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ORIGINALITY OF THE CATEGORIES OF SENSE AND ABSURDITY CONCERNING NEURAL NETWORK MODELING

САМОБУТНІСТЬ КАТЕГОРІЙ СМИСЛУ Й АБСУРДУ ЩОДО НЕЙРОМЕРЕЖЕВОГО МОДЕЛЮВАННЯ

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The article highlights the neural network modeling of linguistic units in the context of the originality of the categories of sense and absurdity as a promising and innovative tool for modern scientific research. It is emphasized that the relevance of using the above categories in the context of this process naturally produces their existence as an important component of the modern scientific and technical paradigm. First of all, this is due to the ability of computer systems to analyze, process, process, and generate data, which in turn creates the problem of actualizing the original categories of sense and absurdity in this context. In turn, in addition to the conventional understanding of the categories of sense and absurdity, it is necessary to understand the pragmatic aspect of their functioning in the context of neural network modeling. Thus, the concept of sense should be positioned as the ability of a certain system to analyze, recognize, etc. (in fact, we are talking about any possible actions with data aimed at achieving an “output” result). Therefore, the above context produces an understanding of sense as an indicator of efficiency, an axiological determinant of the process of an artificial neural network.

Accordingly, if the sense here is the ability of a neural network model to parameterize data to obtain a certain result, it becomes an indicator of the latter’s ability to form coherent structures or reproduce various patterns. Thus, the sense in neural network modeling is more related to the efficiency of the artificial neural network, being a component of the evaluation of its results (current tasks of analyzing certain data). Instead, absurdity in the context of the same neural network modeling should be positioned as another relevant component of its work. First of all, we are talking about the existence of several absurd, illogical, and inappropriate solutions to the problem that neural network models use. For example, these can be repetitions or alternative versions of a translation during machine translation; arbitrarily interpreted information provided by a neural network model at the user’s request, etc.

Thus, the problem of the originality of the categories of sense and absurdity concerning neural network modeling lies in the complementary rather than antagonistic nature of their interaction, specific actualization, etc. First of all, the above-mentioned produces the prospects and productivity of studying these categories in integrated scientific research. In particular, the categories of sense and absurdity concerning neural network modeling complement each other, forming a special fruitful environment for the development and improvement of research on the language poly system. We are talking about the development and improvement of machine and deep learning algorithms, machine translation, etc. in the context of integrated and multidisciplinary linguistic research.

Key words: sense, absurdity, neural network modeling, text analysis, machine learning, artificial neural networks.

У статті висвітлено нейромережеве моделювання мовних одиниць в контексті самобутності категорій смислу і абсурду як перспективний та інноваційний інструментарій сучасних наукових досліджень. Підкреслено, що актуальність використання вищезазначених категорій в контексті цього процесу закономірно продукує їх побутування як важливого складника сучасної науково-технічної парадигми. Першою чергою, це викликано здатністю комп’ютерних систем аналізувати, обробляти, перероблювати та генерувати дані, своєю чергою, вищезазначене продукує проблему актуалізації самобутніх категорій смислу й абсурду в цьому контексті. Своєю чергою, окрім узвичаєного розуміння категорій смислу й абсурду, варто розуміти саме прагматичний момент їх функціонування у контексті нейромережевого моделювання. Так, поняття смислу доцільно позиціонувати як здатність певної системи до аналізу, розпізнавання тощо (власне, мовиться про будь-які можливі дії з даними, які мають за мету досягнення результату «на виході»). Відтак, вищезазначений контекст продукує розуміння смислу як показника ефективності, аксіологічної детермінанти процесу роботи штучної нейронної мережі.

Відповідно, якщо смисл тут виступає здатністю нейромережевої моделі до параметризаційних видозмін даних з метою набуття певного результату, то він стає показником можливості останньої у формуванні зв’язних структур або

відтворення тих чи тих закономірностей. Отже, смисл у нейромережевому моделюванні більшою мірою пов'язаний з ефективністю роботи штучної нейронної мережі, виступаючи складником оцінки її результатів (поточних завдань щодо аналізу тих чи тих даних). Натомість абсурд в контексті того ж нейромережевого моделювання доцільно позиціонувати іншим релевантним складником її роботи. Першою чергою, мовиться про наявність цілої низки абсурдних, алогічних, непитомих відносно завдання рішень, до яких вдаються нейромережеві моделі. До прикладу, це можуть бути повтори або альтернативні версії перекладу під час machine translation; довільно витлумачена інформація, надана нейромережевою моделюю на запит користувача тощо.

Отже, проблема самобутності категорій смислу й абсурду щодо нейромережевого моделювання криється у комплементарній, а не антогоністичній природі їх взаємодії, специфічній актуалізації тощо. Першою чергою, вищезазначене продукує перспективність та продуктивність вивчення цих категорій у інтегрованих наукових дослідженнях. Зокрема, категорії смислу й абсурду щодо нейромережевого моделювання взаємодоповнюють одна одну, формуючи особливе плідне середовище для розвитку та вдосконалення досліджень мовної полісистеми. Мовиться про розвиток і вдосконалення алгоритмів machine та deep learning, machine translation тощо у контексті інтегрованих та поліпредметних лінгвістичних досліджень.

Ключові слова: смисл, абсурд, нейромережеве моделювання, текстовий аналіз, машинне навчання, штучні нейронні мережі.

Statement of the problem in general terms and its connection with important scientific or practical tasks. The language poly system is a complex *construct* [20] (logical or intellectual formation, concept), which is based on communication, ontological, axiological, epistemological, etc. phenomena that can be ranked within the framework of the *social contract* [22]. The essence of the latter is a special organization of everyday life based on the agreement of individuals with each other. Here we are talking about the functionality of the language polysystem as an object of ontological reality, which is associated with the specific cohesive (cohesive) role of language as a determinant of socio-cultural phenomena, as well as the parametrization features of its use, etc. In particular, we are talking about the *magical* and *nominative functions* that ensure the connection between the objects of ontological reality and their names or titles. This, in turn, produces not so much a *proper (appropriate)* as a *comfortable* representation of the above-mentioned horizon of events within the national and linguistic worldviews.

Naturally, for such a process, it is not the object of the ontological space itself that is relevant, but its *name* (in a broader sense, meaning, i.e., the internal, logical content of something), which naturally replaces it. To a certain extent, *sense* [35] can be positioned as *content* [21], which is in constant formation, and this distinguishes the above concept from *meaning* [33]. Thus, the concept of sense includes in its structure the logical basis of becoming, which is actualized during its (the above-mentioned process) unfolding, which is called sense generation. The latter has an objective nature concerning any content that is in the process of becoming, emphasizing its fundamental existence (temporal duration).

Thus, the concept of sense should be understood as the essential content of a linguistic expression, word, sentence, text, sign, etc. This concept is usually understood as a component to which the above-mentioned process of sense generation can be applied. In this approach, the nature of sense can be localized through its defining configuration. We are talking about its *logical* (objective, independent of a specific meaning and content) *relation* to other elements of this configuration. Thus, the issue analyzed in our study requires transparency of the conceptual and categorical apparatus of the research: sense is a generalizing concept that includes, in fact, the category of sense (non-discrediting elements of the traditional sense) and absurdity (discrediting elements of the traditional sense).

Notably, the aforementioned *sign apparatus* (here we are talking not only about the language poly system as a center of a special kind of sign system (semiotics), but also about some possible actualizations (from the clock hand to the conventional map symbols) designed to ensure the connection between the objects of ontological reality, primarily in the brain of the speaker of the language poly system) is not inherent in humans but is acquired by them in the course of their life. The latter naturally allows us to speak of its *artefactual* [12] (artificial formation made by man) nature.

The aforementioned sign apparatus is inherent in its inseparability from human ontology with simultaneous atomization from it. This foreignness, in turn, although it is a *construct* [20] in the brain of an individual (biological organ), has a certain abstracted nature and functioning. The point is that formally, it has no specific ties to the existence of a biological being, such as a human being. For example, the nature of the signifying apparatus does not directly correlate with the acquisition of food, etc. by a human being: moreover, under certain circumstances, this apparatus can be seen as a threat to the existence of such an organism.

Here it is advisable to emphasize that pragmatism is a specific feature of sign systems. In particular, they directly correlate with: *the intended purpose*

(the essence of the represented data and its purpose), *the actualized means* (language, non-verbal means), *the originality of the used data transmission channels* (auditory, visual, tactile, or integrated types), and *the peculiarities of origin* (natural and artificial). In the context of our study, each of the above components is important, but it is the origin that is representative.

As for the origin, natural sign systems actualize elements of natural language (words, expressions, gestures, facial expressions, body movements), which are distinguished by national specificity, multifunctionality, social stratification, variability, and original dynamics of their actualization at various communicative levels (they are characterized by a wide communicative range: actualization of numerous lexical items from different spheres of communication). Artificial sign systems, on the other hand, actualize various symbols, formulas, graphs, signs, etc. taken from different fields of knowledge, which are representative of the relations between objects of ontological reality.

In addition, the above-mentioned systems are characterized by a strict functionality of their existence, since they are created and oriented to ensure the communication process, which, in turn, allows us to distinguish the following subtypes *apriori* (independent, not based on natural languages, but on the logical classification of concepts (philosophical language, mathematical language, symbolic systems, etc.), they are designed to overcome the ambiguity of linguistic units), *aposteriori* (their basis is natural languages, and their components are lexical units (words and their components: suffixes, prefixes, endings), this type of sign systems was created as a means of international communication (for example, Esperanto)) and *mixed* (accumulate elements of both the above types: they are a combination of fragments of natural language with artificially created components along with the links between them, usually they are divided into specialized (for example, programming languages) and non-specialized (for example, Volapiuk – an international artificial specialized language).

Notably, that the mechanism of sign systems is based on the human sensory apparatus, which is associated with the anthropocentrism (products created by people for people) of the above-mentioned entities. The essence of the latter is that the sensory apparatus is a means of establishing correspondence between various phenomena of ontological reality, axiological ranking of the latter, and operating with some of them as representatives (signs) of others. Within the framework of the above process, a special kind of object suitable for this purpose is localized, which acquires signs of a specific function in people's lives. At the same time, such signs are inseparable from the human body, reproduced and accumulated as a cultural heritage from generation to generation. In turn, the rules of their actualization, gradualness, peculiarities, etc. are acquired after birth through learning. Thus, people operate with the sensory images of signs rather than with the signs themselves: people use the sensory images of signs as substitutes (doubles) for the objects they denote.

Characteristically, that the relationship between the signifying object (sign systems, the language poly system in general) and the signified (the object world, the material) is rather conditional. The latter is related to the specifics of operating with such signs, language as a form the environment in which they exist, and the accumulative nature of this process. The above suggests that the process of identifying an object at a certain level arises precisely through sense because the latter mediates such a process. First of all, this allows us to talk about such a connection in the context of its nature (the center of sense units that correlate with each other: they are produced by each other, becoming the basis for each other).

In turn, the above-mentioned specific nature of the organization of senses, which consists of a certain sequence, structure, etc. of their functioning, allows us to speak of a special logic of their actualization. The latter is indicative of the technique of logical work (mathematical methods, formal calculations, statistical calculations, etc.). At the same time, it is advisable to talk about certain limitations of logical research, which can be reduced to the logic of statements and predicates (mostly technical (applied) problems).

Significantly, the above limitations relate to the idea of the non-universality of logical laws (their relativity, subject differentiation, etc.), which naturally leads to the arbitrariness of the choice of logical interpretations. This approach is based on the applicability of logical results outside the sphere of the language poly system, which produces the idea of replacing laws with a mathematical apparatus actualized on computing and information devices. Thus, this problem is more relevant for humanities or integrated studies related to the integration of the mathematical paradigm into them.

First of all, the relevance of the problem of the originality of the categories of sense and absurdity concerning neural network modeling is related to the specifics of the construction, and analysis, etc. of lexical units, stable and unstable expressions, sentences, texts, etc., which should be based on the dynamics of senses and sense chains. This

approach is opposed to the formal correlation of the organization of the above components according to certain parameters, which is not productive because it does not actualize the discourse. Thus, lexical items (along with their meanings, connotations, etc.) are not enough to localize the sense, since this process correlates with the process of transformation or transition of a word to a sense.

The point is that the sense is built precisely in the logical configuration determined by the process of sense generation, which precedes sense production. Thus, the nature of the aforementioned process shapes the sense of the expression comprehended by the speaker of the language poly system (the object of understanding-comprehension, identical in this case to the object of interpretation). Therefore, it is advisable to parameterize the process of sense generation within lexical units and a number of their possible interpretations. The latter is possible provided that such a procedure is defined, the peculiarities of its course are understood, etc.: it is noteworthy that the sense found within its limits can only be the one that has the parameters defined by it. Thus, the logical and sensemaking configuration is limited by the conditions of the interpretations of lexical units found, outlining the permissible limits of the actualized semantic fields.

Analysis of recent research and publications that have initiated the solution of this problem and on which the author relies. The problem of the originality of the categories of sense and absurdity concerning neural network modeling is quite complex. The latter, in turn, produces a multiplicity of studies of the dynamics, functioning, etc. of the above categories in several interdisciplinary and integrated works. The main feature of such categories is related to their discursiveness, which, in turn, constitutes a separate aspect of the problem. This is due to the need for an original process of actualization within the framework of linguistic analysis in the context of machine and deep learning, data science, etc.

The problem of recognizing emotions in spoken language as an important component of the above-mentioned machine and deep learning is studied by C. Gan et al. [10], in which the authors argue for the wide possibilities of applying the latter. The scientists emphasize that the main difficulty is to capture the core aspects of the conversation that produce reliable emotion recognition, including the semantics of the utterance, temporal order, informative contextual cues, speaker interaction, and other relevant factors. The researchers present in their paper a new approach based on a graph neural network for emotion recognition at the utterance level: the feature of their proposed method is to effectively capture the semantic content of conversations by extracting features from scratch using large language models on conversational datasets: IEMOCAP, MELD, Dailydialog, and EmoryNLP.

After processing the data by the latter, the authors use contextual filtering (establishes meaningful dependencies between utterances for the graph construction procedure and removes irrelevant and uninformative utterances from being used as a source of contextual information for the recognition task) and error correction (a feature correction procedure that adjusts the information content of the generated feature representations using a gate mechanism to improve their discriminability and reduce emotion prediction errors), resulting in a new method for the recognition of conversations. Thus, the new method represents conversations as graph structures that naturally encode temporal order, speaker dependency, and even distant context.

The problem of the functioning of large language models (for example, *ChatGPT 3.5* [1]) as a component of natural language processing in terms of the reliability of their results is studied by L. Sun et al. [37]. In the analyzed study, the authors address the issue of ensuring the reliability of such models (a comprehensive analysis of this characteristic of their work: its measurements, established benchmark, evaluation, and analysis, etc.) For the first time, the researchers propose eight criteria for large language models, based on which they created six dimensions (truthfulness, security, fairness, reliability, privacy, and machine ethics).

The researchers emphasize that: a) in general, reliability and usefulness (i.e., functional efficiency) are correlated; b) proprietary large language models usually outperform most open source counterparts in terms of reliability; c) some large language models may be overly tuned to demonstrate reliability, to the point where they jeopardize their usefulness by mistaking benign hints for malicious ones and, as a result, not responding to them. The authors emphasize the importance of ensuring transparency not only of the models themselves but also of the technologies that underlie reliability. The latter is related to the actualization of specific technologies to ensure trust, which is crucial for analyzing their effectiveness.

The study of the peculiarities of the actualization of irony in the Internet discourse (social media platforms) is highlighted in the research of U. Ahmed, J. Lin, G. Srivastava [11], which analyzes the specifics of expressing ironic thoughts through audio, video, and images attached to textual content. Using syntactic information in combination with

semantic research, the authors show the possibilities of improving attention networks. The scientists claim that the proposed algorithm can identify an instance with maximum uncertainty and extract the most informative example from the training set. It is noteworthy that the researchers used an ironic network trained for each labeled record to train the classifier (model).

The authors emphasize that the partial training model and the initial labeled data generate pseudo-labels for unlabeled data: to correctly predict the label of a dataset, the classifier (attention network) updates the pseudo-labels for the rest of the datasets. The above, in turn, allows scientists to highlight the originality of the categories of sense and absurdity in online discourse: for example, the researchers emphasize that the use of irony is mostly produced by ridiculing a situation or trying to convey a certain idea. In addition, according to the authors, irony means ridiculing a situation or its absurdization and is marked by an exponential increase in its use in online discourse (in particular, political online discourse).

The problem of automated sentiment analysis using artificial neural networks (in particular, large language models: *ChatGPT 3.5* [1], *Gemini* [3], or *LLaMA2*) is being studied by A. Buscemi and D. Proverbio [17], who evaluated and tested their effectiveness in the case of ambiguous or ironic texts. The authors created nuanced and ambiguous scenarios, translated them into ten languages, and predicted the sentiments associated with them using popular large language models. Scientists note that *ChatGPT 3.5* [1] and *Gemini* [3] have shown mostly good results in dealing with ambiguous scenarios. At the same time, the researchers emphasize that there are significant biases and inconsistencies in the performance of the above neural network models and the evaluated human languages. Thus, the authors' work proposes a standardized methodology for automated sentiment analysis evaluation and calls for further development of the underlying algorithms and data to improve their performance, interpretability, and applicability.

The specifics of the phenomenon of text in modern conditions are studied in the research of H. Bajohr [13], in which the author analyzes the growth of the number of artificial texts that appeared with the advent of *ChatGPT 3.5* [1] and other large language models. The scientist analyzes the specifics of the new textual situation in the context of its impact on the "standard expectation of unknown texts". The researcher notes that the cornerstone of the latter is the assumption of human authorship of any text, a thesis that will change. The author sees the reason for these changes in: a) the rejection of the attributed human authorship, b) doubts about the machine origin of the text array, and c) the emergence of the *post*-artificial position. According to the scientist, the above-mentioned components will allow us to focus on the content, meanings, and senses of a text rather than its authorship: thus, a *post*-artificial text will be analyzed with an agnostic position regarding its origin. The researcher focuses on the phenomenon of *post*-artificiality: turning to the early days of text synthesis, considering the limitations of Alan Turing's aesthetic tests, and making reasoned speculations about the future of literary and non-literary text creation.

The problem of human use of the language poly system in the context of generative linguistics (for example, Noam Chomsky) is highlighted in the research of V. Carchidi [18], in which the author notes that such a process is free of stimuli, unlimited, but appropriate and consistent with the circumstances of the latter's survival. The scientist extrapolates the above-mentioned language behavior to the functioning of large linear models in the context of natural language processing, noting that, first of all, this is manifested in their ability to generate human-like text. The researcher emphasizes that the study of such models within the framework of generative linguistics is unproductive since they are not a representative source of data for improving or supplementing the theory of human language. He argues that the aforementioned models do not provide any explanation for the acquisition of the ability to use the language poly system by humans.

The study of the peculiarities of the functioning of generative artificial intelligence and natural language processing was studied in research I. Kondurkar, A. Raj, D. Lakshmi [30], where the authors consider modern applications of generative artificial intelligence and natural language processing models, with a special emphasis on the well-known *ChatGPT 3.5* model [1]. The researchers provide a brief historical overview of the development of the above models, emphasizing the most important milestones and achievements in this area. The researchers briefly review the main features of the transformer models updated in *ChatGPT 3.5* [1]: they highlight the basic architecture and the originality of its capabilities. The authors highlight the training process of the *ChatGPT 3.5* model [1], followed by the process of refinement aimed at eliminating the existing shortcomings.

The study of correlations between brain science and artificial intelligence continues with the research of Y. Choe [19], in which the author comprehends

the progress in understanding and engineering the human mind. The scientist explores the issue of understanding the brain at the systemic level in the context of the problems of reliability and limitations of artificial neural networks (in particular, deep learning). The researcher considers several core concepts that are central to brain science and artificial intelligence, such as information and memory, which produce its evolutionary development.

An analysis of the peculiarities of using machine and deep learning models in the context of methodological developments based on artificial intelligence is presented in the research of V. Hassija et al. [27]. In the analyzed study, the authors note that most of these models are inherently complex and unrepresentative of the decision-making process, which gave them the name "Black-Box". Scientists note that the aforementioned complexity is the main reason for the low degree of their actualization in various fields of application (from banking to librarianship). At the same time, the proliferation of such models makes it increasingly difficult to explain their learning and decision-making processes. To resolve the above problem, researchers have comprehensively analyzed explainable neural network models (XAI). This article thoroughly reviews the development of XAIs by thoroughly selecting and analyzing the current state of research in this field of XAIs. It also provides a comprehensive and in-depth evaluation of XAI systems and their performance to serve as a starting point of XAI for applied and theoretical researchers. Finally, emerging and critical issues related to XAI research are highlighted to demonstrate major model-specific trends for better explanation, greater transparency, and improved prediction accuracy.

A peculiar approach to the problem of the existence of the categories of sense and absurdity concerning neural network modeling is presented in the research of P. Bilokon [15], where the author explores the prospects for the evolutionary development of biological and neural networks. The scientist compared the complexity of the second on the Solomonov-Kolmogorov-Chaitin scale and found that they (even the aforementioned large language models) are much simpler than humans. First and foremost, this allowed the researcher to conclude that for artificial neural networks to exist, there doesn't need to be any sophisticated human-made hardware. Thus, artificial neural networks can develop as natural objects even before the appearance of humans: for example, as a form of computing based on chemical reactions or enzymes. In turn, the above suggests that the natural evolution of artificial neural networks is capable of causing a "pure" evolution by natural selection to what is called modeling with limited capabilities.

The study of the above issues in the context of evolutionary anthropology (paleoneurology, neuroarchaeology, and cognitive archaeology) of natural neural networks is continued in the research of E. Bruner [16], whose research focuses on changes in working memory, attention, or visuospatial integration that can be postulated when relevant behavioral changes are described in archaeological materials. The author notes that cognition is a process based on different and partially independent functional elements, and thus different combinations of cognitive abilities or features could have evolved, based on both quantitative and qualitative differences. The scientist notes that, first of all, differences in working memory can lead to more conceptual or holistic thinking, with important changes in the perception and management of mental experience. The researcher emphasizes that the parietal cortex is particularly interesting in this sense, as it is involved in functions related to the integration of body and tools, attention, and visual imagery. The author emphasizes that theories of cognitive evolution recognize that, in addition to the brain and its biology, the human mind is also deeply rooted in bodily perception, social networks, and technological development.

I. Deschenaux and W. Matthews [23] note in their research that conclusions from ethnography in socio-cultural anthropology often rely on an unexplored model of the human mind and behavior. The authors emphasize that in various theoretical approaches, human thinking and behavior are implicitly understood as consistently following a single cultural logic, described in the following terms: "ontology", habitus, and political strategy. In turn, concerning neural network modeling, the above-mentioned cultural logic can be positioned as a core component of text formation, which is based not only on the repeated contours of human behavior to replicate it but also on the conscious genesis of sense in such a text. The researchers examine examples of homo anthropological in anthropological approaches to ontology, caste, and other elements, including the categories of sense and absurdity.

A study of philosophical differences in different approaches to learning analytics is presented in the research of S. Doroudi [25], which analyzes the effectiveness of using the philosophical context to classify research on the above analytics. The author highlights the limitations of this approach, proposing a compromise between bias and variance in machine learning and presenting how different approaches to learning analytics can be considered in terms of

their positions. The author emphasizes that this is not enough, as it is necessary to focus on the underlying epistemology on which the different approaches are based. The researcher notes that a constructivist epistemology for learning analytics has been absent (the author explains this by observing that constructivist work has been relatively absent from established learning analytics research communities). Drawing on previous work in various fields, the author presents his vision of what a constructivist philosophy of data science might look like, as well as the prospects for its use in the context of the development of learning analytics, which is at the intersection of data science and machine learning.

The analysis of the peculiarities of the use of language technologies based on artificial intelligence (large language models, machine translation, multilingual dictionaries, and corpora) is contained in the research of P. Helm et al. [24]. In the research, the authors emphasize that the aforementioned technologies are limited to the 3% of the most common, financially and politically supported languages in the world. The latter has allowed scientists to talk about language modeling bias, a specific and poorly understood form of linguistic bias in which linguistic technology inherently favors certain languages, dialects, or sociolects over others. The researchers predict that such modeling can lead to the creation of systems that, while accurate to the languages and cultures of dominant states, are limited in expressing the socioculturally significant concepts of other communities. Drawing on the concept of epistemic injustice, the authors point to several ethical and political implications of the above and emphasize that this could potentially lead not only to the neglect of valuable aspects of diversity but also to an insufficient representation of the needs of marginalized linguistic communities.

The problem of defining artificial intelligence in the context of the conceptual and categorical apparatus of scientific research is studied by D. Kozikowski, T. Zema, A. Sulich [31], in which the authors present an overview of definitions from the point of view of ethics and choice theory. The scientists note that the presented definitions are the early ideas of the big data era for posing the decision-making problem. Instead, the functioning and development of artificial intelligence in the context of its transformation into superhuman intelligence (sometimes called "strong artificial intelligence", which is an intelligence that is much smarter than the best human brain in all areas, including general wisdom, scientific creativity, and social skills) is covered in the research by L. Jaeger, M. Dacorogna [28].

Representation of the development of theoretical and model semantics is devoted to the research of A. Saz et al. [34], in which the authors analyze the tendencies toward the development of a unified quantitative theory of semantic information and communication. The scientists describe inductive logic and probability, which serve as important tools in the development of the proposed theory, defining two different types of uncertainty in semantic communication (physical and semantic). The researchers present refined interpretations of semantic information measures and propose a new measure for semantic content – information and entropy. The essence of the author's proposal is to standardize semantic information in different planes, which produces measurability, representativeness, and comparability of semantic communication. The scientists introduce conditional and reciprocal measures of semantic data and point out their role in formulating practical and optimized tasks of lossless and lossy semantic compression.

The study of Internet discourse in the context of memes that exist in it and can be used to spread hate speech, toxic content, and false data (misinformation, disinformation, and propaganda) is presented in the research of B. Grasso et al. [29]. In the analyzed study, the authors note that the detection of harmful memes has become an important task for maintaining Internet security and fostering responsible behavior on the Internet. The researchers emphasize that previous studies in this area have mainly focused on the multimodal internal aspects of memes (in particular, image and text modalities), and have tried to interpret their meaning by analyzing intra- and intermodal signals using complex visual-language neural network models.

However, understanding a meme involves implicit background knowledge that is not expressed in the meme, but rather relies on cultural references, background data, and social context. The above allowed the researchers to propose KERMIT (Knowledge-Empowered Model in Harmful meme deTection), a new neural network model that incorporates and utilizes external knowledge in the process of detecting harmful memes. In particular, KERMIT builds a knowledge-enriched meme information network by integrating its internal entities with relevant external knowledge obtained from ConceptNet. Subsequently, the framework applies a dynamic learning mechanism that utilizes extended memory neural networks and attention mechanisms to recognize the most informative data to accurately classify malicious memes. Overall, the results of this study are representative of the complex nature

of Internet memes and illustrate the importance of knowledge-based decision-making.

Thus, the analysis of the historiography on the problems of researching the identity of the categories of sense and absurdity in relation to neural network modeling has revealed a number of gaps in existing studies. Thus, despite the cornerstone role of the aforementioned categories in scientific research, we note the lack of a comprehensive study of the actualization of the latter in the process of their analysis, processing, and use in the context of information technology, linguistics, data science, etc. That is why this study aims to fill this gap, namely, to study the peculiarities of using the categories of sense and absurdity as a special nature of data (specificity of categorization, etc.) in the neural network modeling of linguistic units.

Identification of previously unresolved parts of the general problem to which this article is devoted. Neural network modeling is a promising and innovative tool for modern scientific research, which naturally produces its existence as an important component of the modern scientific and technological paradigm. First of all, this is due to the ability of computer systems to analyze, process, and generate data, and the above creates the problem of actualizing the original categories of sense and absurdity in this context. The above categories seem antagonistic at first glance: while sense is mostly positioned as a carrier of rationality, logic, etc., absurdity is represented as the absence of any cohesion, unity, stylistic, and logical continuity of thought. In this context, absurdity is seen as a complete detachment from ontological reality, characterized as incoherent, unknown, and even threatening. Neural network modeling, as well as philosophy of language and other related fields, deny such a superficial approach to these categories. In particular, in the context of neural network modeling, both categories (sense and absurdity) are presented as interrelated and at the same time contradictory.

At the same time, in addition to the conventional understanding of the categories of sense and absurdity, it is necessary to understand the pragmatic aspect of their functioning in the context of neural network modeling. Thus, the concept of sense should be positioned as the ability of a certain system to analyze, recognize, etc. (in fact, we are talking about any possible actions with data aimed at achieving an "output" result). Therefore, the above context produces an understanding of sense as an indicator of efficiency, an axiological determinant of the process of an artificial neural network. Accordingly, if sense here is the ability of a neural network model to parameterize data to obtain a certain result, then it becomes an indicator of the latter's ability to form coherent structures or reproduce certain patterns. Thus, the sense in neural network modeling is more related to the efficiency of the artificial neural network, acting as a component of the evaluation of its results (current tasks of analyzing certain data).

Instead, absurdity in the context of the same neural network modeling should be positioned as another relevant component of its work. First of all, we are talking about the existence of several absurd, illogical, and unrelated to the task solutions that neural network models use. For example, these can be repetitions or alternative versions of a translation during machine translation; arbitrarily interpreted information provided by a neural network model at the user's request (let's recall the story of a lawyer who, in preparation for a court hearing, used *ChatGPT 3.5* [1] to prepare an evidence base of similar cases), etc. In turn, the above-mentioned absurd results are usually the result of the complexity of the processed data insufficient training (machine and deep learning) or incorrectly selected data "at the input". In addition, it is worth considering that the presence of absurdity in the results of such models may also indicate their ability to track patterns or connections that are not obvious to the human mind. Instead, the latter is the basis for their further improvement (for example, retraining, adjusting training, building training on a different principle, etc.).

Thus, the problem of the originality of the categories of sense and absurdity concerning neural network modeling lies in the complementary rather than antagonistic nature of their interaction, specific actualization, etc. First of all, the above-mentioned produces the prospects and productivity of studying these categories in integrated scientific research. In particular, the categories of sense and absurdity concerning neural network modeling complement each other, forming a special fruitful environment for the development and improvement of research on the language poly system. We are talking about the development and improvement of machine and deep learning algorithms, machine translation, etc. in the context of integrated and multidisciplinary linguistic research. Such research should be aimed at maintaining a balance between specific linguistic and innovative tools to make fruitful use of the assets of other sciences (in particular, experience in working with data of various data science types). In turn, the above-mentioned approach will allow us to realize the full potential of neural network modeling, ensuring the organic and rapid development of modern linguistic science.

Formation of the article's objectives (statement of the task). *The purpose* of the article is to consider the originality of the categories of sense and absurdity. *The subject* is the specificity of the above-mentioned categories in the context of neural network modeling as an innovative tool of linguistic science.

Presentation of the main research material with full justification of the scientific results obtained. Today, digitalization processes are becoming increasingly widespread, which, first of all, produces several socio-cultural changes. The latter, in turn, is actualized in some layers, one of which is modern scientific research, which is undergoing many transformational changes: for example, integrated, interdisciplinary research, in particular within the digital humanities, is becoming increasingly popular. The example of Ukraine is illustrative, as it demonstrated digital resilience in the context of the russian-Ukrainian hybrid war, evolving from paper registers to the world's first smartphone state.

The above was made possible by several initiatives of the Ministry of Digital Transformation of Ukraine and its main product, *Diia*, which has accumulated all the digital services of our country: from duplicates of lost documents (birth, death certificates, etc.) to electronic documents (passports, driver's licenses, etc.). In February 2024, the above-mentioned Ministry announced the launch of another important app for Ukrainian education, *Mriia*, which is intended to concentrate services for the education and development of Ukrainians (to include a student profile, some interactive learning materials, data on learning progress, and an electronic student card) [9].

It is worth noting that the Ukrainian government's interest in the introduction of information technologies is explained by the rapid growth in the popularity of artificial intelligence in the world and Ukraine (in particular, artificial neural networks and, as a result, neural network modeling). Such attention to the innovation component by the government is natural, as its actualization will allow several projects to be further developed in the context of innovative tools of Ukrainian science (in particular, linguistics). In turn, the aforementioned artificial neural networks are a representative tool for the functioning of complex networked computer systems that can not only process, analyze (recall the announced initiative to track the biometric characteristics of conscripts), visualize (it is advisable to update the experience of data science here), etc.

Processing (the aforementioned analysis, retelling, visualization, etc. of the information available in the data sets) does not limit the capabilities of such networks, as they can generate new products: texts, pictures, music, etc. The most illustrative in this regard is the recently released (February 2024) artificial neural network *Sora* [8] by *OpenAI*. It was this company that once released the revolutionary *ChatGPT 3.5* [1], which was capable of generating text, answering questions, translating, creating program code, and producing inferences and logical arguments. The logical continuation was *ChatGPT-4* [1], which had significant functional improvements over the previous version: a deeper understanding of the context (a huge amount of data from the Internet was useful, which helped the neural network model to update contextual information for a better understanding of user questions), longer and better answers (stylistically and logically similar to those generated by humans).

A fundamental breakthrough, similar to the aforementioned *ChatGPT 3.5* [1], which broke the record of 300 words for artificial neural networks at the time by generating 1500 words of text, was *Sora* [8]. This artificial neural network impresses with its text-to-video capabilities. It is about generating realistic videos based on text queries or user instructions: it can create complex scenes with several characters, certain types of movements, and precise details of the object(s) and background. *Sora* [8] can distinguish between the categories of sense and absurdity because it is an advanced neural network modeling system that actualizes the context and sense of information. Thus, this neural network model understands not only the user's query (structure, subordination, declension, semantics, etc.) but also the existence of the things actualized in it in the ontological reality. Thus, we can speak of its deep comprehension of the language poly system, which allows *Sora* [8] to interpret prompts in the best possible way, creating convincing symbols representative of vivid emotions.

Moreover, this neural network model is capable of creating multiple frames in one video that feature certain characters (the same ones, i.e., stylistically unchanged, as is usually the case in such videos) with a unified visual design. In addition to generating videos based on a user's request or instruction, it can also use an existing image to create a video based on it, animating its content. *Sora* [8] uses deep learning artificial neural networks to analyze textual, visual, and audio data, which allows the latter to be interpreted in terms of the categories of sense and absurdity [36]. According to the developers, the aforementioned artificial neural network will become the basis for neural network models that can understand and model ontological reality.

Notably, the *Sora* [8] artificial neural network is a high-quality product, as the videos it creates (available for download and viewing at https://goo.su/CFAWaDa and https://goo.su/l4BFLtH) differ significantly from other comparable products in terms of the harmony of the picture and sound. Importantly, this neural network model is capable of generating videos of up to 60 seconds, while in 2023, most videos created by artificial intelligence were 4-6 seconds long: for example, *Runway* [7] and *Pika* [6] only planned to create videos of 15 seconds by the end of 2024.

In the context of our research, it is illustrative of the capabilities of the aforementioned artificial neural network to actualize the categories of sense and absurdity in working with data in extremely complex contexts and to use such categories as a core basis for building results. This functionality of *Sora* [8], in our opinion, is representative in the context of working with textual data (in particular, for their understanding, generation, etc.), especially in the case of the multi-interpretability of the latter's senses (we are talking about the problem of "input" and "output" of data). For example, the above-mentioned neural network model can localize the logic, consistency, and hierarchy of the semantics of a statement by analyzing the originality of cohesive relations in it.

Fundamentally, in this case, the presence/absence of a specifically absurd sense (not as a certain result of work, i.e., "at the output", but "at the input" – as a determinant of the data received from the developer) is crucial. In such a situation, we speak of the presence of elements of traditional sense that discredit each other through refuting arrangements (a classic case of absurd sense). Such capabilities of the *Sora* neural network model [8] are significant for the development of several areas of deep and machine learning (for example, *Google Assistant*), machine translation (for example, *DeepL*), artificial intelligence systems for processing large corpora of texts (for example, natural language processing), etc. and innovative tools for linguistics (for example, computer and corpus linguistics) and some other sciences (for example, data science).

We should note that it is necessary to keep in mind the pragmatic nature of the existence of the language polysystem in general (in particular, the specifics of its actualization in the mind of the native speaker: within the linguistic and national worldviews). Thus, the above-mentioned understanding of the parameterization features of things in the event horizon of ontological reality is representative of neural network modeling (in particular, the work of the aforementioned *Sora* neural network model [8]). After all, the language poly system, first of all, acts as a means, a tool for achieving certain goals (recall the same contract social [22]), and not an abstracted, ideal phenomenon (we are talking about its realization aspect: speech, writing, and not about language as a construct [20]), which once and for all froze in a form at a certain point in time. In addition, it is advisable to take into account the specific distinction between content (images, senses, ideas) and apparatus (the mechanism of actualization of the latter). This is because the content of consciousness cannot exist without the aforementioned apparatus and outside of it, since it consists of the sign apparatus (we analyzed its specifics at the beginning of the article) and the sensory apparatus.

The sensory apparatus is biological in nature and is inherited by biological inheritance; it includes the brain, nervous system, and sensory organs (vision, hearing, etc.). For us, the inseparability of the sensory apparatus from the human body is important, as it is a part of the body. It is noteworthy that it is this apparatus that is capable of producing sensory images of reality, ranking them in the coordinates of sensations, perception, and representations, and storing the latter in itself (memory), reproducing them without the influence of stimuli. In addition, it is possible to combine sensory images to form new ones (imagination, fantasy). This is especially important in the context of working with the categories of meaning and absurdity in neural network modeling: to understand or at least outline an algorithm for working with textual data, it is advisable, if possible, to act by analogy with biological mechanisms. For example, let's remember that even structurally, artificial neural networks are an artificial equivalent of biological neural networks.

That is why it is significant that the core component of the human sensory apparatus is the language poly system (in particular, linguistic units actualized by the native speaker). Accordingly, since the signifier (linguistic signs), or rather their set, has an individualized nature, then, despite the presence of numerous communicative practices and templates, social contract [22], etc., the main thing is the sense produced by the individual. Thus, the latter (sense) is the pivotal determinant that determines the selection of linguistic signs actualized by the individual.

The above allows us to assert the productivity of neural network modeling in general and the use of specific neural network models. Thus, in terms of linguistic research, *Sora* [8], in our opinion, is representative in the context of studying the occurrence of the categories of sense and absurdity

in online discourse (in particular, political online discourse). The latter is due to the ability of the aforementioned neural network model, as well as similar ones, to reproduce complex linguistic structures while analyzing semantic correlations between them. This, in turn, is productive for analyzing the distorted or distorted sense inherent in absurd statements, texts, etc [32].

Therefore, in the context of the actualization of the categories of sense and absurdity concerning neural network modeling, it is advisable to study the specifics of artificial neural networks. In particular, the peculiarities of their functioning and the consideration in this process of the context and semantics of the lexical units they analyze. At the same time, we consider it productive not to focus on specific linguistic tools in neural network modeling (in particular, recurrent neural networks, large language models, etc.). This is because the aforementioned *Sora* neural network model [8] has several common features with the work of other, seemingly unrelated, text data processing systems.

For example, similar features are found in the functionality of *DALL E2* (in particular, *DALL E3*) [2] by the same *OpenAI*, which is capable of generating a picture from text data, or *LeiaPix* [4]. The functionality of the latter allows you to create a presentation from the text (i.e., again, despite their multimedia orientation, both have an understanding of the language poly system, although not as deep as *Sora* [8]). Another representative example of similar technologies for working with textual data, but much more imperfect than the above neural network model, is: *Gemini* (*Google Bard*) [3], which has similar functionality to *ChatGPT 3.5* [1], and *Narakeet* [5], which is capable of converting text data into speech (indicating the presence of at least some understanding of text arrays, which suggests the "roots" of the latter text-to-speech technology, which is the basis of the "Balabolka", "Govorilka", etc. programs, the "@Voice" application, etc.).

Conclusions from this research and prospects for further research in this area. Thus, the above demonstrates the originality of the categories of sense and absurdity and the productivity of using the *Sora* neural network model [8] to work with them in studies of the corpus, computer, mathematical, etc. linguistics, philosophy of language, and several other areas. This is due, on the one hand, to the integration of the mathematical paradigm into the humanities, and, on the other hand, to the focus of linguistic science on the problems of understanding (lexicon, semantics, stylistics, etc.), generation (philosophy of language, linguopragmatics, metaphorology, etc.), and natural language processing, in which neural network modeling plays a prominent role. We are talking, first of all, about recurrent neural networks, large language models, etc., and, of course, the aforementioned *Sora* [8].

In our opinion, the use of the results of the latter's work in linguistic research is representative because of its ability to distinguish between the original categories of sense and absurdity, which are the cornerstones of neural network modeling. In turn, the actualization of such categories in the above process is productive in identifying relevant semantic patterns in the language poly system, which, in turn, is an important basis for machine and deep learning, machine translation, text data analysis, and generation, etc. It should also be noted that neural network modeling of linguistic units of online discourse (in particular, political discourse, which is the topic of our dissertation research) is representative of the development of interactive systems that can interact with users through language commands or queries.

For example, the aforementioned neural network model is an innovative tool of linguistic science that can study linguistic constructions (identify patterns, specifics of actualization, etc.) and features of discourse (political, Internet, etc.) in the context of the frequency of use of the categories of sense and absurdity. It is not only about understanding textual data (words, phrases, sentences, etc.) but also about decoding cultural metaphors, idioms, jargon, etc. actualized in the studied environment. Thus, mastering the originality of the categories of sense and absurdity is a direct indicator of the productivity and quality of the results of an artificial neural network. In addition, this indicator is key in the context of its understanding of these categories in different linguistic and cultural contexts (semantic bases, several possible actualizations, etc.).

At the same time, we note that a possible drawback of using artificial neural networks (including OpenAI products (*ChatGPT 3.5* (*ChatGPT-4*) [1], *DALL E2* (*DALL E3*) [2], *Sora* [8]), *Google* (*Gemini*) [3], etc.) as an innovative tool for linguistic science is the process of their training. Thus, the data used by the developer for this process are anthropocentric, i.e., they are created by people and for people, just like the developer and the teacher of the neural network model, who are people. In turn, this creates a tendency to inaccuracies, distortions, biases, etc. that the artificial neural network will "inherit" from them. The latter is especially true in the context of the russian-Ukrainian hybrid war, which is being circulated in the information space around which numerous russian narratives exist. Such narratives function as

part of misinformation, propaganda, and disinformation accusations against the Ukrainian government in general and the Ukrainian population in Ukraine and abroad.

Instead, counteracting and eliminating such inaccuracies in the context of linguistic science, machine, and deep learning is a promising area for further research, especially in the context of such distinctive categories as sense and absurdity. Thus, further research in this area will reduce the amount of such "information noise" (prejudice, misinformation, narratives) on both sides and improve the accuracy and objectivity of the analysis of the language poly system. In addition, in the context of linguistic science, it is advisable to talk about the importance of studying the role of cultural and social contexts (in particular, political online discourse) in understanding the categories of sense and absurdity in the language poly system. Neural network modeling (the aforementioned neural network models and their successors) is a modern and innovative tool for researching the above. The latter is due to their ability to process large data corpora with the localization of implicit/explicit relations in them, simplifying the conduct and deepening the significance of research by Ukrainian and other scientists.

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