue imply the appearance or emergence of an object or entity from a hidden or previously inaccessible state.

Similarly, metaphorical use of communication and information verbs, with a non-agentive subject, can also serve as a means of presenting what is perceived. In such cases, the non-agentive subject is interpreted as the object of perception. For instance, in the sentence "His clothes argue poverty," the clothes are metaphorically presented as a perceptual object.

A range of adjectives is also marked by the semantic fields of "perception" and "accessibility/openness to perception." These adjectives can denote qualities of perceptual objects or entities that are the focus of attention, such as being accessible, apparent, appreciable, clear, eminent, exposed, hideous, obvious, ostensible, overt, and perceptible. The semantic element of accessibility to perception reflects the concept of an observer. The implication of an observer serves two functions: it indirectly refers to a qualitative concept used to describe the object, such as "open," "understandable," or "visible," and it also manipulates the attention window by placing an object and its attribute within it, while keeping the observer "off-screen." However, the inference can be directed towards the concept of the "perceiving subject," which may not have been included in the initial cognitive scene or the proposition but can be inferred through paraphrase or contextual understanding. For example, "The crack in the wall was readily apparent" can be paraphrased as "I saw a crack in the wall. The crack was big enough to be noticed (for me to see it)."

The concept of perceptual accessibility can also be combined with negation, as seen in expressions like backstage, behind-the-scenes, in private, and out of view. These expressions indicate locations or states

that are not easily visible or accessible to the general public.

Deagentivization, as a semantic operation involving the cognitive scene in constructing propositions, results in collapsing it into a characteristic of the perceived object (Lehmann, 2019). This is achieved through manipulation of the conceptual content of the observer. By removing the observer from the proposition structure, the semantic focus shifts to characterizing the object itself.

Similarly, the manipulation of first-order conceptual content serves a similar purpose. This can be observed in words such as cityscape, cloudscape, landscape, moonscape, seascape, shores cape, townscape, and waterscape, where the suffix '-scape' denotes a wide spatial scene of a particular landscape, emphasizing the perception of that space by an external observer. The primary conceptual content in these lexical items is the idea of "perceived space." This group of nouns demonstrates the lexical richness of the English language in representing various aspects of visual perception. In Ukrainian language, this semantic aspect falls under the broader category of polysemy (Demenchuk, 2023).

The materials above suggest that the cognitive scene, as a representation of knowledge about a particular state of affairs in the external world, is constructed as a two-layered structure. It contains a first-order conceptual content and a second-order conceptual content that manipulates the first-order content. When interpreting and forming the profile of the cognitive scene in order to structure a proposition, there is a connection between these two types of conceptual content. Thus, the cognitive scene serves as a tool for constructing the worldview in linguistic cognition. Therefore, let's delve deeper into the essence of the concept of the cognitive scene as knowledge that is directed towards language and manifested within it. The concept of the cognitive scene is crucial in conceptual exploration of vocabulary, cognitive modeling of sentences, text analysis, and discourse from a cognitive perspective.

In the realm of verbal lexicon, the cognitive scene serves as the source of meaning for verbs or finite verbal constructions. It reflects the denotative situation that has been "filtered" through the speaker's consciousness. By using a verb lexeme, the speaker conceptualizes a specific fragment of non-linguistic reality, comparing it to something that can be called a "situation concept," which includes a particular set of participants. The cognitive scene, which is denoted by the verb, is demarcated from the denotative (referential) situation as its mental model, encompassing not only the "extracted and language-processed denotative situation" but also the speaker's relationship to it, as manifested in how this linguistic situation is connected to the broader context of linguistic situations.

The cognitive scene, understood as a result of cognitive construction of a situation (Saerys-Foy & Magliano, 2021), is the informational representation of a referential, denotative, and objective state. It is directed towards language actualization and is revealed through the analysis of the semantics of linguistic expressions. As such, it is considered by many researchers to belong to the semantic level of language since it is meaningful and represents a generalized depiction of the situational referent, always simplifying the latter. The cognitive scene serves as the conceptual (meaningful) basis of linguistic expressions and cannot be regarded as their literal meaning. However, it should be seen as the conceptual foundation underlying linguistic meaning.

In this perspective, the cognitive scene has received various synonymous designations in the works of different authors, such as situation, elementary situation, typical situation, state of affairs, cognitive model of a situation, image of reality, and referential situation (Melnychuk, 2023; Isaeva et al., 2022; Hamawand, 2023). These designations highlight the nature of the cognitive scene as knowledge about real, typical events, actions, states, etc., which allows the continuum of reality to be divided into typified fragments or "frames". The segment of reality, whether real or imagined, depicted by the cognitive scene, serves as its referent. The same segment of reality can serve as the referent for multiple "synonymous" cognitive scenes, which depict it from different perspectives, with each scene capturing its referent with varying degrees of identity.

Instances where a single fragment of reality is represented can be conceptually simulative, capturing conceptual proximity or identity between cognitive scenes while differing in event schematization. In the projection of the cognitive scene reflected by the verb (especially evident with action verbs) onto the syntactic structure of an utterance, the presence of iterative senses in the verb and complement plays a crucial role in semantic agreement. This allows for the depiction of the same cognitive scene of an action in different ways: through complete structures ("What were you doing on Saturday? – I was doing laundry, preparing lunch"), through ellipsis of the subject ("Doing laundry, preparing lunch"), or through ellipsis of the verb ("Oh, laundry, lunch").

The concept of cognitive scene closely aligns with the notion of "semantic situation," which has multiple interpretations. It is used to refer to both the referent of a sentence and the conceptual referent, necessitating a more precise definition that relates "situation" to the denoted fragment of the world. We propose that the term "cognitive scene" accurately reflects the nature of this construct as a cognitive representation of the image of a certain situation in reality, which is expressed in linguistic form and serves as the referent of a linguistic expression.

Results and Discussion

In the analysis of functional-semantic sentence models from a situational-structural and cognitive perspective, the "objective (denotative) situation" is understood as the structure of the actual (or fictitious) world reflected by the sentence. The objective situation is constructed in the prototypical meaning of the sentence, which is the most generalized linguistic realization of the structure of mentally represented objective situations. The prototypical meaning of a sentence roughly corresponds to the "state of affairs," but with adjustments for categorical-semantic generalizations such as "unanalyzed situation," "object and attribute," "relation between objects," and so on. Thus, the concept of the prototypical meaning of a sentence corresponds to the cognitive scene as a generalized and typified referent of the sentence.

The cognitive scene, therefore, serves as a representation of a fragment of reality and as the meaning of a linguistic expression, encapsulating this representation. It establishes a connection between what is expressed about the world and the world itself: the referent of an utterance is the cognitive scene as a set of elements present in the speaker's mind at the moment of speech (corresponding to elements of objective reality), which to some extent determine the selection of linguistic elements in the formation of the utterance. Thus, the cognitive situation combines the sequence of "the world as it is – the world as perceived and known – verbalization by a verb." In this aspect of the cognitive scene, where it replaces the mentally represented fragment of ontology, becoming its representative and the referent of the linguistic expression (word, phrase, sentence), a new perspective on the principle of double signification proposed by Émile Benveniste can be gained (Benveniste, 1966).

Double signification constitutes a specific ontological property of language systems, without analogies in other semiotic systems. It involves the interdependence of semiotic and semantic modes of signification: primary signification units (words) must be recognized and identified with the objects and concepts they denote (semiotic mode of signification), while secondary signification units (sentences, utterances) must be understood and correlated with the meanings they convey (semantic mode of signification) (Benveniste, 1971). In the principle of double signification, therefore, reference (Level I of signification) is differentiated from semantics (Level II of signification), suggesting semiotic signification by the virtual sign in the language system (a result of the cognitive act) and semantic signification under the conditions of language system actualization in speech (a process of explication of knowledge through verbal expression using predicate units of language-speech).

The interpretation of the concept of "cognitive scene" presented above focuses on the cognitive

aspect of the formation of linguistic signs. It is viewed as the result of understanding a certain real (or imaginable) state of affairs in the process of formulating an utterance about it. The idea of the cognitive scene is present in the understanding of sentence content as a typical situation, constructed as knowledge about the referent of the utterance. A typical situation can be seen as the reflection of a typified event, fixed in consciousness as a formula consisting not just of components but of the configuration and structure of those components. The configurational nature of the cognitive scene's content is captured in the concept of the so-called poly-situativeness of verbal meaning: within a single lexical item, a whole complex of reflected situations can be found – a situational theme, a field structure that includes core and peripheral denotative situations reflected in intensional, implicational, and extensional sememes of the verb's lexical meaning.

In describing the semantic structure of verbs, it is believed that verbs rigidly fixate only one aspect of knowledge about a situation, while other "situations" or their elements can be implicitly implied through metonymic processes, facilitated by the cognitive organization of thought (Richardson et al., 2021). The semantic structure of a verb includes knowledge about constants and actants, or it implies them, but it cannot be definitively stated. It is metonymic shifts and metonymic transformations that underlie the nominalization of a whole situation by a verb, a special type of human activity, wherein one component of the situation, or one along with another, when designated, has the ability to activate the entire situation in our imagination, or in other terms, activate the corresponding frame. However, this can be said specifically about the cognitive scene. A verb-denoted cognitive scene has a specific focus, profile, perspective, and often, along with the idea of dynamic spatial-temporal localization of object entities, includes a representation of the subject of the action (reflected in the meaning of "subject" verbs) or a representation of the object of the action (possessed by "object" verbs), an instrument, or another characteristic of the action (such as "instrumental," "adverbial," "locative" verbs, etc.). In other words, the semantic structure of a verb, consisting of semantic features or semes, should be differentiated from the cognitive scene, which is the adverbial knowledge of the perceived or conceptualized fragment of reality facilitated by the verb. The content of the cognitive scene, such as buying in a supermarket, allows for the reconstruction of all the implicitly implied fragments of the event corresponding to the verb. These peripheral components of meaning, which are associated with the lexical meaning and can be inferred, constitute the implicational content of the word. However, this implicational content is part of the cognitive, specifically conceptual, content of mental representation, which is the cognitive scene.

The cognitive-discursive aspect of cognitive semantics is presented in the concept of discourse or text modeling. In this framework, the notion of cognitive scene is employed to model the perception and understanding of texts. The cognitive scene corresponds to concepts such as "situation schema," "situation model," and "mental scene," which result from the speaker's conceptualization of a real or fictional fragment of the world. For instance, Van Dijk (1985) uses the concepts of "situation model" and "situation schema" to represent knowledge structures in the cognitive analysis of discourse processing, emphasizing the fundamental role of models in social cognition. His situational models are based on the individual knowledge of language users, which encompasses their previous experiences, attitudes, intentions, and emotions, rather than generalized knowledge about typical events and situations (Van Dijk, 2009), as in the mental models of Johnson-Laird (1994, 2005), frames, and scripts of Schank & Abelson (2013), and others.

The use of the cognitive scene model as an interpretative tool explains why listeners can understand implicit and unclear fragments of texts: they activate corresponding fragments of the situational model (Van Dijk, 1985). This interpretation of the situation model incorporates socio-individual knowledge of stereotypical or unique events. Situational models (Cognitive Scenes) can be both general (e.g., social scripts) and specific (representations of individual contexts, unique events personally experienced or heard). These models can contain not only propositional information but also analogical information, characterizing,

for example, the spatial structure of the denotative situation, spatial relationships between objects, and external properties of objects and individuals (in the sense of Johnson-Laird). In contrast to situation models, situation schemas merely demonstrate that "regardless of the type of information about a situation required, individuals systematically distinguish, for example, the surrounding environment, circumstances, participants and their actions, or the various properties of these constituents. Opinions and evaluations held by individuals can be an integral part of their situation modeling (Van Dijk, 2009).

Models and schemas of situations, as well as cognitive scenes (according to several authors' interpretations), are encoded through linguistic forms via the semantic systems of languages. They allow the speaker to discretize the perceived (or imagined) reality (Farrar, 2003) and gain access to the level of verbal messages, where knowledge representing ontological entities is constructed and actualized. Consequently, this process integrates three levels of knowledge: conceptual, semantic, and linguistic, such that the conceptual level is projected onto the level of language through the semantics of linguistic units (Alefirenko et al., 2019). This projection is facilitated by a primary property of language as a semiotic system, namely, the ability of its sign-symbols to reduce the information contained in gestalt-like representations. In order for linguistic symbols to represent the entire continuum of knowledge about the world common to all individuals, as well as the cognitive experience of each subject individually, a massive process of schematization, generalization, averaging, and simplification of the nature of the stored knowledge takes place. As a result, linguistic signs representing this knowledge and experience are associated not with individual, isolated particles of experience and knowledge, but with entire categories, classes, types, kinds, groups, and other such knowledge structures (Sapir, 2023). While closely tied to human cognitive experience and knowledge, language does not precisely mirror either mental reality or the non-linguistic world.

Using familiar metaphors, it can be said that language "carves up," "cuts," and "segments" the conceptual space of knowledge and experience, discretizing it primarily through categorical values, lexical-grammatical categories (parts of speech), and grammatical (morpho-syntactic) means (Payne, 1997). This discretization creates discrete domains and elements within the conceptual sphere that exist as interconnected dimensions of relationships and associations. Scientific constructs such as the mental lexicon, associative-semantic network, connectionist networks, and mental spaces reflect the essence of these relationships.

In contrast, the continuity and non-discretized nature of the conceptual sphere stand opposite to language, which operates as a mechanism with a fixed number of elements and devices for constructing meaning, converting information of various formats into the process of generating semantic structures – propositions that motivate the syntactic development of sentences. The correlation between the conceptual and semantic-grammatical levels ensures reliable and rapid access to a fixed set of abstract grammatical elements, which serve to structure and differentiate elements at the conceptual level. As a result, linguistic expressions inevitably reduce the level of explicit informativeness to non-linguistic representations in order to facilitate communication efficiency (Langacker, 2012), relegating part of the information to implication and zones of inference, while condensing it to the necessary and sufficient volume of meaning (proximal and distal meanings). In this process, typological factors and language universals come into play: messages encoded through verbal code have the necessary level of detail for the recipient to construct a cognitively adequate scene.

For instance, in the Ukrainian language, a necessary condition for conveying a situation of movement is the explicit indication of the manner (or means) of movement (crawl, drag, walk, ride, float, fly (by plane), travel by bus/train, but walk, paddle a boat, float on a raft). In comparison, in the English language, this condition is not as obligatory when the hypernymic verb "go" is present (*go by train/plane/car*, etc.). Similarly, let us consider the cognitive scenes represented by English words "shore" and "bank" and the Ukrainian word "*bereh*". English nouns convey information about the type of object having a shore, which

is relevant – the shore is encoded either as a closed line surrounding a large body of water (shore of a lake or sea), or it is a (usually elevated) shore on only one side of the body of water, i.e., one of the two banks delimiting the body of water on the right and left (in this case, the object being a river, canal, stream, or even a ditch), or the shore of a small body of water, such as a pond (…*Leo said for the tenth time, as if saying it made things safer. They eased along the dark, weedy creek bed for two hundred yards, and then climbed the other bank*… (Grisham, 1993)). Accordingly, the noun "bank" can have attributes such as "left," "right," or "far," while "shore" can be oriented by cardinal directions such as "northern," "southern," "eastern," or "western," or by the names of large bodies of water. In the actual perception of a river (when the banks are visible), the cognitive scene may include both banks, which is also possible in the case of a small lake or pond. However, it is not possible in the case of a sea or very large lakes like Lake Superior due to the significant distance between opposite parts of a single bank. Only in an abstract representation can all four segments of a lake or sea shore be simultaneously presented.

Based on the above, it can be suggested that the cognitive scene is a semantic-cognitive construct that is the result of cognitive modeling of a fragment of reality. By its function, this type of representation is a meaning, i.e., a pragmatically structured knowledge expressed through verbal means. It is a construct in the semantic space of language thinking. This statement is based on the idea of delineating primary and secondary levels of cognitive processes. Primary-level cognitive processes are individual and involve the formation of knowledge as a result of individual cognitive activity. Secondary-level cognitive processes are more generalized as they occur in the actualization of knowledge during the speech activity of an individual and rely on the foundation of primary knowledge.

Conclusions and Recommendations

The information processes involved in perceiving the world and shaping the ways in which it is conceptualized (and the internal content of the cognitive model) constitute the essence of the "epistemic world." The description of the world constitutes the "semantic world," which consists of individual expressions belonging to different aspects of the utterance structure, or a set of such expressions harmonized within a system or discourse. While agreeing with the main point regarding the dialectical unity of the epistemic and semantic worlds in linguistic ontology (due to the principle of double signification), it should be clarified that the cognitive scene is an element of both the epistemic and semantic worlds, which are the general categories, while the cognitive scene itself is a specific category.

Within the epistemic space, the results of knowledge and understanding of the actual world are represented, some of which take the form of cognitive scenes. The semantic world is composed of a diverse set of cognitive scenes serving as the substantive basis of linguistic expressions. The cognitive scene, as a result of reflection and cognition of a particular fragment of reality, connects the epistemic world (i.e., the results of cognition) with linguistic ontology, reflecting the cognitive activity of the subject that directs its output towards linguistic embodiment.

In linguistics, data about the "impartial" reality are of little interest, as it examines the world in the modality of the subject. The ontology of language is not what is observed "outside the window," but rather what is constructed (conceptualized) by language, as well as by its speakers and linguists, in this lawful space. In natural language, extralinguistic reality represents a world interpreted by individuals, an "ontology" of phenomena as represented by language, determined by how language users conceptualize the non-linguistic reality. The intricacies arise only in the context of a specific mode of linguistic conceptualization of the world. The referents of linguistic expressions are not fragments of the objective world but rather the interpretation of the world in the communicator's consciousness – a process of assigning meaning to aspects of the accepted real scene or a constructed mental scene that are deemed salient and emphasized in the utterance

about that scene ("ontology as represented by language"). However, for mental representations – cognitive scenes and schemas – the referents are indeed fragments of the world, motivating the characteristics of the representations through their structure, properties, and features.

The usage of the concept of "cognitive scene" in the analysis of linguistic expressions based on the aforementioned principles appears to be justified. Firstly, cognitive scenes serve as the semantic foundation of linguistic expressions. Secondly, they are schematic representations of knowledge about typical events, actions, or situations. Thirdly, cognitive scenes embody one of the stages of cognitive-informational processes that occur during the semioticization of non-linguistic reality in communication. Fourthly, cognitive scenes also involve the interpretation of a reflected fragment of reality for embedding its image into various types of contexts.

Recommendations for further investigation.

To fully comprehend the concept of conceptual spaces, it is recommended to broaden the scope of the study. Including a diverse range of languages and cultures in the analysis would enhance the exploration of how linguistic categories differ among various linguistic communities, providing a more thorough and nuanced understanding.

Incorporating corpus-based analysis is crucial for enhancing the precision and practicality of our findings. By gathering a wide range of language samples from extensive corpora, there is an option to conduct a more thorough analysis of lexical units and their distribution, ultimately leading to more dependable and applicable research. This approach may improve the reliability and generalizability of our findings, making them more valuable in various contexts.

It is imperative to examine the impact of context on conceptual mapping thoroughly. Through a thorough analysis of language usage in a variety of social, cultural, or disciplinary settings, a comprehensive understanding of how cognitive models evolve over time can be achieved.

For a more comprehensive analysis, it is imperative to incorporate qualitative techniques such as cognitive interviews or ethnographic studies in conjunction with quantitative lexical analysis. These methods can provide crucial perspectives on how individuals perceive particular subjects and the cultural factors that impact their language.

Exploring the potentials of mapping conceptual spaces in language education is crucial for advancing language teaching and learning. By gaining an in-depth insight into how language influences cognition, it could be possible to create exceptional teaching approaches and materials that will elevate language learning experiences to a whole new level.

Acknowledging the limitations of the current study and proposing potential directions for further investigation is crucial. To further advance the field, exploring how mapping conceptual spaces could be applied to other linguistic phenomena, such as metaphor or grammatical constructions, would be a valuable pursuit.

By incorporating these recommendations, the study can further contribute to the field by offering new perspectives on the relationship between language and cognition.

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Authorship and Level of Contribution

The invention and development process, from conceptualization to design, was crucial to this successful project. It required careful consideration, attention to detail, and creative problem-solving skills to ensure that the end result meets all the authors' desired goals and objectives. Effective communication and collaboration among team members were paramount to achieving a cohesive and well-executed final research article. Thus, in the development of the study, ***Inna Varvaruk*** played a pivotal role in the idea and design process. Her extensive expertise in linguistic studies proved invaluable in the analysis and interpretation of results, and her input was integral to the composition and revision of the corresponding article.

Ulyana Solowij was an integral member of the team responsible for conceptualizing and executing the study. Her extensive knowledge of linguistic analysis and research design was instrumental in the successful gathering and analysis of the data. The co-authors are greatly appreciated her valuable contribution to the project.

The considerable impact of ***Roksolana Stefurak's*** linguistic analysis proficiency on the research's comprehensive range and profoundness is highly probable. Also, she contributed to the study with her expertise in the field of the Ukrainian language, enhancing the overall scope and depth of the study.

Nataliia Ivanyshyn made significant contributions to the development of the article. Ms. Ivanyshyn's extensive knowledge and expertise in the Ukrainian language and linguistic studies have been instrumental in enhancing the quality and precision of the content. Her insightful feedback and recommendations have been invaluable in refining the article's overall effectiveness and impact.

The study benefited greatly from ***Iryna Dzhochka's*** exceptional skills and expertise. She made a significant contribution through her extensive knowledge, meticulous data analysis, and exceptional writing abilities, thereby ensuring the study's success and accuracy. Her dedication and commitment to the project were evident in the quality of work she produced, and her contributions were invaluable to the team.

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