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PHILOSOPHY: DIGITAL HUMANITIES

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for students of all specialties

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The textbook supplements the lecture material with topical issues of philosophy in the field of social semiotics and digital linguistics. The technological trends in the evolution of convergent structures of digital ecosystems are described. The evolution of social semiotics in conjunction with digital linguistics is analyzed.

INTRODUCTION

A course of lectures is given to undergraduates in order to provide methodological assistance in writing a master's thesis on issues related to the general theory of sign systems and digital linguistics. The course of lectures provides methodological assistance related to modeling and heuristic search techniques. The course of lectures contains not only methodological recommendations, but also a description of the main trends in the dynamics of social processes in order to know the strategies of scientific and technological progress in relation to nature, man, social reality, and the economy.

The following questions are being considered. How are various pieces of computer software such as speech recognition and text classifiers used in humanities and social studies? How to investigate language usage in datasets spanning billions of words? How has digitalization affected the use of language? How do chat - bots or Google Translate work in this regard?

Digital language research is an interdisciplinary field of research that studies the use of language in a digital environment and combines the methods of linguistics and natural language processing (NLP). The methodology develops methods for automatic processing of oral and written speech. Notable applications include machine translation, chat bots, and various text mining tools such as opinion detection systems.

Digital language studies apply and develop methods and algorithms. This area requires an understanding of linguistic structures and language variations, as well as programming skills for automatic knowledge processing. Sources of linguistic data are becoming more complex and voluminous. As a result, language technologies and their applications have gained practical importance. Understanding linguistics and language technologies is becoming increasingly important for various language professionals.

The study of how meanings are interpreted in context has become relevant. Texts that were digitally conceived, such as tweets, blogs, memes and

emojis are being explored. Convergent texts are also explored, such as an online lecture at a university or a medical consultation. Texts are researched and interpreted individually or in combination with the use of digital tools.

Modern problems such as automation, artificial intelligence and machine learning are largely defined by computational linguistics. In particular, technological developments in deep learning have led to rapid advances in natural language processing. Digital assistants such as Siri and Alexa or the debate about auto-generated content on social media show just how much these modern technologies have impacted everyday digital life. Technological advances in this area have reached such a level that some new language models are no longer published because they can be abused to automatically generate fake news and spam. The programs are connected with modern methods of computational linguistics and natural language processing. Practical skills are acquired by applying these methods to language analysis and generation, as well as to the annotation of language and media documents.

Research in computational linguistics focuses on machine learning of knowledge representations from textual sources. They are the key to natural language understanding, media content analysis, digital humanities, and knowledge integration.

Digital Humanities

The use of information technologies in the humanities, in the digitization of library funds, museum collections and in the creation of multimedia platforms with a wide range of tasks is accompanied by the expansion of digital formats in the field of social sciences and humanities, the hybridization of art and science forms, and the scattering of disciplinary boundaries of digital humanities research. New views are being formed on the objectives of the study, the subject and methodology of the study, as well as new forms of research practices. Digital Humanities is in the process of becoming.

The task of the digital humanities is the production and management of knowledge presented in digital contexts. The digital humanities are characterized by interactivity, hybrid methodology, and a variety of models and practices. M. Taller substantiated the periodization of the formation of digital humanities, taking into account its genesis associated with the use of computers in corpus linguistics and anthropological research. A methodological platform for the application of IT technologies in the humanities and its conceptual apparatus was developed.

Conducting humanitarian research required the creation of software for each individual study in accordance with the characteristics of the disciplinary field. As a result of the analysis, the researcher receives new knowledge. But as digital information grew, the analytical tools for its processing were not accompanied by an increase in the quality of research. The second period (1970–1985) was characterized by the use of quantification associated with the use of application software packages. The third period (1985–1997) was shaped by the microcomputer revolution. The main features of this period are the loss of the importance of quantification, the possibility of doing the work of a humanist at the desktop, the dominance of computer-assisted humanitarian projects over traditional projects of the humanities.

The fourth period (from 1997 to the present) was called the "qualitative period" in the application of information technologies to solve problems in the field of humanitarian knowledge ("Expertise and search for electronic documents", "Information management", "Museology"). Its characteristic features are the use of information technology as a means of accessing the database, with the task of their analysis and interpretation being given to experts and the humanities. Digital Humanities brings together convergent scientific research, a set of models and practices in the field of social sciences and humanities that use information technology to perform meaningful tasks in various areas of the humanities. This is a general term covering many types of applications of computer science in the humanities: the development of multimedia pedagogy and science, the design and creation of programs and archives, human-computer interaction and digital linguistics.

The key factors for the rapidly growing direction are the transformation of traditional fields of humanities research through digital tools and resources (combining various technologies and methods, expert knowledge) and building new communications that violate disciplinary boundaries. A significant part of this area of research is applied development, including: information and communication technologies and the possibility of their implementation, new digital tools, methods and models; creation of digital resources, platforms, multimedia systems, mobile applications, 3D models; development of online learning tools.

Inter medial data translation in a digital environment based on a binary code consists in the translation of one modality into another, for example, the translation of sound into color. Intersystem translation represents the exchange of language elements between different systems. As a result of such practices of Digital Humanities, the object of research is being transformed, the epistemological status of research is changing, and the disciplinary boundaries of humanitarian knowledge are scattered.

M. Taller distinguishes four areas in Digital Humanities: 1) text analysis in literary criticism, journalism, developing scientific areas; 2) quantitative research in the humanities using databases; 3) digitizing large collections of images and managing collections using 3D artifact models in the visual disciplines; 4) humanities informatics, which requires the creation of adequate software to solve research problems.

Text analysis uses indexing of collections of documents to extract contextual knowledge, the analysis of which contributes to the definition of the author's style, the construction of linguistic corpora. Quantitative research is carried out in a distributed digital environment using software in various subject areas. Digitization of image collections and management of collections using 3D models of artifacts is widely used in archeology, in museums, on the websites of cultural institutions, providing Internet users with wide access to collections in a remote format with the perception of virtual and mixed realities.

Computational linguistics are an interdisciplinary area at the intersection of informatics and information theory with the humanities, in particular, one of the definitions characterizes it as the practice of using informatics for the humanities and in the humanities. Initially, humanities computer science was associated with linguistic analysis and machine translation of text, later its subject field was supplemented by other humanitarian knowledge. The transition from humanities computing to digital humanities has taken place. The use of computer modeling and programming with the use of graphic visualizations in the teaching of philosophy and research projects contributed to the emergence of digital philosophy as a direction that separated from digital physics (the author of the terms is Edward Fredkin), and as a way of modeling and analyzing classical problems of philosophy.

The project approach to solving scientific problems of historical research is expressed in the creation of new products, for example, an electronic online resource and new scientific tools; expanding the historical and cultural heritage

using electronic publications, reconstructions and visualizations. A typical example of the formation of new interdisciplinary areas of knowledge are "Digital corporate culture", "Digital self-presentation", "Digital communications", "Digital etiquette", "Digital business etiquette", "Digital storytelling".

Convergent knowledge does not cancel professional specialized knowledge, but differentiation from a special direction in the evolution of science becomes one of the aspects of the integration process that dominates in it. A digital presentation operating in the virtual space of modern society should be considered from the standpoint of the convergence of social, humanitarian and technological knowledge, which is estimated by experts as an extension of the traditional sphere of humanitarian knowledge based on information methodology. Unlike humanitarian models and practices, key changes in the social sciences as a result of the use of digital technologies are expressed in a shift in focus from studying the object (society, social institutions and relations) to analyzing data about the object, in an increase in the number of applied research based on the convergence of social sciences, statistics and informatics.

The computational turn in social research consists of the following main provisions: 1) the ambiguous role of data; 2) uncertainty of disciplinary boundaries; 3) transformation of research practices; 4) the use of new formats for involving developers and users in social research. Intensive data growth in the absence of a single information exchange center that would accumulate heterogeneous data and technologies for interpreting these data pose an independent task for researchers from the field of social sciences related to the skills of statistical information processing.

Big data changes the criteria of objectivity and the very concept of knowledge as such. Out of context, big data loses its meaning. New formats for engaging users in the production, selection and interpretation of knowledge form new types of human-computer networks: voluntary computing (public resource

computing), crowdsourcing, search engines, collective crowd sensing, online markets, social media, online -games and virtual worlds, mass collaboration.

Fundamental research in humanities informatics, social informatics and computational linguistics is characterized by methodological. This is expressed in the formation of an interdisciplinary field similar to a disciplinary one: with a common object and subject of research, principles of analysis and a common conceptual apparatus of subject ontology. For example, humanitarian informatics as a fundamental scientific discipline studies information processes in humanitarian systems of various nature using the methods of formalization, information modeling and computer experiment.

Applied research includes research in the field of information and communication technologies and the possibility of their implementation. Creation are the new digital tools, methods and models, digital resources, platforms, multimedia systems, mobile applications and 3D models. Development it of online learning tools. Common features of applied research are: convergence of methods and technologies for solving a specific problem; instrumental nature; technological tools are subordinated to the solution of substantive tasks; commercialization of research.

Various forms of involvement of researchers for knowledge production are used; use of special computer programs for research; work with big data in a distributed network environment, their production, analysis and interpretation. In practical research of Digital Humanities is of an instrumental nature in such areas as archeology, digital museology (digitization and preservation of collections), and digitization of library collections.

Digital libraries are an integral part of the global information infrastructure that connects researchers and various institutions of science and culture to various knowledge bases. As another component of the Digital Humanities typology, various forms of organization of network institutions (centers, laboratories, conferences, online communities, websites and blogs) are considered, rep-

resenting forms of communication of network actors as consumers of information and participants in the production of knowledge.

However, the main forms of knowledge production are centers, laboratories, institutes, and universities. The subjects are various aspects of digital social communication, the technological support of which is created by digital communication.

Digital communication

Digital communication is represented by business contacts and communication. In order for it to be implemented, a technological basis is needed in the form of digital communication. This technology transfers data and information using digital signals over a point-to-point (P2P) channel. A P2P connection is a communication mode between two communication endpoints. Data and information are digitally encoded as discrete signals. These signals are electronically transmitted to recipients.

This means the transmission of data in the form of a digitized analog signal or a digital bits ream over a point-to-point or point-to-multipoint link. These channels can be made up of many types. For example, these are storage channels, optical fiber, computer buses, wireless communication channels.

Information or data is represented as an electromagnetic signal such as microwaves, electrical voltage, infrared radiation and radio waves. Modern businesses, institutions and organizations depend on this system to communicate with each other. In this case, the source of information typically comes from the keyboard of a computer or mobile device and is transmitted or transmitted digitally. This communication method reduces labor force and is a cheap communication method. In digital communication, verbal communication takes precedence over non-verbal communication.

Similarly, contact is often brief, replacing the longer and more meaningful contact that face-to-face communication brings. Communication through a digi-

tal device is often limited to the screen and speakerphone. As a result, limited information is transmitted, which can sometimes be misinterpreted. Often you have to encode and decode text, abbreviations and emoji.

Only video chats and newsgroups allow gestures, body language, and tone of voice to be interpreted as if they were face-to-face conversations. But there are still limitations, as it is very far from real human contact.

Digital data can be copied, modified or even republished. Every message you write, friend you add, comment and photo is encoded into digital data. They are stored on the server of the used service.

Digital communications are email, web sites, Blogs, Social media, live chat, Chat bots, Video conference and web call.

Digital linguistics

Digital linguistics is the science of digital data management for linguistics, including the digital storage, representation, processing, and dissemination of linguistic data. It focuses on how to represent linguistic data in digital form, as well as best practices for working with this data, taking full advantage of the modern Open Web Platform (OWP).

The standard data format should be platform and software independent. Go beyond the use of Windows or specific software and encode linguistic concepts that linguists are already familiar with while maintaining flexibility and readability.

Scripts and libraries play an important role in making it easier for developers to work with data in the DLX format and to create tools and software that use this format. All DLX scripts are open source. Many web-based tools have been created that allow linguists to more easily enter, search, and manage their data. The first of these tools, a dictionary management application, is under development.

The Austin Data Citation Principles in Linguistics is a set of guidelines that enable linguists to make informed decisions about the accessibility and transparency of their research data.

The data should be considered legitimate, cited research products. The data on which linguistic analysis is based are fundamental to the field and should be treated as such.

Primary linguistic data are of fundamental importance to the field of linguistics. The management of such data deserves close attention. Data citations should facilitate the provision of scientific credit and legal and regulatory attribution to all data authors.

The Digital Linguistics Data Format includes guidance on how to store information about the people who have contributed to data production and management, and their role(s) in the process.

Linguists must cite data on which scientific claims are based. For data to be citable, it must be stored in an accessible location, preferably in a data archive or other secure repository.

The DLX format allows datasets to be published to the web at URLs for consumption and citation. Since the JSON format used by DLX is a plain text format, it can be easily saved to any archive or online database.

Data citation should include a permanent identification method that can be used, that is globally unique and widely used.

Data references should facilitate access to the data itself and the associated metadata that are necessary for the meaningful use of the referenced data.

Linguistic data should be as open as possible to facilitate reproducibility; and closed as necessary to comply with applicable ethical, legal and community restrictions. The Data Format for Digital Linguistics provides guidance on how to specify access rights to different kinds of linguistic data at each level of granularity. Unique identifiers and metadata that describe the data and its location must be preserved – even after the end of the life of the data they describe.

The low cost of cloud storage allows you to continue storing metadata about language documentation objects even if the data no longer exists, is not publicly available, or becomes too large for its storage.

Data links should make it easier for the reader to find specific data, or a subset of data in a larger data set that supports the assertion.

Citations should indicate which version of the data is being referenced.

The Data Format for Digital Linguistics provides a convention for assigning human-readable keys to each piece of data and each level of detail, allowing stakeholders to easily reference or search for data at the text, utterance, word, morpheme, and phoneme levels.

Data citation practices should be flexible enough to accommodate different practices among communities, but should not vary so much as to compromise interoperability.

Citation standards developed for linguistics should meet the needs of the research community and also follow the principles described above.

The Digital Linguistics Data Format is highly interoperable because it is based on JSON, which has become the standard format for data exchange on the Internet. The use of web-based digital linguistics tools also means that user interfaces can be designed in such a way that users can interact with the data in ways that are most convenient for them. The use of open source tools and software also makes it easier to create new tools to meet user needs.

When our association ALLC was founded, linguistics was considered one of the main pillars of humanities computing. This was correct because the very first applications of the computer in the humanities were directed towards the performance of linguistic tasks, or, more broadly, tasks involving the manipulation of data having a linguistic form. Just think pioneering linguistic analysis or the collection of machine-readable dictionaries and corpora in general, and early attempts at machine translation.

Since any application must be based on certain solid theoretical foundations, there is a logical connection between the two main branches of linguistics, theoretical and applied, in solving problems of linguistic computing.

One of the earliest uses of the computer was to create machine-readable dictionaries and to collect relatively large language corpora such as the Brown Corpus. In addition to their function of familiarizing themselves with the inventory of a given language, they also served as the basis from which ambitious natural language processing projects could begin.

Collecting even unedited linguistic data gave the linguist the ability to describe the basic structure of the language and support applications for non-linguistic tasks. The development of methods for analyzing syntax and morphology made early machine translation systems possible and laid the foundation for more complex, speech-based language technologies of the future.

As a new and rapidly developing field, cognitive science needs contributions from many disciplines, including linguistics. Text analysis is one of the broadest concepts in human computing, encompassing all studies and applications related to linguistic form. The main work is carried out in the field of information retrieval of any kind, including the analysis of literary texts in general, automatic indexing, stylistics, authorship research and the search for grammatical, as well as semantic, pragmatic information, including automatic referencing. Publication support is a very useful area of text analysis that makes all kinds of textual and multimedia information available to the widest possible public.

Text analysis is the field of applied science in which linguistics and literature are most dependent on each other, where the boundaries between these two often competing disciplines essentially disappear, and where both benefit from both approaches and research results.

Since the first electronic corpus (Brown Corpus) was created, a new linguistic discipline (Corpus Linguistics) has emerged that attempts to take perfor-

mance as a starting point and systematically describe languages based on natural speech and writing.

For a long time, corpus linguistics existed only for the English language or for varieties of English, because the created corpora were either corpora of the English language, or were the only ones freely available to the scientific community.

The digital revolution has created new possibilities for the use of language and new ways of communicating. The ubiquity of technology mediates linguistic and social interactions. Technology generates new data streams, but also offers new ways to collect and analyze data. These new approaches to testing linguistic theories include experimental studies of language processing, modeling of language change, and complex ways of documenting endangered languages.

Computational linguistics

Computational linguistics is the application of computer science to the analysis and understanding of written and spoken language. As an interdisciplinary field, it combines linguistics with computer science and artificial intelligence and deals with the understanding of language in terms of computation. Computers with linguistic competence help facilitate human interaction with machines and software.

Computational linguistics is used in tools such as instant machine translation, speech recognition systems, text-to-speech synthesizers, interactive voice response systems, search engines, text editors, and educational materials.

Computational linguists work in universities, government research laboratories, or in large enterprises. In the private sector, vertical companies typically employ computational linguists to verify the accuracy of technical manual translations. Software companies hire computational linguists to work on natural language processing, helping programmers create voice user interfaces that allow people to communicate with computing devices as if they were another person.

A computational linguist should have experience in machine learning, deep learning, artificial intelligence, cognitive computing, and neuroscience. People seeking work as a linguist usually require a master's or doctoral degree in computer science, or a bachelor's degree with a background in natural language software development.

Computational linguistics can be used for many basic applications. Computational linguistics and natural language processing are similar concepts because both fields require formal training in computer science, linguistics, and machine learning. Both use the same tools such as machine learning and AI to achieve their goals and many NLP tasks require understanding or interpreting language.

Whereas NLP deals with the ability of a computer program to understand human language as it is spoken and written, CL focuses on the computational description of languages as a system. Computational linguistics also leans more towards linguistics and answers linguistic questions with computational tools; NLP, on the other hand, involves the application of a processing language.

Most of the work in the field of computational linguistics, which includes both theoretical and applied elements, aimed at improving communication between computers and the base language. It involves the creation of artifacts that can be used to process and generate the language. Creating such artifacts requires data scientists to analyze vast amounts of written and spoken language in both structured and unstructured formats.

CL applications typically include the following:

Machine translate is the process of using AI to translate one human language into another.

Application clustering is the process of turning several computer servers into a cluster.

Sentiment analysis this approach to NLP determines the emotional tone of the text.

Chat bots. These programs or computer programs imitate human conversation or chatter through text or voice interactions.

Extraction of knowledge is the creation of knowledge from structured and unstructured text.

Interfaces in natural language are computer-human interfaces in which words, phrases, or sentences act as user interface controls.

Content filtering is process blocks different web content in different languages from being accessed by end users.

Approaches and methods of computational linguistics:

Corpus approach is based on the language used in practice.

Understanding approach is allows the NLP engine to interpret naturally written commands in a simple rule-driven environment.

The development process has a statistical approach to language learning and does not take into account the grammatical structure.

Structural approach uses large samples of the language through CL models to better understand the underlying language structures.

A production approach has been done in a number of ways, including building algorithms that generate text based on sample texts from people.

A text based interactive approach where text from a human is used to generate a response by an algorithm. The computer is capable of recognizing various patterns and responding based on user input and given keywords.

The user's speech input is recognized as sound waves and interpreted by the CL system as patterns.

Statistical approaches based on corpora have been developed. CL relies on many of the same tools and processes as NLP. These systems can use a variety of tools, including artificial intelligence, machine learning, deep learning, and cognitive computing.

Computational linguistics solves problems related to natural language processing. This is a field of knowledge that deals with computer modeling of

natural language proficiency and solving applied problems of automatic processing of texts and speech.

The history of computational linguistics begins in the 1950s with N. Chomsky's research on the formalization of the structure of natural language, as well as with trial experiments in machine translation and the first AI programs for understanding natural language.

In January 1954, the world's first public machine translation experiment was held at Georgetown University. Engineers managed to translate more than 60 sentences from Russian into English in a fully automatic mode.

In the late 80s of the twentieth century, with the development of the Internet, the volume of texts available in electronic form increased dramatically, which led to a qualitative leap in information retrieval technologies. Completely new tasks have arisen for processing texts in natural language. At the same time, the first machine learning algorithms and statistical machine translation systems were created.

A breakthrough in the field of language processing occurred in the 2010s, when deep learning algorithms began to develop. Since then, many developments have appeared and continue to appear to solve the problems of computational linguistics.

Computational linguists develop programs for natural language processing, text and speech recognition tools, translation systems, text editors, language learning materials, voice assistants, smart chat bots.

Computational linguistics has become a tool for extracting the necessary information from a huge amount of text. The need for intelligent automatic text processing arises mainly for two reasons, both of which are related to the amount of texts produced.

Millions of people who work with texts around the world do not have enough knowledge and education to meet modern document processing standards. For example, a secretary in an office cannot take into account the hundreds

of different rules needed to write a good business letter every time. So it's cheaper to teach a machine to do the job once than it is to repeatedly teach each new generation of computer users how to do it themselves.

In many cases, in order to make an informed decision or find information, you need to read, understand and take into account a huge amount of texts. To find information on the Internet about the expected demand for a particular product, specialists would have to read texts on this topic for a hundred years. Since the object of processing of computational linguistics is texts in natural language, its development cannot be imagined without basic knowledge in the field of general linguistics.

Automatic text analysis consists in extracting grammatical and semantic information from a given natural language text. Computational linguistics was formed at the intersection of linguistics, mathematics, computer science and artificial intelligence. It is most closely related to the field of AI, within which software models of individual intellectual functions are developed. Speech synthesis and text generation are key tasks in computational linguistics.

Computational linguistics is faced with the tasks of linguistic support for the processes of collecting, accumulating, processing and searching for information. The most important of them: recognition and synthesis of speech, Text generation, Automatic translation of texts, Creation and use of electronic corpora of texts, Extracting information from text, Auto referencing, Automatic detection and correction of errors when entering text on a computer, Creation of question-answer systems, Creation of electronic dictionaries, thesauri and ontologies.

NLU and NLG: Approaches for Solving Problems in Computational Linguistics. NLP faces two major challenges – natural language generation (Natural Language Generation, NLG) and its understanding (Natural Language Understanding, NLU).

Language generation is a feature that helps you create, for example, short snippets of text for chat – bots or custom content for apps. NLG can be compared to the process people use when they turn ideas into writing or speech.

Understanding natural language allows you to receive commands and requests from a person in a form convenient for him, as well as sort information, highlight the main thing, analyze the content of the text and its emotional coloring. Speech and Image Sharing Applications: How Data Science Helps People with Verbal and Cognitive Impairments Devices that are available on the market Image communication systems that allow communication by passing physical cards to interlocutors.

Speech recording devices, as well as special equipment for creating synthesized voice and voiced letters, words and messages.

Speech applications for electronic tablets that run on various smart devices: tablets, smart watches and handheld game consoles and narrower application of technology.

Creation of corpora for little-studied and narrowly represented minor languages. Text-to-speech technology and APIs work well for popular languages. Voice-enabled products can be created without the need for text-to-speech, in which case communication tablets are used.

Small language corpora should be available in TEI format according to the ISO Standard for Colloquial Speech.

The revival or teaching of endangered languages is helping people who do not speak the language: researchers, historians, medical personnel and travelers.

Adaptive technologies empower people with disabilities

Computational linguistics is the basis of adaptive technologies that are created to help people with disabilities.

Developments in the field of computer analysis and natural language processing are designed to make life easier for this category of the population. This is especially true for those who have physical, cognitive and sensory impair-

ments. New adaptive technologies greatly empower people with disabilities and give them more autonomy – at work, on the street and at home.

Computational linguistics facilitates communication for people with hearing, vision and speech disabilities. What tasks does computational linguistics to solve. Synthesis and recognition are of speech in physical or cognitive impairments. Speech and language are technologies for everyday living with care and creating an environment of limited dependent living. New Modeling and Machine Learning Approaches are for Assistive Alternative Communication.

Personalized voices for assistive communication and speech synthesis based on limited data. Multimodal user interfaces and conversational systems adapted to assistive technologies. NLP are for Cognitive Assistance Applications. Presentation are of graphic information for people with visual impairments. Speech and NLP as applied to front-end applications. Brain-computer interfaces for language processing applications. Speech are natural and multimodal interfaces for assistive technologies. Web accessibility, text simplification, adapted presentation modes such as speech or special characters. Deployment of speech and NLP tools in clinics.

The growth of the NLP market is constrained by several factors, including: the presence of a gap in terms of perception, understanding and recognition of textual information between a person and a machine; lack of personnel and training programs for researchers in the field of natural language processing; the complexity of machine processing and understanding the context and meaning of texts.

One of the challenges in the NLP segment also remains the creation of universal language models and architectures that will solve various tasks of working with text using one system. This system will understand textual information and will be able to interact with a person in the same way as another person would. Computational linguistics is related to semiotics.

Semiotics

Semiotics is represented by categories, concepts and concepts. In the center of her research is the symbolic nature of information, as well as communication processes in nature and society. In modern times, epistemological (D. Locke, I. Kant), communicative (W. Leibniz) and linguistic (J. Herder) aspects of semiotics were formulated. Ch.S. theory Pierce contains the basic principles of semiotics, characterization of the sign, its meaning, sign relations, classification of signs. An important role began to be played by the system of structural regularities and relations between linguistic signs outside of their dynamic development. It was designed by F. de Saussure.

In the twentieth century, semiotics became part of the linguistic philosophy of L. Wittgenstein. R. Jacobson developed the theory of signs. E. Sapir wrote about the symbol in the culture and life of the individual. The study of sign structures of myths, rituals and social attitudes became a priority in structuralism. This was clearly manifested in the writings of K. Levi Strauss. R. Barth formulated a semiotics paradox. M. Foucault introduced the concept of episteme. The deconstruction of the sign and the text became a priority in the works of J. Derrida. J. Baudrillard analyzed the phenomenon of the simulacrum.

The principles of the phenomenological and hermeneutic approach to the study of the sign by G. Shpet remain relevant. The interpretation of the symbol of A. Bely and Vyach is taken into account. Ivanov, symbolic views of P. Florensky, philosophy named after A. Losev. The semiotic theory of L. Vygotsky and the metalinguistics of M. Bakhtin are of particular relevance. They describe the sign structure of the speech genre, the polyphony of the novel, the concept of dialogue, the chronotope. The postulates formulated by Y. Lotman remain relevant.

The main classes of sign systems differ in their genesis. These are biological (innate) semiotics (animal languages) and cultural semiotics. Natural cultural semiotics describe gestures, facial expressions, intonation, and behavior. They

represent clothing, etiquette, religions, arts, as well as natural ethnic languages. Artificial semiotics is represented by mathematical symbolism, the semiotics of a geographical map, and traffic signs.

Types (classes) of elementary signs, different in type of motivation and degree of conventionality: principles of classification of signs, types of motivation and three classes of elementary signs (signs-indexes, iconic signs, signs-symbols). Complex signs and new stages of semiosis are studied (derivative and complex signs, bodily movements-images, signs-artifacts, intonational signs-images, images, verbal images, symbols, emblems, allegories and allegories, signs-constructions).

The possibilities of the language lie in the expression of sensual, subjective-emotional and rational-objective information. Accordingly, three types of semiotic content are distinguished: artistic image, lexical meaning, concept.

The factors of reliability in the transmission of messages are studied, as well as the types of structure of sign systems: isolated signs and sign systems, elementary and complex, single-level and multi-level semiotics. The structural features of paralinguistics, behavior and etiquette are considered: a variety of subsystems, linearity and multi channels.

The subject of consideration are complex, multi-channel and complex semiotics. The history of art appears as the development and interaction of artistic languages. This is dance, acting, pantomime and circus. The "vocabulary" and "syntax" of dance, the texture and units of theatrical language, pantomime as a semiotic experiment, the semiotic paradox of the circus are studied. The semiotic structure of music, the types of musical creativity and the variety of musical forms are studied.

The subject area of artistic image semiotics includes sculpture, graphics, painting, architecture, photography and cinema. The semiotic specificity of fine arts, iconicity and convention of the plastic arts, the contribution of cinema to the development of visual semiotics are studied.

Language sign systems and their logic are considered, as well as the levels of the hierarchy of the language sign system. These are the levels of phonemes, morphemes, lexemes, syntagmas and sentences. As well as the levels of text fragments, the whole text. Two levels of a semiotic approach to language are used, based on linguistic units that have independent meaning:

1) the level of words and other reproducible units (clichés) extracted from consciousness in a finished form;

2) the level of formed signs created in the course of communication according to the syntactic models available in the language. The role of meta language in the intellectual development of consciousness is studied.

Three classes of phenomena are identified, the relationships of which form a sign a) a sensually perceived form of a sign (sounds, letters, images), b) a representation (concept) of an object belonging to the human mind, c) a material object of the external world with which the sign is correlated.

Digital semiotics and linguistics

Digital semiotics is the study of signs in the context of the digital realm. Memes are part of semiotic research. A meme is the smallest unit of culture or sign of shared experience. There are other emic units in semiotics, including the se meme which is the smallest unit of meaning. Often meaning is generated by metaphor and metonymy. A metaphor connects the signifier of one sign with the signifier of another sign. Metonymy is a sign that represents a larger whole.

Digital semiotics helps engineers who create user interaction systems create models to convey meaning. Considering the metaphors and metonymy of the user and interface is critical to implementation.

The basic concepts in computer science are a code, a system of conventional signs or symbols; alphabet – a set of code characters, text – a sequence of characters of a given message. The term "information coding" is the representation of a message in a form suitable for transmission over a given channel.

Most codes for encoding information are based on one or another number system. The transmission and storage of information in this case is work with numbers. When comparing number systems and the implementation of computer technology, the binary system turned out to be effective, since logical elements must have two stable states (on / off or 1; 0). From a technical point of view, information is a signal (1.0) or an elementary event "yes" – "no", measured in binary units – bits (Hartley measure).

Numbers, although convenient for transmission and storage in a computer, are not convenient for perception and presentation of information for human needs. Natural language is a universal storage and means of information transfer. The predominant part of the information exists in the form of written and oral texts in natural language.

Technical communication is developing in the direction of optimizing information processes and using a human-friendly language. The problems of language communication and language modeling lie in the field of computational linguistics (Computational Linguistics). It was formed at the intersection of computer science and linguistics with the introduction of the first computers, and the first experiments in this area were associated with machine translation in the early 50s. XX century.

The direction began to be actively developed in the 60-70s. XX century. The main direction of computational linguistics is Natural Language Processing, NLP, which includes the tasks of analyzing and modeling the language structure. This is a graphematic/phonemic analysis of a language; morphological analysis; lexical and grammatical analysis of the language; parsing, or parsing; analysis and modeling of the semantic structure; the task of synthesizing language elements, including the generation of texts.

Most of the tasks are related to the problems of automatic text processing. This is a machine translation; speech recognition and synthesis; linguistic foundations of information retrieval; automatic indexing, abstracting and classifica-

tion of texts; automatic content analysis of the text; text authorization; network technologies for presenting text and information; corpus linguistics.

Also, the tasks of computational linguistics include the development and use of artificial languages, including programming languages, information systems languages; computer lexicography and terminography; computer didactics.

Separately, within the framework of computational linguistics, tasks and technologies for using statistical linguistic information are singled out. Computational Linguistics studies the linguistic foundations of computer science and all aspects of the connection between language and thinking, modeling language and thinking in a computer environment using computer programs.

Her interests lie in the field of communication optimization based on linguistic knowledge; creation of a natural language interface and language understanding technologies for human-machine communication (this is one of the main problems of Artificial Intelligence); creation and modeling of information computer systems.

Computer lexicography

The development of computer technologies has led to the institutionalization of computer lexicography involved in the creation of electronic dictionaries. Over the past decades, many events have taken place in lexicography that have radically changed the face of the modern dictionary. The new informational paradigm required serious retraining from compilers of dictionaries, reassessment of strategies for compiling lexicographic sources, content of information and ways of interacting with a new type of digital user "digital native". Lexicography has become the science of information (information science). In modern lexicography, the focus is on three interrelated aspects: information, access to it and the user. Information is provided by linguistics, user profile by sociology, access by information sciences.

Many lexicographic resources are installed not only on computers, but also on other electronic devices (smartphones, tablets). Corpus-oriented lexicography is a separate area and a new trend in modern lexicography. This is the field of language learning based on text or acoustic corpora, with the constant use of a computer in certain phases of data storage, retrieval or analysis. Linguistic research is based on corpus data. Scientific descriptions of the language system, as well as authoritative academic dictionaries, are compiled from the corpora of these languages.

Thus, the popular series of dictionaries Collins is based on the well-known language corpus The Bank of English, the lexicographic works of the Oxford University Press series are based on the British National Corpus, the dictionaries of the Longman series are based on the Longman Mini Concordances. Language databanks are of great value, since the hundreds of examples contained in them provide accurate data for understanding exactly how, in what connotation, and with what usage restrictions, an English word is used by its native speakers. They contribute to the maximum approximation to the way of thinking of the British, as well as understanding their language.

The object of study of modern lexicography is an electronic dictionary. For dictionaries created using computer technology, various terms are used in the scientific literature: “machine dictionary”, “automatic dictionary”, “automated dictionary”, “computer dictionary” and “electronic dictionary”. Electronic lexicographic resources can differ greatly from each other not only in content, but also in structure, purpose, and technical tools. The question arises about the legitimacy of their assignment to one category of "electronic dictionaries".

In a broad sense, an electronic dictionary is a special lexicographic object with a number of specific structural features. This is any ordered, relatively finite array of linguistic information, presented in the form of a list, table or list, equipped with programs for automatic processing and replenishment.

The term "electronic dictionary" may be used to refer to any reference material stored electronically that provides information about the spelling, meaning, or use of words. In terms of content, electronic lexicographic resources are divided into two categories. It is customary to distinguish between automated dictionaries intended for the end user and automatic dictionaries intended for software text processing.

In this formulation, an automatic dictionary means an automatic translation dictionary designed for processing scientific and technical texts. Such dictionaries, being an ordered array of linguistic information, register and store lexical units (words and phrases) with their morphological, syntactic and semantic characteristics, necessary for syntactic analysis (parsing) and automatic translation of the text.

Thus, a distinction is made between automatic dictionaries for a human user and automatic dictionaries for text processing by a special program. Dictionaries for the user in their structure, appearance (interface) and a number of other points differ from those included in machine translation systems, automatic referencing systems, and information retrieval.

The qualitative difference between an electronic dictionary and a dictionary on paper is not so much in electronic markup and hypertext, in cards and windows in place of paper pages and dictionary entries, but in a new manner of lexicographic interpretation of language semantics. The main problem in creating electronic lexicographic resources is that a computer program is not able to fully work with natural language text to represent the user with information corresponding to the possible range of his requests.

This problem has been solved by specialists who develop text corpora through the use of such a tool as markup. Modern electronic dictionaries are a flexible interactive system that provides access to information of a very different nature, which goes far beyond purely linguistic knowledge. Rather, they are multimedia databases that increasingly expand the capabilities and scope of

electronic information sources and bring them closer to the thesaurus-type information depositories, as close as possible to the method of storing information about words in the human mental lexicon.

We are talking about the transition from a dictionary-book to electronic lexicographic and graphic systems, which are complex lexicographic resources , providing interconnection with various sources of information. Automation and hyper textual allow modern electronic dictionaries to work in close relationship with each other. The user can independently choose electronic publications for which information will be searched.

Computer didactics

This is a term that defines the field of didactics, which studies the theory of the use of computers in language teaching. Didactics as a scientific discipline should be associated not with hardware (a computer and a network), but with an electronic format in which new generation content is created and functions. With the development of electronic devices, digital and telecommunication technologies, new terms appear. The laptop is equipped with a webcam, integrated with the mobile Internet. The acquisition of new qualities by a mobile personal computer (laptop) dictates the emergence of a new term – "netbook".

Electronic didactics and teaching methods are faced with the task of developing criteria for analyzing and evaluating the quality of electronic teaching aids. It is necessary to identify the features of the presentation of speech material. An electronic textbook consists of a system of interconnected functionally oriented modules, the property of each of which is to be investigated in scientific and methodological work.

One of the key factors in e-learning a language is the presentation of new teaching material, its explication and semantic. A feature of the electronic presentation of the new training material is its implementation in the format of a web page, which allows you to compose and simultaneously present the training

material in all its information and digital varieties (video, text, graphics, sound, animation), as well as to explain it productively and semantic using electronic dictionaries-translators.

The didactic and methodological possibilities of modern ELS are growing along with the improvement of related electronic disciplines, for example, electronic linguistics and its section - electronic lexicography. With the dynamic development of the networked world and the formation of a global multilingual, cross-cultural, multi-ethnic environment, there is a need for multilingual translator dictionaries that allow users to quickly translate words, phrases, texts, web pages and sites. Competition between software companies that produce electronic translators contributes to their further improvement.

There are a number of electronic dictionaries on the market that have the following innovative methodological qualities for language learning: instant translation when hovering over a word, providing numerous contextual realizations of a given word, its sound pattern, interpretation and a wide synonymous range. Among the special significance for the language teaching methodology is the ability to quickly switch the student to specialized dictionaries without leaving the working area of the web page (technical, medical, legal and informational). The method of teaching the language, focused on working in electronic format, cannot but take into account the essential characteristics of the web page.

The multi functionality of a web page is ensured by its implementation in a universal html format, on the basis of which the global network is built. Internet users get used to such a presentation of information material, acquire skills in working with digital information, mainly by manipulating the mouse and keyboard, which cannot but affect the psychological and pedagogical aspects of language learning. A universal style of working with information of various nature is being developed. Electronic dictionaries-translators also function on the basis of this property of the web page.

The successful work of a teacher in the network depends on his readiness and equipment of a personal computer with the necessary minimum of mandatory modern software. The Internet has already developed common international formats for presenting meaningful content. Basic formats include html and flash.

Many years of experience in the production of various types of electronic learning tools testifies to the effectiveness of the production of computer and network textbooks, created taking into account the universal formats for presenting educational content and external applications that are included in the package of mandatory tools for a modern user.

Internet discourse

To understand the term Internet discourse, it is necessary to refer to two key concepts that make up this term – discourse and the Internet. The term discourse is used in various scientific fields, to some extent having an anthropological orientation (philosophy, sociology, psychology, linguistics). In linguistics, most researchers understand discourse as a text immersed in a situation of communication.

Discourse is traditionally compared with speech and language, finding features of both in the concept of discourse. It is believed that discourse is similar to speech in that it manifests itself in action, in the process, and differs from it in that it has systemic features inherent in language. However, language, unlike discourse, is more abstract. Discourse differs from language and speech by the presence of a sociocultural context. Although discourse is text, not all text is discourse. The fundamental difference between discourse and text lies in its dynamism and interactive character.

Discourse is both a process of linguistic activity (communication, context) and its result (text). The combination of two concepts – discourse and the Internet – leads to the obvious conclusion that the Internet discourse is a special type of communication carried out through the Internet, which is a communication

channel and information exchange between the participants in communication. The term Internet discourse implies the attachment of discourse to the Internet and to the computer.

This type of communication includes the user, the computer and the Internet. Internet discourse is considered as a special new type of speech, within which communicative genres are formed and developed. The main linguistic feature of communication in the global network is the synthesis of written and oral speech. Internet discourse is a hybrid of oral and written discourses.

Technologies of digital linguistics

They suggest methods for creating linguistic databases and knowledge. This is a formal representation of linguistic data in the dictionaries of automatic text processing systems; tagging written text; representation of knowledge in the form of logical inference rules, semantic networks and frame structures; formal representation of the content of the text.

Programming of linguistic tasks includes the basics of algorithm; technology for designing algorithms for the analysis and synthesis of words; technology for designing algorithms for analysis and synthesis of proposals; technology for designing text analysis algorithms; writing an algorithm in the Python programming language

Automatic text processing methods involve linguistic aspects of artificial intelligence. These are expert systems; automatic text reading systems; automatic text indexing systems; information retrieval systems; systems for in-depth analysis of unstructured texts (Data Mining and Text Mining); systems for automatic annotation and abstracting of text; machine translation systems; systems of automatic linguistic examination of the text

Problems of understanding and generation of text and speech constitute a special subject. Among them is the generation of a written text by a person; generation of a written text by a computer program; human understanding of written

text; understanding of the written text by a computer program; automatic recognition and understanding of oral speech; automatic synthesis of oral speech.

Sign systems

A sign cannot be directly identified with itself, since such and undermines its main property – signs. A sign is identified through another object called the value of this sign. The nature of this identification can be very different. C. S. Pierce reduced it to three main types.

The first of these forms iconic signs, or icons. Iconicity is based on the relationship of similarity between the sign and the object it denotes (for example, a portrait depicting a particular person). The second type of sign identification with the object it designates forms index signs, or indexes. Indexality is based on a real connection in space or time between a sign and the object it denotes (for example, a road sign and smoke as a sign of fire).

The third type of identification forms symbolic signs, or symbols (symbols), they are based on an arbitrary, conventional connection between a sign and its object. It can be a contract, a tradition, or a coincidence (natural language words are usually given as an example of symbols). Even in the case of iconic signs, similarity cannot lead to the identification of a sign with its meaning. The sign is an object of a different type.

Whatever the specific types of signs, symbolism undermines the foundations of self-identity. A sign is not identical to itself or to the object it denotes. A sign is identified by its object meaning, with which it cannot be identified. Without meaning, there is no sign. Without a sign, there is no meaning. However, the sign and its meanings cannot be identified. These are different types of phenomena. In the world of signs, the law of identity does not apply. Semiotics is based on an internal paradox. The self-identity of the sign is also undermined by its potential multiplicity and ambiguity. The sign of an apple can be not only an “apple”, but also its image.

All this was clearly realized already by G. Frege, who tried to establish the foundations of mathematics, first on logic, and then came to the conclusion that there are objects that, for the purposes of justifying mathematics, are even more fundamental than logical relations. They are signs.

Speaking about the semiotic foundations of knowledge, one should take into account the obvious fact that semiotics does not consider reality in all its diversity, but only its conditional and greatly simplified sign models. This is the fundamental simplification of semiotics, and the guarantee of its effectiveness, since it allows describing complex systems and processes in a simple and obvious way. Any sign model is a comprehension of its subject area. For a semiotic description, there is no fundamental difference between conscious and unconscious connections and meanings.

Semiotics of culture

In semiotic research, there are two main approaches to the analysis of culture. The first of these is connected with the tradition of C. S. Pierce and the work of North American scientists. The second, characteristic primarily for European researchers, is associated with the development of the ideas of F. de Saussure.

For C. Pierce, the role of the central concept is the sign, which is the original and elementary in his semiotics. A sign is any object that replaces any other object. The sign is not decomposed into smaller components that are relevant from a semiotic point of view. Simple single signs can form more complex complexes of signs, statements, which together form a language. N. Chomsky defines language as a set of grammatically correct sentences. For C. Pierce, the sign is a much more important phenomenon than language. The correct description of the signs and the rules of their syntax automatically guarantee the correct description of the language. This point of view can be called atomistic.

The logic of F. de Saussure is fundamentally different. For him, an isolated sign does not exist. A sign is formed not by its relationship with the object it replaces, but with other signs included in the same system of signs (language). A prerequisite for the existence of a sign are other signs. Language is the original semiotic reality. For C. Pierce, a sign is a specific object representing another object. For F. de Saussure, it is an abstract object represented in speech. C. Pierce's sign is elementary. The sign of F. de Saussure represents the indivisible unity of the signified and the signifier. Such an approach to semiotic phenomena can be called holistic.

From the point of view of the Peirce tradition, semiotics of culture is a branch of semiotics that studies sign formations found in different cultures, that is, in the phrase semiotics of culture, “semiotics” means a method, and “culture” means an object of study. At the same time, neither culture occupies any special position in relation to semiotics, nor semiotics in relation to culture.

Semiotics and culture turn out to be so closely connected with each other that the problem is not how these concepts can be connected with each other, but whether it is possible to separate them at all. The basis of culture is formed by semiotic mechanisms associated, firstly, with the storage of signs and texts, secondly, with their circulation and transformation, and, thirdly, with the generation of new signs and new information. The first mechanisms determine the memory of culture, its connection with tradition support the processes of its self-identification. The second mechanisms support both intra cultural and intercultural communication and translation.

The third mechanisms provide the opportunity for innovation and are associated with a variety of creative activities. All other functions of culture are derived from these basic, semiotic functions. Thus, semiotics turns out to be not one of the numerous possible approaches to the study of culture, but the main and initial one, organically connected with the nature of culture. Culturology is first of all, the semiotics of culture.

Semiotics is the basis of not only the theory of culture, but also the methodology of any cultural studies. Culturology is a product of reflection and self-description of culture, that is, it is a metasemiotic formation. Culturology operates with signs of signs, creates texts about texts. Since there are no pre- and extra-sign formations in culture, the interpretation of any cultural phenomena must begin with their semiotic analysis, deciphering.

Semiotics is culture-centric and culture-morphic. First, culture for semiotics is not just one of the numerous objects of description, but its primary and most important subject. Most of the remaining areas of semiotics are related to and dependent on the semiotics of culture.

Text problem

The semiotics of culture deals with texts. Culture can be considered as a text. Various methods of analysis are important only to the extent that they contribute to the description and interpretation of the text.

The text is a closed and independent structure, and it is precisely as such that it must be studied. Individual elements of this structure do not have independent value. Their value is determined by a set of structural functions. Text is more than language. First, there are a number of elements in the text that are not derived from the language. Secondly, the text, unlike the language, is endowed with meaning and this meaning is inseparable from the structure of the text.

Therefore, the text is subject not only to description, but also to interpretation. The number of possible interpretations is in principle unlimited. Thirdly, almost never a text is the product of the implementation of only one language. Any text is poly linguistic, as is any culture considered as a text. In the semiotics of culture, the text is the main integrity.

Y. Lotman introduced fundamental changes in the understanding of the form and role of communication in the system of culture. First, the act of com-

munication is not the transmission of a ready message. Only language is not possible before and outside the text.

The same is true for all other Jacobson components. The context cannot exist before the text and to the same extent that the text depends on the context and the context depends on the text. The act of communication is an act of translation, an act of transformation. Text transforms language. It establishes contact between the addresser and the addressee, transforms the addressee. The text transforms itself and ceases to be identical to itself.

Secondly, it is necessary to distinguish fundamentally different communication channels. For Jacobson, both the addresser and the addressee are impersonal characters.

There is a semiotic duality in the text, the same as in the sign. On the one hand, the text is immanent and self-sufficient. It is a semantic universe. On the other hand, he is always included in the culture, is part of it. The exclusion of a text from culture leads to the destruction of its nature. This kind of duality is also characteristic of culture. The boundaries of culture are like the horizon. You can see them, but you cannot go beyond them. The culture is textomorphic. The parallels between culture and text are numerous.

Culture is in constant dialogue with the space external to it, structuring it in its own image and likeness. But this same dialogue is existentially significant for culture itself. In its course, it acquires and develops its identity. The more external connections, the more diverse they are, the richer the culture. Dialogue is even more important as an intracultural process. Culture can be interpreted both as a text and as a collective consciousness.

Culture began to be presented as a secondary modeling sign system, built according to the laws of the natural system of language. Culture is an information sign system in which, with the help of special codes, scenarios of human behavior, social laws, religious and artistic texts are created. In cultural signs, a person selects and structures his knowledge about the world and his experience.

Accordingly, different spheres and types of culture select and structure information in different ways.

Semiotic research considers all the phenomena of culture as facts of communication, the individual messages of which are organized and become understandable in accordance with a certain code. By studying the sign systems of different cultures, one can discover their deep meanings by extracting this or that information. The semiotic approach was formed in line with structuralism, founded by French linguists in the late 60s. of the twentieth century with the aim of structuring and categorizing reality, giving the humanities the status of exact sciences. The basis of structuralism was the methodology of structural analysis, which has been used since the 1920s. Another source of structuralism was the psychoanalysis of Z. Freud and the theory of archetypes by C. Jung, from which the categories of the unconscious were borrowed as a universal regulator of human behavior.

One of the theoretical provisions of structuralism is that the society and the individual are controlled by an unconscious semantic structure, encrypted in the language. Accordingly, culture itself is structured like a language. The relations between its elements remain stable under any transformations and changes. Structures, algorithms are easily established in language and literature, social processes, art, mass culture phenomena.

The concept of "structure" refers to the arrangement and connection of the constituent parts of something, the structure. The totality of interconnected links forms a system, regardless of its elements and goals. The mere presence of a structure does not make this or that phenomenon a system. The structure is only a form of expressing the content of the system, a relatively stable ordering of links between elements, determined by the functional purpose of the system.

Accordingly, the structural approach is associated with the description of the system and involves the selection and description of the elements of its structure, taking into account the relationships between these elements. Viewed

in this way, the structure reflects the internal form of organization of the system. Economics, politics, myths, rituals are considered as texts containing an infinite number of messages. Structuralism reveals in each text a layering of other texts, in any message - other messages.

The structural method was successfully used by K. Levi-Strauss in ethnographic and anthropological studies. R. Barth established structures similar to language in the phenomena of mass communication, journalism, fashion, food, urban environment, modern mythology, advertising, understanding them as semiotic phenomena in which social logic can be found. J. Lacan extended the ideas of structuralism to psychoanalysis, and M. Foucault developed these attitudes on the material of the history of ideas.

The semiotic approach made it possible to combine the system-forming characteristics of culture on the basis of the achievements of semiotics in the field of sign systems with the identification of their syntactic, semantic and pragmatic aspects. Structural-semiotic analysis is used in the study of art, literature, anthropology, and mass communication.

This approach, through the prism of the linguistic structure, makes it possible to read cultural phenomena as texts and to identify their universal meanings. As a philosophy, as a theory, as a set of concepts and as a method of analysis, semiotics has many manifestations and is the subject of various interpretations. Semiotic analysis involves the study of works of art as a sign system, revealing the "language" through which artistic information is transmitted.

One of the important concepts of semiotic research is the concept of a cultural code. Codes are world modeling systems that create a single picture that reflects the vision of the world from the perspective of a community. The code represents a model that acts as the main way to form messages, which allows them to be transmitted, decoded and interpreted.

The main type of code is the language. It determines denotative meanings. Connotative meanings, containing the whole range of cultural meanings, depend

on secondary codes. When using the methodology of semiotic analysis, cultural, social and ideological codes are distinguished. A message with an aesthetic function contains a style code, as well as an author code. A complex multi-stage code as a set of different codes is distinguished in the analysis of synthetic level communication systems (theater, music, cinema, dance, painting, television).

An extensive repertoire of codes is inherent in audiovisual messages. Semiotic analysis allows you to find out how the message is organized. What does it express and with the help of what elements helps to understand the ideas of the author and the deep meanings of the text. Iconology makes the subject of study the study of various plots and motifs in order to determine their meaning and meaning in the context of a particular culture.

The beginning of the structural-semiotic study of culture was laid by the works of the folklorist V. Ya. One of the variants of the structural-semiotic approach was formulated by G.G. Shpet, who presented in his “Aesthetic Fragments” the principle of a consistent description of a work of art by levels, including the level of meanings.

The traditions of the formalists were continued in the studies of the semiotic school of Y. M. Lotman. Art is considered as a sign system, and works of art – as an artistic text built according to the laws of this system.

Under the influence of M. M. Bakhtin and E. Benveniste, a clear division was made between natural language and other modeling systems. An important place was given to the semiotic analysis of those types of art to which the methods of structural linguistics cannot be applied. The Y. M. Lotman's concept contain such provisions that are fundamentally different from the initial principles of structuralism, which led to an understanding of the structure as a system and made it possible to consider the simulated objects as open systems obeying universal structural laws. The key concept was the concept of the text, which extended to the description of culture as a whole.

A literary text is a structure, all elements of which at different levels carry a certain semantic load. Text levels are separate layers, each of which is a system, each element of which is, in turn, a system of a lower level. Y. M. Lotman extended the idea of the symbolic nature of the text to other areas of culture – art, everyday life, education. A text can be a fragment, a book, and a person's life, and his behavior, and even the story itself, if they contain the same semiotic duality as in the sign. As a text, culture is a certain set of information, and its content is closely related to the structure of its external relations.

Unlike a sign system and a language, a text may not have an internal structure it may not contain any rules governing its comprehension or use. But in any case, the text must be comprehended and understood. According to Y. M. Lotman, in order for a message to be defined as "text", it must be double-encoded. Among the leading areas of semiotic analysis are ethno linguistics and ethno semiotic. The subject of their research is the relationship between the ethnos and language, the ethnos and the ways of its organization.

That is why ethno semiotics comes into contact with mythology, cultural history, and ethnic history. The semiotic approach served as the basis for the formation of the direction, which is called "symbolic anthropology", within which a methodology for the structural and areal study of rituals was developed, and such an important concept as the "semiotic status" of objects was substantiated. Particular attention is paid to spatial codes and oppositions. Things contain the possibility of their utilitarian and symbolic use.

Intertextuality implies that the text is always connected with other texts, which are presented in it in the form of quotations, motifs and allusions. Thus, penetrating into the sphere of various methodological approaches, the semiotic aspect expands both the possibilities of methodology as a whole and its own research strategies.

Language of culture

The semiotics of culture is the symbolic means of culture, as well as the consideration of all cultural phenomena as texts. In this case, it is assumed that a necessary component of any culture is information that is always stored and transmitted using signs that collectively make up the text.

At the same time, "text" is called not only written messages, but any artifact considered as a carrier of information. Language is also understood in a broad sense – not only as a natural language (primary modeling systems), but also as a secondary modeling system. The languages of culture are called modeling systems, since they are the means by which a person learns, explains and tries to change the world around him.

A sign is a material object that replaces some other object, property or relationship and is used to acquire, store, process and transmit messages, information and knowledge. Natural signs are understood as things and natural phenomena in the case when they point to some other objects or phenomena and are considered as a carrier of information about them.

Natural signs are sign-signs, for example, smoke is a sign of fire. To understand natural signs, you need to know what they are a sign of, and be able to extract the information contained in them.

Functional signs are things and phenomena that have a direct pragmatic purpose, and they become signs because they are included in human activity and carry information about it. These are also signs-signs, for example, production equipment, since any mechanism or part can act as a sign containing information about the entire technical system of which it is an element, for example, the actions of a teacher moving his finger over the list of students in a journal become a sign of an incipient survey.

Functional signs often have secondary meanings attributed to them by analogy, which is especially well seen in superstitions: a horseshoe – fortunately, a woman with empty buckets – unfortunately, etc.

Iconic signs are signs-images, the appearance of which reflects the appearance of the things they designate. As a rule, they are created artificially, although occasionally natural objects can be used if they are similar to the object they want to designate. So, in music, thunder, sea waves, etc. are imitated; in this case, the signs are similar to the designated objects in terms of material. Artistic images created by writers, painters or sculptors describe people, animals or events very accurately, although they are more or less arbitrary.

Conventional (conventional) signs are artificially created signs to which people have agreed to ascribe a certain meaning. They may not be at all similar to the object they represent (although this is not excluded), for example, a school bell. a red cross on an ambulance, a zebra at a pedestrian crossing, etc. There are three main types of conventional signs – signals, indices and symbols.

Signals are signs of notice or warning, such as the colors of a traffic light.

Indexes are conventional designations of objects or situations that have a compact form and are used in order to distinguish these objects and situations from a number of others. Sometimes (but not necessarily) they try to select them so that their appearance suggests what they mean, for example, instrument readings, conditional icons in diagrams, graphs, etc.

Symbols are signs that not only point to some object, but also carry an additional meaning. If the meanings of any other signs refer either to things and objects of the real physical world, or to the phenomena of the mental and spiritual life of concepts, ideas, feelings, then the meanings of the symbols indicate the significance, value of these phenomena both for an individual person and for small and large groups of people, peoples, states, humanity as a whole.

Symbols are not only conventional, but also iconic. The signifying side of a symbol is related to what it denotes, has some resemblance to it, sometimes very indirect, associative.

Verbal sign systems are spoken languages. They form the basis of the culture of the people speaking it. This system is formed on the basis of the psycho-

physiological capabilities of a person, inherent in his biological nature (the structure of the brain, larynx, hearing organs). Language has a social nature. It is formed and developed by people only through their joint activities and communication. Natural language is an open sign system. The basic vocabulary remains unchanged for a long time, for hundreds of years.

Sign systems of record in the history of mankind appeared rather late. They arose on the basis of other sign systems of spoken language, music and are secondary to them. The emergence and development of writing played a particularly important role in the history of culture. Without writing, the development of science, technology and law is impossible. The basic sign of writing is not a word, as in spoken language, but a letter. The number of basic signs in the system is significantly reduced and becomes visible. Thanks to this, the logic of using the sign system changes radically, qualitatively new ways of processing, perceiving and transmitting information become possible.

Recording creates an opportunity to artificially increase the vocabulary of the language. If in unwritten languages little-used words disappear, then the record allows you to accumulate words. With the advent of writing, language norms and rules and a standardized literary language were formed. Writing opened the way to the transmission of information across time and distance, and made it possible to preserve those thoughts and ideas that were not understood by contemporaries, but later turned out to be in demand.

The most important step in the development of culture was the emergence of printing. This created the conditions for creativity, mass education and enlightenment of peoples.

One of the important directions in the development of notation systems is the creation of artificial, formal languages, characterized by a strict formalization of the construction rules. Such languages are widely used in logic, mathematics and computer science.

Semiotics and linguistics

The subject of semiotics includes the symbolic embodiment of communication processes. It studies the patterns of signification. Metalanguage is that fundamentally new thing that has appeared in man and from which human language as a whole has grown. N. Homsky, R. Solso believe that a person's propensity for linguistic reflection is genetic. N. Chomsky called this property biologically hereditary. Psycholinguistics distinguishes between external and internal speech (L. Vygotsky). It is a conductor of information and at the same time a fundamental semiotic system that generates other sign systems (hereinafter referred to as primary and secondary modeling systems).

The foundations of semiotics were laid in the works of philosophers and logicians of classical antiquity (5th century BC), who did not separate it from geometry, grammar, and rhetoric. The early pioneers of semiotics can be considered Blessed Augustine, Thomas Hobbes. The roots of modern semiotics can be found in the works of A. Humboldt, A. A. Potebni, I. A. Baudouin de Courtenay. The foundations of semiotics were laid by representatives of European structuralism in the 1920s-1930s. – the Prague Linguistic School and the Copenhagen Linguistic Circle (N.S. Trubetskoy, R. O. Jacobson, J. Mukarzhovsky, L. Elmslev, V. Brendal), the Russian formal school (Y. N. Tynyanov, V. B. Shklovsky, B. M. Eikhenbaum).

Charles Pierce is the founder of the science of signs, which he called "semiology". He formulated the principles of semiotics, which he defined as a science that studies any system of signs used in a human team, gave definitions of basic terms and outlined a classification of signs. The Swiss linguist Ferdinand de Saussure, the founder of the structural school, considered natural languages as sign systems and developed a theory of the meaning of signs. Under the influence of his ideas, semiotics took on a linguistic bias.

Having arisen at the intersection of several disciplines, along with the methods of linguistics, semiotics also actively began to use the methodology of

logic and mathematics. On the basis of semiotic methodology, the objects under study began to be comprehended in a new way. The semiotic view is close to cybernetics. Since the time of the Stoics (III – II centuries BC), all definitions of the sign indicate its two-sided nature (material-ideal). A sign is a material sensually perceived object, thing, phenomenon, action and sign.

He acts as a representative of another object, thing and phenomenon. It is used to receive, store, process and transmit information. Each sign has: 1. the material side – this is its signifier or the plan of expression, 2. the ideal side – this is the meaning of the sign (signified), or the plan of content. The thesis about the materiality of the sign should be explained. The meaning (content) of any sign is not the "replaced" object itself, but the representation of it.

The content of the sign is not material, but conceptual. The intangibility of the content of the sign was already seen by the Stoics of the Hellenistic era, when they defined the sign itself as "perceived", and the signified as "understood". Modern semiotics accepts the two-term formula of the sign, but only as a simplified working model, while semiotic philosophy operates with a three-term model: signifier – signified – object of designation, the so-called semiotic triangle of G. Frege.

It follows from the definition of a sign that it necessarily correlates with one or another concept of reality. However, there are elements in the structure of signs that do not have such correlation. In a language, these are all insignificant and non-independent units: graphemes, morphemes, punctuation marks, diacritical superscripts, etc. This category of elements is collectively called "sub-signs". They do not represent the subject. Their purpose is to designate the formal grammatical, semantic and intonational articulation of speech. The sub-sign components of any semiotic system are not only the building material of signs, but also the distinction of meanings.

Modern semiotics believes that the sign has the following properties. He matters. He informs. It is used to store and transmit information. It functions un-

der the condition that the addressee is included in the given sign system. The meaning of the sign is single and stable in this context. The boundaries of the mark are clearly delineated so that it can be separated from other marks. Its shape can vary greatly, but it must be recognizable. The form of the sign is partially or completely arbitrary in relation to the denotation.

The physical nature of the sign determines the sensory channel of its perception. On this basis, optical, auditory, tactile and taste signs and sign systems are distinguished.

Combinations of signs are called complex signs or sign systems. Signs are connected in it with each other by certain rules of syntax. Signs are connected in it with each other by certain rules of syntax. New signs are introduced into the system not arbitrarily, but on the basis of rules. The meaning of a sign in a system depends not only on the sign itself, but on its place in the system. The system consists of a finite number of elements, so that their description can be drawn up with an indication of each of them. A sign construction is not the same as a sign system and is not its special form or special case. This is an independent phenomenon, for which the sign system supplies the building material.

Sign construction has its own structure. It reflects the structure of the denotation, although it does not always reproduce it visually. In this case, the denotation is a certain system, and we obtain information about it schematically. Models are divided into three types: physical, real-mathematical and logical-mathematical. Logical-mathematical models are constructed from signs.

The relationship between the model and the original is based on the principles of isomorphism, identity to the object. In codes with rich semantic possibilities, including natural languages, there should be special operators that would update the information. The opposition of encoding and decoding was put by A.R. Luria as the basis for the classification of the processes of speech activity and speech disorders.

By taxonomic features, signs can be divided into elementary and non-elementary. Elementary signs are simple and primary signs. They do not contain other signs and are not derived from other signs. Complex or non-elementary signs include several simple signs, for example, writing a formula, a religious rite. There is a classification into natural biological or innate semiotics and non-biological cultural semiotics.

The genealogical connections of natural and cultural semiotics are manifested in two directions: in the features common to semiosis in the behavior of animals and humans, in the form and content of signs of cultural semiotics – gestures, facial expressions, etiquette. In culture, there are many sign systems that combine the properties of natural and artificial semiotics.

The ratio of such systems is determined by the predominance of features of natural or artificial origin in them. Duality is characteristic of the language of people. On the one hand, no one doubts the natural origin of ethnic languages. In society, there are phenomena of artificial origin or phenomena that contain features of artificiality. These are writing systems, scientific and technical terms, the literary language itself and normative-stylistic systems, conscious language planning, which is always present in language policy and in conditions of mono lingualism and, moreover, in multilingual societies.

Artificial semiotics reveals the features of natural and spontaneity of development, which is characteristic of the history of culture. For example, there is every reason to consider writing as one of the artificial linguistic semiotics; it is not for nothing that they often talk about the “invention” of writing.

However, historical knowledge reveals in writing a powerful elemental and evolutionary principle. In the addition of original (not borrowed) systems of alphabetic-sound writing, naturalness is due to the fact that they grew out of ideographic writing, so new letters turned out to be dependent on the previous pictograms or hieroglyphs.

Artificial semiotics are purposefully created by people for specific purposes as a metalanguage. These are not only alphabets, but also geographical and astronomical maps, coats of arms, emblems, road signs, systems for recording dances and music, signs of military branches and military distinctions. Artificial languages of communication of a multilingual society have been created – Esperanto, Ido, Volapuk and Occidental.

The cultural beginning in the language prevails and tends to increase. Biological semiotics are assimilated genetically, artificial semiotics are assimilated artificially. The assimilation of such semiotic systems as mathematics, art, religion, behavior and some others require certain efforts.

In the mind of a person, natural or motivated nomination can be of two types: according to the contiguity of phenomena (metonymy) and according to their similarity (metaphor). Metonymy and metaphor become symbols of the two main types of relations between signs and their corresponding operations on signs - selection and combination.

Most linguistic signs are motivated by signifier and signified. However, in all languages there is a different kind of motivation – in contrast to natural motivation it is called secondary or intra-systemic motivation. This is the motivation of derived words and derived meanings. It takes place not only in natural languages, but also in artificial semiotic systems. This type of motivation is especially characteristic of heraldic practice. In the semiotics of art, iconic signs predominate, because the essence of art lies in the creation of similarities.

The ability to understand and use natural signs was the most important condition for the adaptation of ancient man to the environment and, consequently, the condition for his survival. Functional signs arise in the process of human activity and indicate the way the denotation functions in the process of this activity. The signs of this class are also signs of something, but unlike natural ones, the connection of functional signs with a denotation is due not to its objective properties and not to the laws of nature, but to those functions that the des-

ignated performs in the process of human activity. These signs are objects that have some pragmatic purpose. They are created by man for practical use, and not for the purpose of turning them into a sign.

Functional signs can be not only objects associated with activity, but human activity itself. By making involuntary and unconscious movements, a person, as a rule, gives these signs signaling his feelings, thoughts and intentions. Functional signs, along with primary meanings associated with pragmatic functions, can also take on secondary meanings, which are assigned to them more or less arbitrarily on the basis of some analogies. The secondary meanings of functional signs in culture become signs and interpretations of dreams. For conventional signs, this function is the main and main one. These signs are created specifically to denote a certain denotation. People get acquainted with the content of a sign in a particular culture as a result of training.

The defining feature of the images is the similarity to what they represent. This similarity can be greater or lesser – from similarity to isomorphism. The resemblance may be of an external character, but it may concern the inner content of the signifier and the signified; it may consist in a complete or partial coincidence of ideas and associations that evoke an image and a denotation. The difficulty in understanding symbols is caused by several factors, first of all, the multi-level nature of the symbol, the inclusion of many semantic layers in the content of the symbol, the abstractness of the idea included in the semantic field of the sign, the richness of historical fate.

No other sign system can compare with language in terms of its cultural significance. You can point to a number of advantages of the language: the language is economical and easy to use, does not require significant energy costs, does not need to prepare any means of communication, and allows you to transfer large amounts of information in a short time. An important advantage of the language is its reliability as a means of communication and information transfer.

Reliability is achieved through the phenomenon of redundancy. In a language, information is encoded by more characters than is necessary for its perception.

Redundancy allows you to more accurately establish the content of the message and avoid errors even when the message contains omissions or distortions. There are four main levels of language structure. Each language has its own phonetic features, which is expressed in a specific set of phonemes, in a special form and method of their in intonation features. The number of possible phonemes is small. If the language was formed only at the level of phonemes, then the variety of languages would be small, and the languages would be poor in terms of content.

Vocabulary in developed languages has up to 400-500 thousand words. However, not all vocabulary is used in everyday life. In the vocabulary of any language, there are many intersecting classes of words: polysemy and homonymy. The overwhelming number of verbal signs of the language has more than one meaning, which greatly complicates the undistorted perception of information by the addressee. The process of forming ambiguity is complex, but there is a connection between different meanings. Polysemy enriches speech, saturating it with additional subtext.

The meaning of sentences depends not only on the words of which they are composed, it is largely determined by grammar. Grammatical structures express the essential features of the content. Following the stylistic canons was directly associated with the social status of the addressee. The high style of speech spoke of a high social position in society. Style can be considered as an individual manner of speech, which reflects the level of education, occupation, range of interests, way of perceiving the world.

In the process of thinking, language performs three cognitive functions. Thinking is the operation of mental images of objects, phenomena, ideas. The words of a natural language appear in the process of thinking as the names of objects of thinking. This is precisely the nominative function of language. In the

process of thinking, objects are replaced by their names. This optimizes the efficiency of thinking.

In the course of thinking, names are linked into sentences that describe the diversity of the world. Moving from one sentence to another according to the rules of logic, people build verbal constructions that express the features of their inner speech. Language is the material in which the results of thinking are fixed and stored, and the objective reality is conceptualized. Before the advent of writing, the accumulation of knowledge occurred through oral speech.

The hypothesis of Sapir and Whorf is known as the hypothesis of linguistic relativity, according to which the system of concepts and features of thinking existing in the human community are determined by the language of which this society is the bearer. According to this hypothesis, language is not just a means of expressing and shaping thoughts. It determines the course of thought processes and their results.

Whorf formulated the following hypothesis: modern world culture has developed based on the European language type, which determined the type of normative behavior and thinking. For example, the European concept of time and European logic, predetermined by the forms of the European language type, prevailed in world culture. If we assume that modern world culture developed on a different linguistic basis, then, apparently, different rules of thinking would have been created. The differences between languages are most noticeable in the fact that each of them has a so-called non-equivalent vocabulary, i.e. words that are not translated into other languages in one word. The share of non-equivalent vocabulary in different languages is different.

The absence in the language of words corresponding to the non-equivalent vocabulary of another language is called lacunae. Gaps become noticeable only when comparing languages. They are due to differences between the realities of cultures. The language serves culture, therefore the norms of the language, its

vocabulary and grammar change when the development of social life, science, art requires it. Language evolves with culture.

Verbal illusionism plays a big role in creating social stereotypes and standardized ideas about any phenomena, people, social groups. A stereotype is like a verbal label, while simultaneously giving little information, it introduces the addressee into the captivity of illusory knowledge. Such, for example, are national stereotypes, which attribute the same traits of character and behavior to all representatives of a certain people. Such stereotypes often serve as a source of nationalist prejudices.

With the development of culture, the role of the word in human activity increases and this opens up more and more scope for verbal illusions. If primitive cultures were predominantly material, then developed cultures are increasingly becoming verbal.

In modern society, the formulation of the problem often becomes more important than the problem itself. Verbal mirages, which people begin to trust more than their own eyes and common sense, are constantly created by propaganda and advertising. Near linguistics – (near-) – the science of the sound codes of non-verbal semiotics. Kinesics is the science of gestural systems.

Oculesika is the science of the language of the eyes. Haptics is the science of touch language and tactile communication. Proxemics is the science of the space of communication, its structure and functions. In addition to the main listed sciences, one should know about the language of smells (olfaction), about the sign and communicative functions of food and drinks, about the time of communication, about its structure and cultural functions, and the science of the systems of objects that people surround themselves with, about the functions and meanings that these objects express.

The term "near linguistics" is used to denote a system of non-verbal sound codes included in the process of speech communication and capable of transmitting additional semantic information. In near linguistics, one can distinguish be-

tween the center and the periphery. The center of the system includes individual non-speech sounds, sound complexes, the voice and its constant qualities, the playing of the voice or (phonation), as well as prosodic elements (logical stresses, semantic accents, voice pitch, speech tempo, tonal level).

Intonation can radically change the meaning of a message. Sometimes tone is more important than words. The periphery includes logical sounds and their parameters (a knock on the door, the sound of rain, the sound of a slap, applause, etc.). The peculiarity of all paralinguistic signs is that they are not speech elements of the language, but to a large extent organize and determine the communicative act. These funds are irregular and are individual in nature. Different sound parameters may be due to various reasons. The voice can tremble with excitement and break out of anger. There are special social types of voices. Speed, timbre, and the general tone of the text play a role.

Kinesics studies body language: gestures, ritual sign languages, sign dialects (professional, territorial). Along with near linguistics, it is the central area of non-verbal semiotics. The word “gesture” comes from the Latin word “gestus”, meaning “to act”. People communicate with each other not only with the help of speech, but also with the help of facial expressions and gestures. In the process of communication, everything is significant, even the non-execution of a gesture. There are certain similarities between sign and natural languages.

The parallel existence and interaction of these two languages in a communicative act is possible due to the fact that the deep mental processes are largely similar. This is evidenced by the following facts: 1. Certain conditions, meaning can be expressed only by a gesture, only by words or paralinguistic units or a combination of both signs.

Gestures, like language units, are symbolic signs; they form the lexicon of the body, just as lexical units form the vocabulary of a natural language. With the help of gestures, you can express thoughts and feelings, convey emotions and ideas. Gesture sequences can form gestural semiotic acts.

Like words, gestures are able to act in different contexts and play different roles in a communicative act. Gesture behavior changes in space and time, as well as speech behavior. Each time has its own gestures, gait, posture, manner of greeting and drinking tea. Many body language gestures can be translated into verbal language. The verbal reflection of a gesture is called a nomination. The variety of sign language is great, but not infinite. Throughout history, many gestures go from iconic signs to symbolic ones, from the expression of specific simple meanings to the expression of abstract ideas.

There are also fundamental differences between verbal language and sign language, which do not allow us to consider them as isomorphic systems. But between them there is a certain internal connection. A person who speaks different languages noticeably changes kinetic and paralinguistic behavior. The change of non-verbal code occurs spontaneously and naturally. People's acquisition of body language is slower than the acquisition of verbal language. In the process of communication, speech units are supplemented and concretized by symbolic elements of postures and gestures. For semiotics, the ideas of Levi-Stross in the field of structural anthropology were extremely important.

The eyes and their expression take on a special role in non-verbal communication, transmitting a wide variety of information channels. Within one culture and one sign language, eye expressions have fixed meanings. Each culture and each people develop their own typical patterns of eye behavior and stereotyped language ways to talk about them. The rules of etiquette eye behavior regulate its certain types and types. With the help of the eyes in the communicative act, sets of silent messages are transmitted in the communicative act.

Looking into the eyes, adopted by European peoples as an etiquette norm, is considered indecent and irreverent by Muslim peoples. The cultural protective function of the eyes is known and described. Hundreds of amulets designed to protect people, their homes from possible diseases, the evil eye and other misfortunes are shaped like an eye. There is an analogy with the cult of the Sun,

which observes the behavior of people from above, protects them and helps them in life.

The scope of touches and their typology is extremely diverse. The origin of touches, their types, functions and meanings, as well as the high frequency of use in a communicative act, make touches an extremely important and interesting object of study. Of the perceptual abilities of a person, touch is one of the main ones. People love to touch everything new and unusual, and this habit has been preserved since early childhood.

There are groups of people and entire nations that can be conditionally called touching. Through touch, knowledge of the world is realized. These are children, doctors, hairdressers, psychics. Italian, Turkish, Arabic and some Latin American cultures are inconceivable without certain tactile techniques. The rules of tactile behavior or interaction are based on the internal socio-cultural context.

The tasks of proxemics include: the study of the structure of a natural or specially constructed communicative environment; building a typology of communicative spaces; description of the meanings and functions of the properties of the environment and semiotic signs used in this context; analysis of verbal and non-verbal behavior of people in communicative spaces of different types; cultural and social functions and meanings of communicative spaces. Each nation sees the spatial structure of being in its own way, which can be denoted by the term national (ethnic) conceptualization of space.

One of the most common phenomena in proxemics is the giving of cultural meaning to various parts of the house, which cannot be considered accidental, since the house is the main personal territory of a person. The subject of the study is the semiotics of doors, windows, stairs, various rooms, basements and attics. The semiology of the house includes solving the problems of which of the corners of the house is sacred, and in which of the corners religious objects should not be hung, in which place of the room it is appropriate to offer a place to the guest.

A person's attitude to the communicative space and his behavior in this space covers a very wide range of bodily and near-body manifestations. This behavior, like gesture, is subject to special rules. The universal rules of behavior include: 1. general laws of semiotic and cultural of space, attributing certain meanings to spatial fragments and endowing them with cultural functions. 2. verbal or non-verbal statement of a person to his territory, to personal space 3. laws of the spatial organization of the environment.

Among the culturally specific rules of behavior, one can distinguish: 1. rules for choosing a place and distance (for example, for a conversation). 2. rules of spatial mutual position and orientation of communication participants (see Russian language units: face to face, next to each other, half-turned, and others). 3. rules that assign a certain communicative weight to various spatial parameters. This may be a type of communicative distance between participants in a communication situation, rules reflecting the attitude of participants to the presence and absence of third parties. There is a classification of interpersonal distances, which is divided into 5 types: distant, public, social, personal and intimate. Like most rules of non-verbal behavior, the rules of behavior are followed automatically: only their violations are explicitly recorded.

Semiotics of the text

Text is a sequence of characters built according to the rules of a given sign system and forming a message. Each work of art exists in culture as a text, has the sign of indivisibility and is the bearer of a certain meaning. Text is a dialogue between the created text and previously created texts, as well as a dialogue between the author and the ideal reader. The text generates its own meanings, not exhausted to the end, and at the same time reminds of the culture that formed it. Modern semiotics distinguishes different aspects of text misunderstanding: subjective, objective, local semantic, global semantic and non-semantic misun-

derstanding. The text reflects the communication between the audience and a certain cultural tradition and performs the functions of collective memory.

In any work of art, some plots are updated, while others are not only relevant, but are removed and even forgotten forever. A work of art (text) is comprehended in different ways not only historically, but also depending on the actual culture of the addressee – different cultures perceive the text differently. The text is also the moment of the addressee's communication with himself, since any work actualizes certain aspects of the personality of the perceiver himself, in many cases changing his personality, acting as a means of helping the restructuring of personality.

The text is positioned as an equal interlocutor with a high degree of autonomy, but this dialogue is possible when the misunderstanding of the text is eliminated. The term "intertext" was proposed by Y. Kristeva in 1969. Any work of art always carries more than its own content. The author is influenced by some random phenomena and events that fell into his mind at the very moment of working on the text. The content of a work of art is also influenced by the individual characteristics of the perceiver: his thesaurus, taste, inclinations, his level of education, breadth of outlook and mental state.

The problem of intertext is the problem of the intellectual, emotional, social, mental resource of the addresser. This is the problem of the influence of the cultural context on the author who creates the text and the cultural context of the person who perceives the text. Dialogical relations, according to M. M. Bakhtin, this is the relationship between integral positions, this is the active semantic interaction of different subjects of the act of communication.

The concept of "intertext" is closely related to the concept of "intermediality". It represents a broader understanding of the first term, when the concept of "text" is considered in the aspect of cultural variability. Especially brightly variability is shown in art. It is here that a particular work of art is characterized by

the presence of intertextual connections, when in one type of art the influence of another type of art is manifested.

Images of a work carry information about another work of another art form. The term "intermediality" was first used by Hansen Loewe. Firstly, each means in art is very ambiguous, while the sign must be unambiguous and stable in its meaning. The ambiguity of each of the expressive means of art has a dual nature. On the one hand it different meanings depend on the situation.

The content of the meaning that the addresser puts into a work of art is not always fully and adequately read by the addressee. In particular, the specificity of music lies in the fact that performance is of great importance for perception. Cases are well known when the first performance decided the fate of a work. The second difference of an artistic sign is that it cannot be isolated from a given context and used in another context, as is the case with other signs.

In ordinary signs, the material form is arbitrary in relation to the meaning. In art, even with a slight change in form, the content also changes. It is impossible, without prejudice to the meaning of the poem, to rearrange the words in it or replace any word with a synonym. One of the reasons for the impossibility of getting a complete picture of a painting from a reproduction is the partial change in all elements of form, color, and texture.

The semiotics of sculpture, in contrast to painting and graphics, models ideas about a characteristic and expressive context. The semiotic possibilities of sculpture are connected with a number of factors: the choice of the prototype of the image, artistic and visual possibilities.

Sign systems of culture are called secondary modeling systems or languages of culture. They include not only all types of art, but also traditional methods by which society maintains its historical memory and national identity. Each culture builds a hierarchy of its secondary systems in its own way. Some cultures prioritize literature, others the visual arts.

Some cultures focus on their origins, others on their end goals. Some cultures think of development in circular terms, others in linear terms. In their attitude to semiotic, cultures can be divided into those that emphasize the plane of expression and those for which the plane of content is more important. The first position can be characterized as focused on the correctness of the text, and the second – on the text itself.

Accordingly, cultures can be defined as syntagmatic (the meaning of phenomena arises from their interconnections with each other), and paradigmatic (all phenomena are signs of a higher reality). Culture, in semiotic terms, is a mechanism for processing and transmitting information.

Secondary modeling systems function with the help of codes that are implemented by members of the social group. But unlike the natural language, which is known to all members of society, understanding the codes of secondary modeling systems is possible to the extent that the individual has mastered them.

With the help of meta language, culture organizes itself and structures its hierarchy. It is an ideology or set of values expressed by one or more modeling systems. As in any act of description, the meta language simplifies the object being described, discarding the random and extra-systemic. No culture can be adequately described by its meta language alone, but the method itself is useful as a counterweight to the tendency to introduce more and more new codes.

In aesthetics, the idea that the content of a work of art is thoughts, emotions, and the form is its entire material side, is firmly established. Most researchers consider the plane of expression (sign) and the plane of content (denotation) to be a multi-layered phenomenon. There are three levels of artistic content. The first layer, deep, forms the author's idea (or system of ideas). This is the ideological and problematic basis of the content.

The second layer consists of thoughts, experiences of the characters, their personality traits, circumstances, events that make up the content. The third, top layer is the plot, the structure of the work.

Culture codes

Artifacts surrounding a person in his daily life are signs and symbolic systems of culture. Along with the acquisition of a native language, a person from childhood acquires knowledge of the codes of the social environment in which he is brought up. Different geographical conditions, different social and economic status give rise to different cultural languages: food, rituals, attributes, dwellings, and so on. The acquisition of knowledge of codes, starting at birth, continues at school, university, circumstances and living conditions.

As a result, a person enters adult life having an individual set of codes, an individual intertext. But, nevertheless, there are also generalized codes of social groups – national, class, professional and others. There are features that are characteristic of a particular area and type of area. The languages of everyday culture depend on many circumstances. They influence the culture of everyday life. One of the most important types of sign systems of everyday culture is the semantics of dwelling.

The house is one of the most important and semantically loaded objects, a place of numerous ceremonies and rituals. The most important symbolic function of the house is protective, the table in the room is the sacred center of the dwelling, the threshold is an element of the house that plays the role of its symbolic border with the outside world, the window is the source of light in the house in the literal and figurative sense.

The sign content of household items, the sign of things, the interior and the semantics of the costume are of great importance. The form of a thing, its material, functions cause many associations. The thing is woven into a complex system of symbolic links. The semantics of the traditional costume is one of the most important components of the semiotics of everyday life. The general silhouette of clothing was determined, in addition to purely practical considerations, by the landscape of the area and historically established aesthetic ideas and occupation and religious ideas.

Industrial changes have led to the formation of social semiotics in the digital sphere, which is characterized by a multimodal nature and includes such paralinguistic signs as emoticons and memes. Translated from the Japanese language to which it owes its appearance, emoji means ‘picture character’. It is a word-picture, representing an image that visualizes a variety of human emotions, non-verbal actions of a person, objects and artifacts. A wide range of presentation along with input speed, expressiveness and a deeper level of identification has led to a more successful and widespread use of emoji compared to emoticons and memes.

The sudden appearance and rapid spread of emoji may indicate the beginning of the evolution of the human communication system. The first cognitive shift took place in 1000 BC. when moving from a pictographic type of writing to logographic, ideographic or alphabetic writing. There are conditions for a second cognitive paradigm shift, characterized by the return of the pictographic-logographic type of writing, combined with alphabetic writing.

This is a hybrid type – hybrid / blended writing system. It is a factor in a significant change in human consciousness, a transition from a linear way of processing information to a more holistic, imaginative way of thinking. If emoji or similar elements of communication do not prove to be a passing trend, then humanity may be approaching the second cognitive shift in its history.

Emoji play an important role in attracting attention in the field of marketing. Researchers use various linguistic theories, mainly from the field of rhetoric, to study the nature of the impact of emoji on the consumer, stimulate interaction with a potential buyer and increase his interest in buying.

The dominant role of emoji in expressing emotional state in digital communication makes them an effective tool for tracking and measuring user emotions in relation to products, brands and services. In the field of behavioral sciences, emoji research focuses mainly on three aspects: motivation for the use of these signs, preferences for choosing certain emojis, and factors influencing this

choice. Among the main motivating reasons for using emoji are the management and maintenance of interpersonal relationships, self-expression, the assertion of self-identity, and the facilitation of interpersonal communication.

Psychological research examines the relationship between individual psychological characteristics and the use of emoji, as well as the possibility of introducing them into psychometric scales as new tools for psychological measurement. In addition, there are works in the field of education that study the impact of emoji on learning efficiency, involvement in the learning process and reflection. A number of semiotic studies relate to the legal sphere, namely, the analysis of cases of litigation, in which the true intentions and motives of the accused were interpreted through emoji accompanying their text messages on social networks and instant messengers addressed to victims or victims.

Within the framework of linguistic science, research is focused on the pragmatic functions of emoji and the analysis of the potential that these signs and symbols can become an independent universal language due to their semantic properties. An attempt is made to identify various speech acts within the framework of interpersonal communication through instant messengers, in which emoji are most often found, predominantly anthropomorphic in their visual representation.

On the one hand, emoji is a pictographic way of expressing a state of mind, helping to express the emotional state, empathy, “I” of the speaker more effectively in electronic communication, which is distinguished by a number of features, in particular, limitations associated with the inability to see the interlocutor. Emoji add emotions to ordinary text messages and, unlike the emoticons that preceded them, they allow you to convey a whole range of emotions from simple smiles or a frown to sarcasm, surprise, indignation, etc. The symbol has a rather powerful communicative potential that can effectively convey disproportionately more content than any other another sign. In the Internet space, emoji

are able to overcome cross-cultural boundaries and create a dialogue space among speakers of both one language and at the international level.

Emoji perform non-verbal communication functions. Informal written communication in the field of digital communication presents certain difficulties. Without additional information conveyed by tone of voice and body language in face-to-face communication, users of social networks and instant messengers cannot always correctly interpret information, losing sight of each other's sarcasm, humor, and misinterpreting the intended emotion or illocutionary intention. Like non-verbal cues in face-to-face communication, emojis help to clarify intentions in an ambiguous context, express emotions appropriate to the situation, and, therefore, increase the effectiveness of the communicative act.

Facial expression is considered one of the most important signals in human communication. Humans are born with a preference for facial expressions over other types of stimuli. The face is one of the most visible and complex sources of information about a person's emotional state. Human faces are integrated into the processes of understanding and interpretation during social interactions and communication. According to researchers, most people have the ability to process information transmitted by a person using certain mechanisms through a neural network. These facts indicate the need to fill in the gaps formed in the new type of communication with the help of emoji.

The function of non-verbal communication is performed by a variety of gestural emoji, symbolizing parts of the human body. Symbols such as approval, disapproval, the OK gesture, crossed fingers symbolizing good luck and a clenched fist make up for the lack of a gestural component that has arisen in digital written communication. Emoji allow the ambiguity of the discourse. However, their use represents certainly more thoughtful behavior compared to traditional face-to-face communication, in which emotions are more spontaneous and uncontrollable. The considered iconic signs perform an emotive function.

Accompanying a text message with one or another anthropomorphic symbol allows the sender to more accurately and multifacetedly express their emotions in digital communication. The emotive function is realized not only with the help of anthropomorphic symbols. Artifacts are also able to convey the mindset and emotional mood of the interlocutor. Emoji are used even in isolation, without verbal accompaniment. In some situations, it is easier to choose the appropriate picture symbol than words to convey your feelings and emotions.

If a more primitive way of expressing emotions with the help of emoticons did not allow you to fully convey your feelings, then bright pictures-symbols representing a whole range of feelings can make up for the lack of eye contact and give the message the emotionality and expressiveness of live communication. To enhance the emotional effect and intensify the meaning, the possibility of doubling and tripling the symbol, as well as the emoji cascade, is often used. These iconic signs allow you to set the necessary emotional tone, to convey the appropriate mood.

Emoji have the potential to convey a full range of pragmatic parameters, including subtext, satire, and hidden meanings. In live communication, this is achieved using verbal and non-verbal codes. Emoji perform the same pragmatic functions as the lexical units of the language, so the study of the pragmatic functions of emoji cannot be separated from the verbal component and modality of the utterance. Emoji perform the function of greeting and farewell in phatic communication, both together with the verbal component, and independently, the contact-establishing function of maintaining contact with the interlocutor.

Emoji are able to create additional pragmatic meanings, enhancing the illocutionary power of the utterance. Over time, the iconic symbols in question began to perform another function that can be defined as punctuation, which consists in their ability to act as punctuation marks. Quite often, one can notice that a sentence ends with one or another character, followed by a new sentence in meaning, sometimes written with a capital letter. Emoji with different mean-

ings can replace periods, question or exclamation marks, as well as punctuation marks in the middle of a sentence, such as commas and dashes.

In text messages of interpersonal communication, as well as in the texts of posts and advertising mailings, the substitutive function of emoji is manifested. The word can either be completely replaced by a symbol or can be accompanied by a corresponding symbol, duplicating the meaning and leading to an intensification of the meaning. The use of signs-symbols for metaphorical transfer used by speakers of different languages is noted. This substitutive use is explained both by the speed of entering a character compared to typing a word, and by the desire to diversify, decorate the message, bringing an additional visual component to the message.

The considered semiotic signs are used in various congratulatory posts, response messages in instant messengers, in advertising mailings, increasingly performing a decorative function. More than half of users are more likely to interact with brands that use emoji to represent a company or in online promotions. This fact explains the increase in the number of mailing lists containing emoji in the subject and headline to attract the attention of users, potential buyers of goods and services or participants in educational courses, webinars, marathons and brand promotion.

The listed functions are associated with a rhetorical function that affects the addressee of a message or post. The manifestation of this function can be found in advertising on the Internet, in the texts and posts of politicians addressed to a wide audience.

The ease of expressing thoughts and attitudes through emoji, easy involvement and involvement in the discussion process without the need for verbal expression, as well as an unusual game format allows you to involve a significant number of people from among the potential electorate. Politicians resort to the use of symbols to create a certain emotional message, to attract the attention of the target audience, to enhance the influencing effect.

Non-verbal symbols allow you to manipulate public consciousness, set a certain tone and mood of a potential audience. Emoji, on the one hand, serves as a means of overcoming the limitations imposed by electronic written communication at the present stage, allowing the emotional state of the speaker to be expressed through visual means, going beyond the spelling format.

Emoji imitate human emotions, replenishing the non-verbal component of the communicative act. Modern man seeks to reduce the text space of an electronic message by including paralinguistic semiotic signs that perform various functions in the formation of meaning. On the other hand, these symbols serve as a means of influencing the addressee, the recipient of the message, realizing their rhetorical potential. The merging of the verbal and iconic components triggers the mechanism of double focusing, in which perception is provided by all cognitive mechanisms, with the connection of a rational and emotional-unconscious component.

The message, in which the text is combined with the visual image, has a powerful persuasive effect due to the integration of the work of both hemispheres of the brain, which allows processing the received information both with the help of logical mechanisms and with the connection of the emotional component. Digital communication, having received a dominant role in interpersonal communication, develops according to certain laws and gradually includes in its arsenal tools that compensate and replace a number of elements inherent in live speech interaction. The emergence of multimodal texts within the framework of interpersonal communication is a natural process of development of remote digital communication.

Over time, semiotic signs have undergone changes and improvements. Emoji began to perform the function of a non-verbal component of communication, emotive, pragmatic, punctuation, decorative and rhetorical. Polycode texts containing such semiotic signs as emoji have, among other things, a certain influencing effect that affects the mood of the addressee, his involvement in the

communication process, and the perception of the message, which is achieved by connecting a complex information processing mechanism.

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in the communication process, and the perception of the message, which is achieved by connecting a complex information processing mechanism.

Methodology of Computational Linguistics

Computational linguistics, as a field of artificial intelligence, deals with the description of natural languages using mathematical models. Tasks switched to automating natural language processing (Natural Language Processing, NLP). Since then, devices have performed not only mechanical functions, but also intellectual functions.

These are tasks: read the text, check it for correctness, follow the prescribed instructions, or give a reasonable answer based on the meaning of this text. People have left the final decisions to themselves. Computational linguistics solves problems related to natural language processing. This is a field of knowledge that deals with computer modeling of natural language proficiency and solving applied problems of automatic processing of texts and speech.

The history of computational linguistics began in the 1950s with Noam Chomsky's research on the formalization of the structure of natural language, as well as trial experiments in machine translation and the first natural language understanding programs. In January 1954, engineers managed to translate more than 60 sentences from Russian into English in a fully automatic manner.

In the late 1980s, machine learning algorithms and statistical machine translation systems were created. A breakthrough in the field of language processing occurred at the beginning of the 21st century, when deep learning algorithms began to develop. Since then, many developments have appeared and continue to appear to solve the problems of computational linguistics.

Computational linguists develop natural language processing programs, text and speech recognition tools, translation systems, text editors, language learning materials, voice assistants, and smart chatbots.

The need for intelligent automatic text processing arises mainly for two reasons, both of which are related to the amount of texts produced.

Millions of people who work with texts around the world do not have enough knowledge and education to meet modern document processing standards. For example, a secretary in an office cannot take into account the hundreds of different rules needed to write a good business letter to another company every time, especially when he writes in a language other than his own. So it's cheaper to teach a machine to do the job once than it is to repeatedly teach each new generation of computer users how to do it themselves.

In many cases, in order to make an informed decision or find information, you need to read, understand and take into account a huge amount of texts. To find information on the Internet about the expected demand for a particular product in the next month, specialists would have to read texts on this topic for a hundred years. Since the object of processing of computational linguistics is texts in natural language, its development cannot be imagined without basic knowledge in the field of general linguistics.

Linguistics is divided into several sections:

- ✓ Phonology and graphics study the side of linguistic signs perceived by hearing or sight, and semantics, on the contrary, their semantic, understood and translated part.
- ✓ Morphology deals with the internal structure and external form of words of speech, including parts of speech and their categories.
- ✓ Syntax studies the structure of sentences, the rules of compatibility and the order of words in a sentence, as well as its general properties as a unit of language.
- ✓ Pragmatics studies the relationship of signs to the subjects that produce and interpret them.

These sections correspond to the stages of automatic text analysis, which consists in extracting grammatical and semantic information from a given natu-

ral language text. By the age of six, the child reaches a level of development in language cognition that fully covers the first three steps and partially the fourth and fifth steps. AI and machine learning are so far most predictably productive at the fourth, syntactic level, while user expectations are at the pragmatic level.

Computational linguistics was formed at the intersection of linguistics, mathematics, computer science and artificial intelligence. Psycholinguistics arose at the intersection of psychology and linguistics. Linguistics is most closely associated with the field of AI, within which software models of individual intellectual functions are developed.

Speech synthesis and text generation are key tasks in computational linguistics. Computational linguistics is faced with the tasks of linguistic support for the processes of collecting, accumulating, processing and searching for information. The most are important ones. Recognition and synthesis are of speech. Text are generation. Automatic translations are of texts. Creation use are of electronic corpora of texts. Extracting information are from texts. Automatic detection and correction are of errors when entering text on a computer. Creation are of question-answer systems. Creation are of electronic dictionaries, thesauri, ontologies.

NLU and NLG: Approaches for Solving Problems in Computational Linguistics. NLP faces two major tasks - natural language generation (Natural Language Generation, NLG) and its understanding (Natural Language Understanding, NLU). Language generation is a feature that helps you create, for example, short snippets of text for chat - bots or custom content for apps. NLG can be compared to the process people use when they turn ideas into writing or speech. Understanding natural language allows you to receive commands and requests from a person in a form convenient for him, as well as sort information, highlight the main thing, analyze the content of the text and its emotional coloring.

Speech and Image Sharing Applications: How Data Science Helps People with Verbal and Cognitive Impairments. Devices are available on the market.

Image communication systems are communication by passing physical cards to interlocutors.

Speech recording devices, as well as special equipment for creating synthesized voice and voiced letters, words and messages.

Speech applications for electronic tablets that run on various smart devices: tablets, smart watches and handheld game consoles.

Narrower application of technology

Creation of corpora for little-studied and narrowly represented minor languages. Text-to-speech technology and APIs work well for popular languages. Voice-enabled products can be created without the need for text-to-speech, in which case communication tablets are used.

Small language corpora should be available in TEI format according to the ISO Standard for Colloquial Speech.

The revival or teaching of endangered languages is helping people who do not speak the language: researchers, historians, medical personnel and travelers. Adaptive technologies empower people with disabilities

Computational linguistics is the basis of adaptive technologies that are created to help people with disabilities. Disability affects more than 1 billion people. New adaptive technologies greatly empower people with disabilities and give them more autonomy – at work, on the street and at home.

Computational linguistics facilitates communication for people with hearing, vision and speech disabilities. Deafness and hearing impairment is the most common form of so-called sensory disability in the world.

There are more and more technologies designed to facilitate communication for people suffering from dysfunction of sensory systems. Among them, the most common are speech recognition and synthesis services, which are created using computational linguistics methods.

Computational linguistics for helping people with disabilities focuses on the following tasks. Synthesis and recognition are of speech in physical or cog-

nitive impairments. Speech conversion are to improve intelligibility. Speech and language technologies are for everyday living with care and creating an environment of limited dependent living. New Modeling and Machine Learning Approaches are for Assistive Alternative Communication.

Personalized voices for assistive communication and speech synthesis based on limited data. Multimodal user interfaces and conversational systems adapted to assistive technologies. NLP are for Cognitive Assistance Applications. Presentation are of graphic information for people with visual impairments. Speech and NLP as applied to front-end applications. Brain-computer interfaces for language processing applications. Speech, natural and multimodal interfaces are for assistive technologies. Web accessibility, text simplification, adapted presentation modes such as speech or special characters. Deployment of speech and NLP tools in clinics.

The growth of the NLP market is constrained by several factors, including: the presence of a gap in terms of perception, understanding and recognition of textual information between a person and a computer program; lack of personnel and training programs for researchers in the field of natural language processing; the complexity of machine processing and understanding the context and meaning of texts.

One of the challenges in the NLP segment also remains the creation of universal language models and architectures that will solve various tasks of working with text using one system. This system will understand textual information and will be able to interact with a person in the same way as another person would. Glasses for the blind and digital accessibility guide: developments that already help people with disabilities. LC Technologies has invented a device that gives people the ability to control a computer with just their eyes.

Computational linguist

This is a specialist who develops algorithms and programs that can reproduce the cognitive language activity of a person: the ability to read, understand by ear, speak, participate in dialogue and translate from one language to another.

Computational linguist: develops algorithms and methods for machine translation; programs systems for extracting and searching for information, speech recognition and other products; works with text generators; combines similar texts into groups; develops question-answer systems; creates programs that facilitate communication for people with disabilities.

A digital linguist analyzes how well automatic text processing programs work: spell checkers, machine translators, or text similarity meters.

A computational linguist combines the knowledge of a linguist and a programmer, so he combines the professional qualities characteristic of these two seemingly incompatible specialties.

To work with a computer and databases, a digital linguist must have mathematical and analytical skills, as well as be able to process large flows of information.

In order for algorithms and neural networks to remember correct information, a specialist needs to know reliable sources of information for analysis and a high level of literacy for their correct markup and interpretation.

Computer and natural languages are sign systems. Therefore, it is important for a computational linguist to be able to handle both systems equally well and find common ground in them. It is desirable to know foreign languages, as well as programming languages and machine learning and AI technologies necessary for work: Python and its numerous libraries and frameworks, R, specialized Lisp and Prolog languages, neural networks, data markup and much more.

Digital linguists are often associated with developers and data scientists who work with labeled data. Therefore, it is important not only to process data,

but also to form a methodology and explain its principles to colleagues. This will require cross-industry communication skills.

The linguistic aspect of the profession of a computational linguist requires the presence of such qualities as imaginative thinking, good memory, attentiveness, perseverance and patience. In addition, the specialist must be able to articulate thoughts clearly and concentrate on one task for a long time.

To become a computational linguist, you need to have the ability to do mathematics, and analytics, and to formalize the language. To work in this profession, it is important to have impeccable literacy, a penchant for algorithm and programming, the ability to work with big data, as well as a good memory and the ability to think logically.

Psycholinguistics

Psycholinguistics arose in the middle of the 20th century. in connection with the need to give a theoretical understanding of a number of practical problems for which the explanatory potential of a purely linguistic and proper psychological approach turned out to be insufficient. These tasks include the following groups of issues: a) organizing the speech development of preschool children; b) teaching a foreign language, c) speech therapy, teaching mentally retarded children, deaf-mute and deaf-blind children, children with congenital speech pathologies, d) restoring speech in case of its impairment; e) intercultural communication, f) engineering modeling of speech communication.

Due to the relative youth of psycholinguistics, the question of the branch belonging to the discipline is not unambiguously resolved in modern science. Determination of its status largely depends on the nature of the basic training of specialists. Psychologists, as a rule, believe that psycholinguistics is included in the system of psychological sciences as a section of general psychology. Philologists tend to consider psycholinguistics as a variant of linguistics, a special perspective of theoretical linguistics or experimental linguistics.

Psycholinguistics is often treated as part of cognitive science. In connection with the popularization of psycholinguistics, the point of view, according to which psycholinguistics is considered as an independent science of an integrative type, is becoming more and more argued. A broad definition suggests considering psycholinguistics as a science that studies language and intelligence. In a narrower sense, psycholinguistics is a science that describes and explains the functioning of language as a mental phenomenon with the mandatory inclusion of an individual (native speaker) in sociocultural interaction.

The object of psycholinguistics is also a person. The subject of psycholinguistics is unique and is not duplicated in other sciences – the verbal organization and verbal behavior of a person. Psycholinguistics originated in the middle of the 20th century. The theoretical basis of the methodological base of psycholinguistics was the works of W. von Humboldt, A. Schleicher and H. Steinthal, A. A. Potebni, I. A. Baudouin de Courtenay, F. de Saussure, L. Bloomfield.

Initially, psycholinguistics was defined as the discipline that studies the processes of encoding and decoding in the generation and perception of verbal messages. For a complete formalization of the foundations of science, it is necessary to have a research method. Modeling is such a method. The essence of the latter is that the object under study is considered in line with any theory, as a result of which a model of the original is built, subject to subsequent verification (verification).

During this period, two key psycholinguistic theories in world science were created: the psycholinguistics of Ch. Osgood (psycholinguistics of the first generation) and the generative transformational grammar of J. Miller – N. Chomsky (psycholinguistics of the second generation). The third period is marked by a change in the psycholinguistic paradigm, a significant expansion of the problems of the discipline and is represented by modern fundamental psycholinguistic research, starting from the 80s. 20th century

Psycholinguistics during this period develops in line with the paradigm of cognitive science. Cognitive science – of are sciences about cognition. The term "psycholinguistics" is a convenient label for many different theories and experimental studies.

The following problem areas (branches) within the framework of modern psycholinguistics can be distinguished: a) the philosophical direction of psycholinguistics, b) the cultural direction (ethno psycholinguistics), c) the social direction (socio psycholinguistics), d) the linguistic direction, e) developmental psycholinguistics, f) patho psycholinguistics, g) engineering psycholinguistics.

F. de Saussure singled out three fundamental linguistic phenomena: the actual language (langue), speech (parole), and speech activity. The followers of F. de Saussure gave different interpretations of the dichotomy of language and speech (social – individual, virtual – actual, abstract – concrete, paradigmatics – syntagmatics, synchrony – diachrony, norm – style, system – implementation of the system, code – message, generating device – generation L V Shcherba distinguished three aspects in linguistic phenomena: speech activity, language system (language), language material (texts).

A. A. Leontiev noted that the opposition of language and speech only within the parameters of social (language) – individual (speech) and abstract (language) – concrete (speech) does not seem complete and sufficient. Therefore, a third one must also appear which can be called language ability. The scientist identifies the following aspects of linguistic phenomena, the various relationships of which are emphasized within the framework of related disciplines (psychology, linguistics, psycho linguistics): language ability, language, speech / speech activity.

Language ability is a psycho-physiologically conditioned, but social product that ensures the assimilation, reproduction, adequate perception and production of linguistic signs of a linguistic community (a person's ability to master and master the language). The language system is a supra-individual, objective

semiotic system (system of signs), rules and norms of their functioning, characteristic in terms of lexical, syntactic and semantic features for speech communication in a certain era of the life of a certain social group.

Speech / speech activity is the realization by a person of his language ability for the purposes of communication in certain cultural conditions and for thinking. Distinguishing speech – speech activity is carried out according to the criterion of dynamism / static. Speech activity appears to be an active cognitive-linguistic process of generating and perceiving speech, implemented through the execution of intellectual procedures. The speech emphasizes the productive aspect. Speech is the result of speech production, fixed in texts, messages – sign products.

Analysis and generalization of theoretical and experimental data on the study of human speech behavior make it possible to single out the following three aspects in the structure of language ability. This is a language mechanism or the ability to master a language (native and / or foreign), a person's language organization or mental representation and organization in the mind of a native speaker of a system of signs of a natural language and the norms of their functioning in communication, a speech mechanism or the ability to carry out speech activity – to produce and perceive speech statements.

The solution of the question of the nature of the language ability (in particular, the language mechanism) gave rise to a confrontation between two points of view: the positions of rationalists and empiricists. The first recognize the presence of innate deep linguistic knowledge, which ensures the mastery of human language. Empiricists believe that language ability is a social formation in nature, formed under the influence of social factors, mainly the need for communication and the implementation of communicative intentions in various situations of joint activity of people.

According to the concept coming from L. S. Vygotsky, A. N. Leontiev, A. R. Luria, the structures of language are not innate, but are the result of reflecting

the basic relations of objective reality. The source of language development is not an innate scheme, but activity and rules of activity. It is the extralinguistic reality that determines the entire course of development of the language ability.

The social is what is assimilated by a person in the course of ontogenetic development, that is, the structures of those activities that can be performed under certain (external and internal) conditions and in certain forms to satisfy human needs proper. Sensitive periods in the development of language ability, in particular, language acquisition, are age stages characterized by the presence of special mental reserves for language acquisition. These are the age periods: 2 – 5 years, 12 – 15, 27 – 30 years and 45 – 48 years.

The study of the linguistic organization of a person involves the identification of the content and mental organization of the linguistic archive of a native speaker. In the linguistic organization of a person, a number of components of linguistic knowledge can be distinguished: phonetic, lexicon, grammatical component, semantic component. The correct organization of the linguistic archive of a linguistic personality is a key condition for language proficiency.

Only in the case of a well-structured mental representation of language knowledge is it possible to successfully extract (actualize) language units from the archive of long-term memory, and bring a number of speech actions and operations to automaticity, and flexible use of alternative strategies for the implementation of speech communication.

The semantic fields of foreign language units are less structured; connections between elements are single, random, situational and individual. Most of the words of a foreign language lexicon are structurally represented in the mind of a bilingual person in the form of autonomous semantic fields, individually unique in terms of semantics and composition of elements, as well as equivalent lexical units not correlated with the semantic fields.

This information regarding the specifics of structuring the linguistic archive of the subject of communication (in particular, its lexicon) makes it possi-

ble to explain many issues of translation, namely, the issues of the adequacy of translation as a quality criterion, as well as the actual process of interpretation in conditions of simultaneous bilingualism.

The functioning of the speech mechanism is manifested in the ability to generate and perceive speech (texts). The meaning and content of the statement are controlled at the level of actual awareness. The work of the speech mechanism at the level of conscious control involves the conscious selection of lexical units (words) appropriate to the situation, social role and status of the communicants. The application of the rules of morphological and syntactic coherence of words (grammar) is carried out at the level of unconscious control.

Phonation is completely unconscious. When learning a foreign language, language knowledge is acquired in the process of their practical use, starting from the level of actual awareness. The path of further mastery of the phonetic system of the language is presented as a gradual movement through the levels of conscious and unconscious control to the pure unconscious.

Mastering the rules of speech coherence (grammar) is represented as a movement from the level of actual awareness through the level of conscious control to the level of unconscious control. The formation of a lexical skill is represented by the translation of the processes of selecting the appropriate words (when generating speech) and decoding them (during speech perception) from those carried out at the level of actual awareness to those performed at the level of conscious control.

L. S. Vygotsky believed that the need for communication is formed in vivo, but on the basis of primary biological needs. The main idea of L. S. Vygotsky is that the need to ensure biological existence and the impossibility of (independently) satisfying the child's biological needs without another (adult) is the basis for the emergence of the need for communication (as the initial need for contact with another person capable of ensuring existence).

In the first year of his life, a child transforms inherited reflex-motor reactions (cry, grasping reflex, turning of the head, direction of gaze, crying, smiling, etc.) into sign means of communication – into proto-signs, as they were called by the researcher of children's speech E. Isenin.

Proto-language is the primary pre-verbal, paralinguistic communication system that forms the basis of the child's communicative activity during the first two years of life, consisting of proto-signs – genetically inherited reflex-motor reactions of the child, transformed into communication signals. In parallel with the formation and functioning of the proto-language, the child's voice development occurs according to the scheme: cry – cooing – babble.

The biological purpose of the cry is that it acts as a defensive reaction to discomfort, and does not have a specific addressee. Further, at the reflex level, a connection is established between the cry and the further elimination of inconvenience. The cry acquires an addressee and becomes intermittent: the child gives a voice and waits for the reaction of an adult; in the absence of such, he gives his voice again with increasing expression.

Ultimately, the cry turns into a proto sign, meaning a call. The crying stage lasts for the first two months of life and is replaced by the cooing stage.

Cooing is a pre-syllable phonation, a monotonous vocalization of an autogenous nature, a stage in the vocal development of a child aged approximately 2 to 4 months. Babble is a phonation based on doubling the syllable, formed on the action of the mechanism of echolalia – the child's unconscious imitation of the sounds of audible speech; the phenomenon is exclusively social in contrast to congenital cooing.

The pre-speech period is the pre-speech phase in the development of intelligence and the pre-intellectual phase in the development of speech. At the moment at an early age (about 2 years), the lines of development of thinking and speech, which until now have been separate, intersect, coincide in their devel-

opment and give rise to a new education: thinking becomes speech, and speech becomes intellectual.

This marks the beginning of the cognitive-linguistic period of speech ontogenesis. As noted by L. S. Vygotsky, the movements of the semantic and physical aspects of the word in mastering linguistic structures do not coincide in development. The word is a vessel that is given to the child ready, but it fills it with content on its own. The formation in the child's mind of the psychological content of the communicative sign, primarily the word (although grammatical structures are also mentally represented through the formation of their logical and semantic content), occurs to a large extent through generalization (either expanding or narrowing the referential area of the sign-word).

Unambiguity in a child's speech is manifested in the fact that the first words of a child's speech have specific meanings: a sound complex (word) denotes one specific object, phenomenon and action. Linguists of children's speech point to the presence of a child's sensory and sensorimotor dictionaries, the development of which non-parallel. Sensory vocabulary is a child's passive vocabulary, which includes language units that the child singles out in the speaker's speech flow and is perceived by him as significant, but not used in his own speech due to the complexity of articulation.

The sensorimotor dictionary is an active lexicon of the child, including language units that the child successfully perceives in the speaker's speech and is able to pronounce and use in an adequate speech situation.

The ability to distinguish and understand audible speech, to respond to one's own name, to follow the instructions of an adult is observed in a child quite early. The dissonance between the motor abilities of the child and the material richness of the world forces the child to use one sound complex to designate heterogeneous objects and phenomena.

This form of generalization is called super generalization. Super generalization is the expansion of the semantic content of words and the formation by

the child of their super-meanings due to the random combination of various impressions that he receives from the outside world at the time of their perception.

The gradual accumulation of experience by the child, the acquisition of motor skills, which contributes to the active expansion of his vocabulary stimulate the refinement of the meanings of words by searching for grounds for generalization in the word.

The first form of speech that occurs in a child is always a dialogue. The dialogic orientation of speech is understood as its orientation towards the interlocutor, which is manifested in the so-called egocentric speech. Egocentric speech – loud speech of the child, accompanying his actions, regardless of the presence of the interlocutor; arises through the child's transfer of social forms of behavior, collective cooperation into the sphere of intra psychic functions. It performs a number of important functions in the development of the child: it programs the way out of a difficult situation for the child, and later it is included in the thinking processes, providing action planning and behavior organization.

Children's speech is characterized by linguistic heuristic, which is manifested in children's word and speech creation. Word creation is the result and indicator of a complex intuitive mental analytical and synthetic work of the brain to master and systematize the rules and norms for the use of linguistic signs, as well as exceptions to the rules. By the age of 6, the cognitive-linguistic period of speech ontogenesis ends: the child masters the language as a system of phonetic, grammatical and lexical norms. The key point in the development of a person's language ability, as well as the most important stage in the speech ontogenesis of a linguistic personality, is its formation as a subject of textual activity.

The nature of the connection between thinking and language is not unambiguous, and in no way can one categorically declare the primacy or determination of one phenomenon by another. L. S. Vygotsky believed that the curves of the development of thinking and language repeatedly converge and diverge, in-

tersect, level off in separate periods and go in parallel, even merge in their separate parts, then branch out again.

The point of view, according to which human thinking can be carried out only on the basis of language, has become the most widespread, since it is characterized by abstractness. However, observations of the behavior of deaf-mutes and deaf-blind people from birth show that already before they have mastered any artificial means of communication (which happens later for them than for hearing children), they already behave reasonably and adequately.

Patients successfully cope with intellectual tasks that are not directly related to the use of natural language: test tasks for compiling a complete image from fragments, finding a way out of a maze, playing checkers and even chess. The ability to think and the ability to speak a language are not characterized by an inseparable connection. The process of thinking is not homogeneous, but is a multi-level poly variant entity.

The results of scientific observations of doctors, psychologists, physiologists, logicians and linguists show that thinking occurs not only in the field of abstract-logical, but also takes place in the course of sensory cognition, can be based on visual images and representations: the thinking of composers, mathematicians, chess players and not always expressed verbally.

The inseparable connection between thinking and language is found precisely in verbal-logical thinking. Verbal-logical thinking is the highest form of thinking that provides a reflection of complex connections and relationships, the solution of theoretical problems, the derivation of conclusions and the prediction of events by operating in the mind with logical-conceptual units formed in direct connection with linguistic structures and constituting their semantic field.

The logic of thinking is objectified and reveals itself in the grammar of the language. Some scholars believe that the basic mental entities are reflected in the grammar of languages, and it is grammatical categorization that creates that conceptual grid, that framework for the distribution of all conceptual material

that is expressed lexically. So, the linguistic category of the subject conceptualizes the logical category of the subject, the predicate – the predicate.

Process, action, state are conceptualized in the language by verbs and their temporal forms. The logical categories of space, time, causes are formed in consciousness due to the conceptualizing function of such linguistic units as prepositions, conjunctions, adverbs, as well as such categories as the case of nouns, the tense of verbs, etc.

The main forms of abstract (verbal-logical) thinking are the concept, judgment and conclusion. The concept is mediated and generalized knowledge about the subject, based on the disclosure of its essential objective connections and relationships. Schematically, a concept in thinking corresponds to a word (sign), less often to a phrase in a language.

The formation of concepts in the child's mind is a long ontogenetic process carried out through the generalization of meanings in children's speech. Judgment is the affirmation or denial of certain qualities of phenomena. In language, a sentence as a form of thinking corresponds to a sentence – moreover, narrative in terms of the purpose of the statement.

The judgment has its own structure (S – P – O) with the obligatory presence of a subject and a predicate in it. The subject is the object of thought itself; in a sentence, it usually corresponds to the subject. A predicate is something that is asserted or denied about a subject.

Inference is actually the process of thought, obtaining a new judgment from the content of the original judgments. Only the word - a linguistic sign - has a sufficiently high level of abstraction. With the abstractness of the linguistic sign is connected the possibility of broad generalizations through the language of our knowledge of reality, relationships, feelings. 4.2 Inner speech the connection between thinking and language is directly revealed in inner speech.

Inner speech is an important universal mechanism of human mental activity, which manifests itself as an intermediate stage between thought and

sounding speech (during speech generation) and between loud speech and mental image (during speech perception) and ensures the transition of a simultaneously existing thought into syntactically dissected speech and vice versa.

It is customary to distinguish two phases of inner speech: undivided (actually internal speech or internal programming) and divided (or internal pronunciation). Internal programming is an undivided phase of internal speech, which provides the formation of thoughts in the mental language: the thought is structured in an integral format that allows structural programming of the future speech whole. It can be assumed that in this phase some of the mental information already has some language "binding" (for example, it is expressed in a verbal mental code – concepts and propositions that structurally contribute to the programming of the future statement as a whole), but some of the information is clearly represented by mental representations of a different type: visual and sound images, schemes, motor imprints of reality.

Internal pronunciation is a dissected phase of internal speech, articulatory activity devoid of phonation, imitation to a greater or lesser extent of the processes that occur during real speaking, accompanied by a hidden physiological activity of the organs of articulation. Internal pronunciation is especially clearly manifested in the following situations: in the perception of speech (in particular, foreign language), in the process of solving mental problems of high complexity, in the form of hidden ego ache in adults (as a kind of satisfaction of the need to "speak out", a special act of manifestation of emotional states), generation of oral monologue speech, while writing.

Internal pronunciation is characterized. There is also a strong reduction in the phonetic characteristics of speech. Inner speech (pronunciation) is fragmentary, compressed. The language of inner speech is also free from the redundancy inherent in all natural languages. The phase of internal programming is the central link in all speech-thinking processes it functions in all types of speech activity: speaking, listening, reading and writing. Internal pronunciation can ac-

company verbal and thought processes, but is not an obligatory phase. With maximally minimized internal speech, close to the direct understanding of the meaning, there may be a loss of the phase of internal pronunciation.

The text, as a holistic education, has certain structural principles of its construction – coherence and integrity. From the point of view of perception, wholeness is conceived as a special astructural semantic category, not necessarily correlated with linguistic units – the semantic unity of the text.

From the point of view of text generation, the integrity of a speech work is the result of the action of the tendency to integrate a speech work on the basis of an idea, an internal program of speech action at all stages of speech activity. Connectivity is a structural property that has language ways of expression.

This is a linear, semantically, grammatically, syntactically and conditioned connection between text elements. Connectivity is manifested as a combination of individual language units in the text and as the compatibility of individual structural blocks of the text. The lack of coherence does not destroy the text as a "concentrated reality", while the lack of integrity completely the text as such and turns it into an unorganized sounding or graphic matter.

Texts are speech products that necessarily have the property of integrity, but are not always connected. It is assumed that the core integrity of the text is reflected in the set of keywords or the wording of the intent of the work. It is popular to use the term text plot to describe the structural unity of an artistic message. The plot of the text is a logical causal sequence of episodes of the event described in the text, including exposition, plot and development of actions, climax and denouement; reflects the motivation and logic of the story.

The formal realization of the integrity of the text is schematically presented in the theory of the actual division of the sentence by V. Mathesius. The essence of the theory is to divide the sentence into a topic. The initial, given information that is contained in the proposal is called the topic. The new, relevant in this situation, which conveys the statement is called the rheme.

The emergence and use of non-verbal language is mainly due to subconscious impulses. Some of the gestures are innate. They are independent of gender, age, nationality, culture. They are universal.

The majority of non-verbal signals are acquired. The meanings of many gestures and movements are culturally determined. Nonverbal language is not as well structured as verbal. It is capacious and compact. Signals acquire meaning in combination with other gestures. Non-verbal means of communication play a dual role in communication. At the same time, non-verbal means provide the actual psychological side of communication, interpersonal interaction: they perform the function of social stratification. They establish certain status-role relations, regulate the temporal parameters of communication, act as an indicator of the current states of individuals. They create a socially significant affective relationship, allow you to create an image of a partner and maintain an adequate level of psychological intimacy.

Secondly, the role of an alternative communication system that replaces natural language in cases where it is impossible to establish linguistic communication for reasons of different etiologies. At the same time, an alternative nonverbal communication system carries an information load and provides the psychological side of communication. Non-verbal means of communication accompanying communication in natural language are classified into groups.

These are proxemics, kinesics (optical-kinetic means), paralinguistic (near-linguistic or prosodic) and extralinguistic non-verbal components of communication. Proxemics is an area of non-verbalism, which includes spatially distant characteristics of communication: communication distance (communication zones), as well as tactile communication (dynamic touches in the form of handshakes, patting, kissing).

E. Hall described the norms of the remote location of people during a conversation, defining the zones of communication: the zone of intimate communication. Distance characteristics of communication vary depending on the

age, gender, personal characteristics, social status of the interlocutor, nationality, population density in the area where the interlocutors live.

Kinesics is an area of non-verbal that includes behavioral manifestations of wordless communication between people, in particular, any movements of the body or part of it, with the help of which a person conveys emotional messages to the outside world (gestures). Paralinguistic means of communication include prosodic characteristics of speech: intonation, tone, intensity design of speech, vocal qualities of the voice, voice range, timbre and loudness.

Extra linguistics – non-verbal components of communication, such as pauses included in speech and various psychophysiological manifestations of a person: crying, laughter, coughing, sighs and yawns. In a number of professions, the ability to decode non-verbal messages is an important component of professional competence.

Perception and understanding of the text

The process of perception and understanding of the text (speech) is a hierarchical system, where the lower, sensory, and higher, semantic, levels are in close relationship. Understanding is achieved through a complex multi-stage processing of the perceived (input) signal. At the sensory level, auditory images are recognized through the correlation of perceived signals with sound standards, which are stored in the long-term memory of a native speaker in the form of a mental subsystem of sounds. The complexity of phonetic identification lies in the fact that the same sound can have different, somewhat different from the phoneme itself variants of implementation in speech.

Each sound has two types of variability: allophonic and announcer. The essence of allophonic variability is in qualitatively different variants of physical realization in speech of the same phonetic symbol in a different phonetic environment (the presence of a number of allophones). Speaker variability refers to

the special acoustic properties of speech as a result of the psychophysiological features of pronouncing words: burr, stutter, lisp and accent.

There are a number of theories describing the mechanism of recognition of speech signals. The acoustic and motor theories seem to be the most reasoned. The acoustic theory of the speech identification mechanism proceeds from the sensory principle of perception: the language signal perceived by ear is compared with the phonetic standard in the long-term memory of the recipient according to acoustic features (sound quality), while the articulatory component is optional. Motor theory in its radical version considers the perception of speech as an active dynamic process that occurs with the obligatory participation of the motor, namely, the speech of the motor link.

When perceiving speech, the recipient models its articulation parameters. There is a pronunciation by the recipient of the perceived text in internal pronunciation. Semantics studies the degree of motivation of the sound visual system of a language, that is, stable connections between the sound composition of words or the graphic representation of letters and the signs of objects (denotations) and phenomena denoted by words.

Already at the sensory level of speech perception, reflection into the sphere of emotions, relationships, experiences, as well as meanings and meanings can take place. At the perceptual level of speech perception, the intelligibility of sound combinations – syllables, words, phrases – is carried out by segmenting the speech stream into separate elements. Listening to speech is a continuous speech stream: the speaker, when generating speech, does not pause between words and phrases. The perception of speech (in particular, oral speech) requires the isolation of the words that make it up from the general flow of sounding speech. The presence of speech experience ensures the perceptual readiness of the listener and removes the difficulties of speech intelligibility.

Segmentation of the speech flow into constituent elements is difficult when perceiving a foreign language text, and when perceiving speech in an un-

familiar language, it is practically impossible. At the next stage of speech perception, ordered sound combinations (words and integral syntactic structures) are comprehended. Therefore, this level of speech perception is called semantic perception. There are two plans for the semantic perception of speech, which make up its two stages:

1) at the level of linguistic meanings (semantic analysis) and

2) the actual content-semantic side of the message (semantic analysis). Semantic analysis involves understanding the text at the level of linguistic meanings and often without regard to the context of the message.

Understanding the actual semantic side of the message (semantic analysis) is a complex multi-stage process, including cognitive processing of perceived speech by the subject. At this stage, the meanings of words are clarified based on the general context of the message, there is an understanding of coherent sequences of words (sentences) and entire structural blocks of text (paragraphs), the semantic integrity of the entire perceived message is recreated through the active interaction of the listener's linguistic and encyclopedic knowledge. There are a number of differences between the perception and understanding of spoken (audible) and written (visible) speech.

When reading, you can control the rate of information flow there are advantages in relation to the segmentation of the speech stream. Oral speech is richer and more informative because it is accompanied by prosodic characteristics. External evidence of understanding the message is the translation of the meaning of the text into any other form of its consolidation: a) paraphrase – retelling the thought in other words; b) translation into another language; c) semantic compression: summary, annotation, abstract, set of keywords; d) building an image of an object or situation: screen adaptation, dramatization, illustration; e) formation of an emotional assessment of the event; f) development of an algorithm for operations prescribed by the text.

Understanding can be different in terms of the degree of completeness and depth of mastering the content-semantic structure of the text by the recipient. It is possible to distinguish levels of meaning that determine the depth of understanding of the message: understanding the content of the text (non-reflexive understanding), general meaning (reflexive understanding), hidden meaning (reflection of the 2nd order), deep meaning (reflection of the 3rd, 4th, nth order).

The movement of thought in the process of understanding a verbal message occurs both horizontally: linearly, from one text element to the next, and vertically: from private text units and their specific meanings to units of a different order – meta-units, meta-links, meta-senses. With a horizontally directed movement of thought, a phenomenon called L. S. Vygotsky influence of meanings. Each subsequent component does not just join, but merges into the previous one with their simultaneous mutual influence.

The vertically directed movement of thought is the movement of the thinking center along the levels of meaning (general, hidden, deep), relies on the general apperception of the recipient and involves the involvement of an increasing amount of his “background knowledge” in the understanding. The results of psycholinguistic studies of speech understanding allow us to formulate the following main features of this phenomenon. 1. Understanding the text is subjective, has many degrees of freedom.

Understanding a verbal message requires decoding non-verbal means of communication. The actions of the recipient, which make up the dynamics of understanding the text, are predictive in nature. Probabilistic forecasting in the perception and understanding of speech is a prediction of the form, content and meaning of the perceived statement (message), which saves time, effort, and RAM reserves.

Probabilistic forecasting is based on a person's previous experience: his general sociocultural knowledge (general apperception) and his speech experience (linguistic apperception). It is enough for a mature recipient to decode 60%

of the perceived message, while understanding is achieved through the operation of the prediction mechanism. Forecasting becomes possible due to the latent reaction of expectation, which is called the installation reaction. The mechanism of anticipation of incoming linguistic information is closely related to the construction of hypotheses regarding the form and content of the perceived text.

The hypothesis is put forward by the recipient on the basis of his individual general and speech experience and affects different levels of the language – phonetic, lexical, grammatical, extends not only to the anticipation of the meaning or form of speech units, but also more broadly: to the phrase, sentence, content and meaning of the entire text as a whole. Text comprehension is a flexibly strategic process. Strategies are part of our procedural memory that contains information about the process of understanding (T. A. van Dijk). Understanding strategies are the mechanisms of cognitive processing of verbal information, the possession of which implies the presence of language ability.

Strategies represent the basis of the process of predictive interpretation: given the structures of the text and the pragmatic context, they provide a quick suggestion about the possible development and most likely outcome of the perceived event. Thus, global coherence strategies presuppose the presence in the mind of the recipient of a number of conventional scenarios that serve as the basis for the semantic modeling of the mental representation of the perceived message. In speech perception, these scenarios are attached to the perceived message. The selection of a suitable model is carried out according to "indicators", "key features" of the text and context – words, types of statements, communication environment. As a result, the unfilled links of the scenarios are filled with specific information.

Thus, the content integrity of the perceived message is modeled, which marks the achievement of understanding. The recipient selects and sorts through conventional scenarios quickly and flexibly – this is the essence of strategic understanding.

The generation of speech utterance is often called the process of verbalization of thought. Any speech statement – whether it be a sentence or a text – is precisely formed and generated. The time of articulation of the initial elements of speech is used to plan further information, which is then embedded in the utterance. Speech production is not limited to the simple use of language structures, but relies on the verbal formulation of the original idea.

Firstly, the sequence of stages of speech generation is correlated with the phases (stages) of any activity: it involves orientation, planning, implementation of the plan and comparison of the result with the goal (control). Secondly, the generation of speech is carried out as a hierarchical system of processes, including the level of the act of activity, the level of actions and the level of operations. Thirdly, the process of generating speech involves purposefulness. Fourthly, the generation of speech is heuristic in nature, that is, with a conscious goal set, the speaker can arbitrarily consciously or more often unconsciously choose the best way to achieve this goal.

The direction of research in the field of speech production processes is determined by the provisions of the concept of L .S. Vygotsky. He interpreted the path from thought to word as a process of movement from a motive that generates a thought to the formation of a thought, to its mediation in the inner word, then in the meanings of external words and in words. The functional-syntactic aspect of speech generation is not limited to the syntax of a single utterance, but involves the programming of a holistic text and its separate content blocks. The holistic construction of the text is subject to the key provisions of the theory of the actual division of the sentence by V. Mathesius.

The mechanism of grammatical construction of an utterance includes several classes of operations: grammatical prediction of an utterance; enumeration of possible forecasts; consolidation of grammatical obligations.

At the sensory level, recognition of graphic or acoustic images of linguistic signs occurs through the correlation of visually or auditory perceived signals

with the standards of sound pictorial symbols stored in long-term memory. Correct perception depends on the phonetic and acoustic characteristics of the sounds in the composition of sound combinations: typicality, improbability or even improbability of combinations for speech norms in this language. The key mechanism of perception and understanding of speech is the predictive activity of the recipient.

Constructing a hypothesis is the main operational step in the perception of a text. The hypothesis is put forward by the recipient on the basis of his individual speech experience and affects different levels of the text – phonetic, lexical, grammatical, extends not only to the anticipation of the meaning or form of language and speech units, but also more broadly: to the synthesis of text units (anticipatory synthesis) and the establishment of the meaning of phrases, sentences, content-semantic integrity of the entire speech work. There is a construction by the recipient of conclusions, the adoption of semantic decisions by him at all levels of the text.

Consideration of the generation of speech in the paradigm of the activity frame suggests, firstly, that the stages of speech generation are necessarily formed according to the universal scheme of the structure of any activity: planning, implementation of the plan, comparison of the result with the goal (control). Secondly, the generation of speech is carried out as a hierarchical system of processes, including the level of the act of activity, the level of actions and the level of operations. Thirdly, the generation of speech is heuristic in nature, i.e., with a set goal, the subject can arbitrarily (consciously or more often unconsciously) choose the best way to achieve this goal (in terms of strategies and tactics for encoding a certain content).

Encoding marks the transition from a simultaneous (simultaneous, not deployed in time) predicative organization of content to a successive (linear) sequence of linguistic elements (in terms of linear syntax). Coding is represented

by an integrable series of conditionally sequential stages: a) syntactic programming and b) lexico-grammatical programming.

Syntactic programming involves determining the syntactic scheme of the future statement, which in external speech corresponds to a certain type of sentence, which precedes the selection of lexical correspondences. The functional-syntactic aspect of speech generation is not limited to the syntax of a single utterance, but involves the programming of a holistic text and its separate content blocks. At the stage of lexico-grammatical programming, grammatical structuring and selection of specific vocabulary takes place.

The selection of words that are semantically adequate to the units of the original text occurs at the level of conscious control. The staging of speech production should not be represented as an algorithmic sequence of phases. Speech is planned and implemented not sequentially, word by word, sentence by sentence, but more compactly, holistically, with the parallel implementation of various speech operations within the framework of simultaneously performed speech actions at different phases of communication.

Methods of collecting and processing information in psycholinguistics

The associative experiment is the most developed method of psycholinguistic analysis of semantics, which reveals both the semantic characteristics of individual meanings of words, associative links between words and groups of words, and allows one to judge the specifics of individual linguistic consciousness, subjective-affective assessment of social phenomena. Its general scheme is as follows: the subjects are presented with a list of words to which they must answer with the first words that come to mind within, as a rule, a limited period of time. The concept of an associative process excludes the idea of a consciously controlled selection of responses.

An association is a connection between some objects, phenomena, based on our general apperception. The association can be culturally conditioned, conditional; actual, reflecting real connections and phenomena between phenomena in reality; actually individual, based on subjective experience, personal experiences and relationships.

An associative experiment can be based on the study of any type of association, while revealing various aspects of the linguistic consciousness of either one individual, or a small group, or even an ethnos and an entire nation. In a free associative experiment, the subjects are not subject to any restrictions on reactions: there is a reaction to the stimulus word with the first word that comes to mind, regardless of its grammatical and semantic class. On the basis of such data, dictionaries of associative norms of the language are compiled.

The free associative experiment makes it possible to find out how fragments of linguistic consciousness are arranged among native speakers and can serve as a way to obtain both linguistic and psychological knowledge. It serves as a valuable material for the study of semantic associative fields and reveals the semantic connections of words objectively existing in the psyche of a native speaker. The psycholinguistic concept of "semantic field" is a collection of words together with their associations.

The associative field formed behind this or that word can be different for each person both in the composition of the elements and in the strength of the connections between them. The actualization of this or that connection is not accidental and often depends on the situation, emotional attitude, and is determined by the level of education of a person.

Belonging to a certain people, one culture forms the core of the associative field, which is generally quite stable for all native speakers, and the connections of the stimulus word with the elements of the core of the field are regularly repeated in this language, regardless of the situation.

The method of free associations is also the most important method of revealing the language picture of the world, understood as a reflection of the objective world in the human psyche, mediated by objective meanings, cognitive schemes and amenable to conscious reflection (A. A. Leontiev).

The linguistic picture of the world is a prism through which the world is refracted for a person and which determines the specifics of his communicative behavior and assessment of the surrounding reality.

A chain associative experiment involves the response of subjects to a stimulus with several associations. All subsequent responses of the subject are associations not so much to the word stimulus as to its previous association, resulting in a chain of associative reactions.

In a directed associative experiment, subjects are asked to respond to a stimulus word with reactions of a certain semantic or grammatical class. This imposes restrictions on the processes of mental search of the subjects when choosing the appropriate words-reactions. A special type is the psychophysiological associative experiment conducted against the background of certain physiological reactions of a person.

A series of similar experiments was conducted by A. R. Luria, using the features of a person's reaction to a painful stimulus in the form of an electric shock. The results of the associative experiment are analyzed according to the following two criteria: firstly, the type of linguistic associative connection between the stimulus and the response is revealed, and secondly, the logical associative connection is analyzed.

The language associative connection is presented as syntagmatic or paradigmatic. Paradigmatic associations make up reaction words of the same grammatical class as stimulus words. The syntagmatic associative connection implies the presence of syntactic relations between the stimulus and the reaction: such associative pairs form phrases. Paradigmatic associations reflect linguistic relations, syntagmatic – speech.

Depending on the specific objectives of the study, the organization of the experiment may be different. It is possible to evaluate a certain list of individual words on the same scale to compare the degree of expression of the same feature in them, for example, the study of the coefficient of specificity and figurativeness of words. Separate pairs of words can be evaluated on one scale to compare the subjective assessment of the similarity of the meanings of synonyms. One and the same word can be evaluated on a number of scales (semantic differential method). During statistical processing of experimental data with scaling according to the method of successive intervals, the arithmetic mean and the mean deviation from it are often calculated using the corresponding formulas.

A particular case of using the scaling method is the semantic differential method. This method was developed and described by C. Osgood and his colleagues (J. Sucy, L. Tannenbaum) in the early 50s. 20th century According to the theoretical principles of C. Osgood, the evaluation of persons, objects, phenomena is carried out through the evaluation of the sign (word), "representing" the given person, object or phenomenon.

In psycholinguistics, this method serves to construct subjective semantic spaces of words by quantitatively and at the same time qualitatively indexing the meaning of a word using bipolar scales, each of which has a gradation with a pair of polar qualifiers of antonymic adjectives, while the central position on the scale is neutral. Using this method, it is not the denotative (denoting an object) meaning of a particular concept that is measured, but the connotative (semantic), emotive, metaphorical or affective meaning associated with personal meaning, social attitudes, stereotypes and other emotionally rich, poorly structured and little conscious forms generalizations.

When processing the data, it is possible to calculate the average scores according to the factors of evaluation, strength, and activity proposed by Ch. Osgood or other authors. The value of the concept for each subject is determined as a set of factor estimates. The diagnostic potential of this method has ensured its

high popularity and wide application in research. The semantic differential method is widely used in the theory of mass communication, advertising, PR technologies in order to select the most appropriate words and expressions that provide the desired impact on potential listeners.

The semantic differential method has its pros and cons. On the one hand, it allows one to describe an infinite number of concepts, from the simplest to the most complex, in terms of the same features. On the other hand, the method reveals precisely the affective system of meaning (associated with human emotions and feelings), and not the objective one: the psychological, and not the linguistic content of concepts. One of the most common psycholinguistic techniques at one time was the supplement technique. The method was proposed and first used by the American researcher W. Taylor in 1953. The essence of the method lies in the multilevel disruption of the connection of the experimental text and its subsequent presentation to the subjects for restoration.

The condition that makes it possible to reconstruct a destroyed (perforated) message is the principle of verbal utterance redundancy, which ensures a more or less adequate understanding of both oral and written speech even in the presence of interference (which are omissions of text elements).

The data of experiments on the supplementation method allow not only to draw conclusions regarding texts (the threshold of their destructibility) and the mechanism of their perception, but also to act as a diagnostic tool for the verbal and non-verbal behavior of the subjects, allow us to identify the degree of language proficiency, age-related characteristics of perceptual readiness and communicative competence, some individually – personal characteristics. To ensure a greater degree of reliability of the revealed facts, it is important to conduct a study using the method of supplementing on the material of several texts of different content, different genres, styles.

The classification method was first applied by J. Miller in the 60s. 20th century J. Miller suggested that the forms of material classification correspond

to the internal (mental) semantic links of this material and, therefore, the structure of these links can be expressed in the classification procedure itself. Therefore, it seems possible to find out the structure of the mental representation of the lexicon in the mind of a native speaker through the procedure of semantic material classification. The essence of the method is that the subjects are offered to classify the language material – a certain number of words – into groups. The number of groups may be unlimited or predetermined.

When processing the experimental data, first a matrix is compiled for each subject, taking into account all associations, then a general matrix, reflecting the data as a percentage. Further, the data presented in the matrix are subjected to cluster analysis – combining objects into sequential groups. As a result, a kind of clustering tree is obtained, reflecting the semantic proximity of words and concepts. The method of semantic interaction was proposed by C. Osgood to identify the rules of semantic compatibility of words in speech.

The positive aspect of using this technique is that the results lend themselves well to generalization. Similar in the methods developed by C. Osgood (semantic differential and semantic interaction), and their advantage is the fact that the author proposed some common "measurements" (universal guidelines) for the study of verbal communication. Gradual scaling method is used to study the semantic space of word groups. The subjects are asked to arrange a number of words of one semantic group in order, according to the degree of presence of a semantic feature.

The peculiarity of this technique is to use the ideas of native speakers about the semantic richness and semantic representativeness of various words of the language (their “sense of the language”), i.e. that subjective information that is not presented in dictionaries. With this method, you can organize the semantic space of any group of words (with semantic meaning, such as size, evaluation, relationship, etc.). Accordingly, if the place of a word on the semantic scale is known, the semantic distance between words can also be measured by the de-

gree of presence of the considered quality, which reflects the degree of synonymy of lexical units.

The results of the experiments make it possible to create gradual dictionaries used for compiling advertising texts, political speeches, as well as for translating emotionally and suggestively rich works. The associative experiment is the most developed method of psycholinguistic analysis of semantics, which reveals both the semantic characteristics of individual meanings of words, associative links between words and groups of words, and allows one to judge the specifics of individual linguistic consciousness, subjective-affective assessment of social phenomena.

Architecture and features of speech

Autism is a congenital disorder of the child's needs for communication. Aphasia is a speech disorder that occurs with local lesions of the cortex of the left hemisphere of the brain (in right-handed people) and is a systemic disorder of various forms of speech activity. The biological concept of language is the theory of A. Schleicher, according to which languages are considered as natural, the highest of all organisms, given to people from the outside, independent of their will and developing according to certain laws.

Blissymbols is a visual basic script created by the Austrian scientist C. Bliss, in which symbols represent meanings, not letters, and are applicable to any language; originally intended to promote international understanding and agreement through a single graphical way for people who speak different languages to communicate.

Verbal-logical thinking is the highest form of thinking that provides a reflection of complex connections and relationships, the solution of theoretical problems, the derivation of conclusions and the prediction of events by operating in the mind with logical-conceptual units formed in direct connection with linguistic structures and constituting their semantic field. Internal programming

is an undivided phase of internal speech, which provides the formation of thoughts in the mental language: the thought is structured in an integral format that allows structural programming of the future speech whole.

Internal pronunciation is a dissected phase of internal speech, articulatory activity devoid of phonation, imitation to a greater or lesser extent of the processes that occur during real speaking, accompanied by a hidden physiological activity of the organs of articulation. Inner speech is an important universal mechanism of human mental activity, which manifests itself as an intermediate stage between thought and sounding speech (during speech generation) and between loud speech and mental image (during speech perception) and ensures the transition of a simultaneously existing thought into syntactically dissected speech and vice versa.

Generative-transformational grammar is a scientific direction developed by N. Chomsky, according to which the grammatical principles underlying languages are innate and unchanging, and the differences between the languages of the world are explained in terms of parametric brain settings that can be compared to switches. The mastery of a language by a person is explained by the scientist by the presence of a special innate cognitive module – "universal grammar", including linguistic universals and transformation mechanisms that ensure human speech activity.

Hermeneutics is the art of interpreting and understanding texts. The double coding hypothesis is a theory of mental representation of knowledge developed in foreign science, which states that memory and consciousness are served by two systems of codes: figurative and propositional, which can overlap when processing information with an emphasis on one or the other, but are able to function independently.

The hypothesis of linguistic relativity by E. Sapir – B. Whorf claims that a certain structure of consciousness of its speakers is set through language: each

language, as the spiritual world of the people, creates its own conceptual world, which serves as an intermediary between reality and man,

The dual organization of the brain is a theory of functional asymmetry of the work of the cerebral hemispheres, which states that the basis for the implementation of higher mental functions is the organic interhemispheric interaction and complementarity of the work of the hemispheres. Iconic systems are sets of iconic signs (as a rule, images) that have a number of properties inherent in the objects they designate, provide a direct transmission of any idea in communication, provoking the emergence of a sensual image.

Artificial intelligence is a computer implementation of a certain model of natural intellectual processes (consciousness modeling), which provides the ability of automatic systems to perform certain functions of human intelligence, for example, to choose and make optimal decisions based on previously gained experience and rational analysis of external influences.

Concept is a basic cognitive entity that connects the meaning with the word, allows you to talk about the object at different levels of generality and performs the function of categorization. The concept category in foreign science is, in fact, an analogue of the “concept” in the works of domestic psychologists.

Conceptual-propositional hypothesis is a theory of mental representation of knowledge developed in foreign science in the form of a verbal code represented by a system of concepts and propositions. The concept of dominance of the hemispheres is a theory of functional asymmetry of the brain, according to which mental functions are localized in the left hemisphere, while the right hemisphere is secondary. The underestimation of the role of the right hemisphere is the main shortcoming of the theory.

The sensorimotor dictionary is an active lexicon of the child, including language units that the child successfully perceives in the speaker's speech and is able to pronounce and use in an adequate speech situation. The Braille system is a variant of the embossed dot font for the blind, which is a conditional alphabet

of various combinations of six embossed dots arranged in two columns of three; to read the text, the “reader” runs his fingertips over the embossed lines.

A language system is a supra-individual, objective semiotic system (a system of signs), which is characteristic in terms of lexical, syntactic and semantic features for speech communication in a certain era in the life of a certain social group. Supportive alternative communication systems are sign systems that replace natural language, aimed at maintaining communication of a person with disabilities and acting as a means of sign support for the development of his intellect, which ensures the formation of important intellectual functions and operations, as well as successful socialization of a person with special needs.

Broca's center is a special area of the cerebral cortex responsible for the muscular act of pronouncing words, articulation. Wernicke's center is a special area of the cerebral cortex that provides speech understanding. Egocentric speech – loud speech of the child, accompanying his actions, regardless of the presence of the interlocutor; arises through the child's transfer of social forms of behavior, collective cooperation into the sphere of intrapsychic functions.

Extralinguistics – non-verbal components of communication, such as pauses included in speech and various psychophysiological manifestations of a person: crying, laughter, coughing, sighs, yawns, etc. Language mechanism – the ability to master a language (native and / or foreign) as an objective system of conditional symbols and the rules of their functioning in speech. The language organization of a person is a mental representation and organization in the mind of a carrier of a system of natural language signs and the norms of their functioning in communication.

Language ability is a psycho-physiologically conditioned, but social product that ensures the assimilation, reproduction, adequate perception and production of linguistic signs of a linguistic community (a person's ability to master and master the language). A linguistic personality is a person considered from the point of view of his ability to perform speech actions, from the standpoint of

the originality of communicative manifestations and the speech manner of the personality, its linguistic exclusivity.

Elements and technologies of semiotics in advertising design

The modern market identifies goods, services with images, society culture, attributing to them the desired meanings and symbols. In this regard, various elements and technologies of semiotics are actively used in advertising and brand development: the inclusion of sign systems allows you to quickly and accurately convey the necessary information to the consumer, client.

When creating effective advertising, a logo that works, it is necessary to proceed from the fact that the potential audience has information about the objects represented by signs, draws parallels between the presented sign system and the implied set of objects.

The main criterion for the application of semiotic provisions in graphic design is the ease of interpretation of the sign systems used the ability to convey embedded information, the degree of impact on perception by the human senses. In graphic design, as in any field of activity, signs can be any stable systems that have become firmly established in everyday life, causing unambiguous associations. The use of semiotics makes it possible to speak about objects and objects that are actually absent in front of the audience, creating a visible (audible, tangible) image, eliminating temporal and spatial boundaries.

When considering semiotics, it is necessary to pay attention to the structural components of any sign: image, meaning and format.

The units of the sign system are images, symbols, signs-indexes. The most visual, of course, are the pictorial elements: they are visually similar to the object of identification, are easily perceived, and do not require adaptation to different language groups and cultures. They are most often used in design, allowing you to visually demonstrate a message or thought.

Index signs serve as an indication of an event their visual display is a consequence of the meaning of the sign itself. An example is smoke in advertising: its presence indicates that there is a fire nearby.

Symbolic signs are among the most creative: they exist thanks to an unspoken agreement between people because according to some images of phenomena it is difficult to judge their meaning (most often it concerns the image of feelings, emotions, abstract concepts).

Knowing such nuances allows you to create a memorable graphic object that resonates with a large part of the audience. It should be noted that the creation of a logo in the studio, the creation of a commercial in advertising agencies, are accompanied by a detailed analysis of the features of the use of various sign systems at a specific time and place.

At the very beginning of the development of graphic design, visual and linguistic signs are determined, which will be emphasized. The verbal part carries more accurate information, practically eliminates the ambiguous interpretation of the underlying thought, and has specificity. The visual component requires fewer symbols to explain the thought being conveyed, is easier to perceive and more quickly absorbed by the audience.

An organic combination of two variants of sign systems allows the most capacious reflection of the subject of discussion. When creating advertising, logos, images perform numerous functions:

- Attract attention. An image, as mentioned above, evokes a greater response than a verbal representation. Also, it is necessary to mention the features of the colors of the icons. Bright colors will inevitably focus attention on them, calmer, pastel colors will favorably shade the placed test.
- Reporting information. When time is limited, the presentation space using a small image will elicit a better reaction from the audience.

- Sensual expressiveness. A logo that works, a video that makes you want to join the circle of owners of certain things should evoke different feelings in the people watching. Impact on the senses is the primary task of graphic design.
- Aesthetics of perception. A visual representation of various objects (in particular, objects of art) develops a sense of beauty, allows you to fully reveal the artistic concept.

The color of the symbols and signs used has a significant impact on the effect of the design object. The use of various combinations of colors can convey partial information: red is traditionally associated with danger, sensuality, passion; blue – intelligence, calmness, confidence.

Bright colors (orange, yellow, light green) are used to create an optimistic message, muted tones to emphasize the verbal component.

From the point of view of semiotics, there is no attachment to the meaning of color to the individual preferences of each consumer there is a "group" interpretation. Development of corporate identity, creation of advertising, posters, etc. require careful study of the visual components. Semiotics helps to decipher the subconscious elements. For some, such a definition may cause associations with something scientific and complex, but in fact, semiotics has a practical application. It allows:

- Improve brand message
- Convey the right meanings
- Influence the subconscious decisions of consumers.

Semiotics is the science of signs and symbols. She explains meanings using the social and cultural background. Subconscious interpretations rely on emotions rather than objective information. Daniel Kahneman calls this the dominance of the emotional system in the human brain.

Words, images, sounds, gestures, and objects are all signs that can be interpreted. This interpretation is precisely the essence of semiotic analysis, plus

the subsequent use of the information received in order to convince the consumer to buy goods. Each sign consists of two parts:

- A pointer is the form it takes.
- The signified is the concept it represents.

Semiotic analysis involves three steps:

- Analysis of verbal signs (what you see and hear).
- Analysis of visual signs (what you see).
- Analysis are of the symbolic message (interpretation of what you see).

Semiotic analysis deciphers the meanings (signals) that resonate in the hearts of your audience. Knowing about semiotics will help you incorporate the decoded elements into your brand and your marketing communications.

Semiotic analysis can become part of your checklist when developing a new landing page, advertising campaign or publishing content. Run analysis on your own or with the help of your marketing team. Even better, invite representatives from other departments or, if the budget allows, representatives of the target audience.

There are ways to conduct semiotic analysis in parallel with other forms of qualitative research: Gather as many interpretations as you can through surveys or interviews. Determine the dominant interpretation and check if it matches the meaning you intend to convey.

Uncover the meanings hidden behind the symbols – this will allow you to understand if you have missed alternative interpretations. To do this, organize focus groups or brainstorming sessions with your team. Rethink your answer and explain it in more depth. Let's say we think squares add structure to a logo.

The guiding question will ask you to explain the relationship between the square and the structure. Use the Content Matrix or Mind Map to discover deeper and more meaningful meanings in a concept. Projective techniques help to get an idea of the psychological characteristics of the audience. For example, you want to understand if your logo is associated with youth.

Ask the focus group to imagine the logo as a person: how old will he be? Other options include making up word associations and sorting photos. There is no fixed number of questions to identify all the significant components in a brand message. Start with these three, then develop a chain of questions:

- What does the text say? How does the title grab attention? What does the text say about my product/service? Does he sell the product or the emotion behind it? How does it compare to images?
- What does the picture say? How does it get attention? How is it related to text?
- Who is our target customer? Does the message reflect his age, income level, pain points, attitudes, culture? What elements highlight this? For what?

Your brand has become familiar. You created it with a mission, values and meanings. You then encoded these elements into the brand message, explicitly and implicitly. But you have no control over its interpretation.

Successful branding is when the target audience deciphers the meanings as intended, so that the brand begins to correspond to their personal ideas.

The semiotic triangle of branding describes the process of defining the essence of a brand and its interpretations. It includes three aspects: brand image. Your mission, values, history, employees, and the product/service itself.

Brand communications. Logo, slogans and content.

The moral image of the brand, ethos. Your reputation and how consumers perceive your brand.

Engage in all three aspects, then you will create a strong brand message. And your audience interprets it the way you intended. Below is how to implement each component.

Incorporate relevant meanings into your brand identity

Incorporate cues from your audience into brand architecture, symbolic elements: logo, colors, texts, advertising, cultural symbols, website and physical environment of your brand.

When choosing a palette, consider the psychological and emotional color associations. This will help convey the appropriate meanings to the viewer.

The shape of the logo also has a semiotic meaning. Fonts also have their own psychology. Font connotations should balance the verbal specificity of your brand. This includes the slogans and language you use to convey the message in your taglines and ads. This also applies to the voice and tone of the brand.

Finally, think about behavioral identity: how your brand interacts with consumers and creates experiences that match their needs and desires.

The three means of individuation noted above – visual, verbal, and behavioral – benefit greatly from recourse to semiotic storytelling and relationships with the audience at different levels.

Cultural codes, sometimes referred to as "cultural soft", determine how we connect sets of images to our stereotypes. Advertisements testify to the evolution of codes, their ability to be flexible.

Myths have always been part of human culture. Shared myths create human bonds. Often, brands turn to archetypal characters to tell a story.

Ethos is the fundamental character or spirit of a culture; underlying sentiments that influence the beliefs, customs, or practices of a group or society.

The quality of the product and the attitude towards customer service are two key elements of the brand spirit. Your statements that you are in favor of something more must be consistent with your behavior. Then, from a semiotic point of view, your ethos will be successful.

Ethos explains the importance of a brand and the reason why people should hear its voice. The ideal ethos depends on the brand. Recently, many companies have focused on two aspects: environmental sustainability and social responsibility. To create a positive ethos, a belief system must:

- Relate to core brand values.
- Resonate with the target audience.
- Be supported by operational changes to achieve the set goals.

Be truthful. Truthfulness is important. Brand ethos is not just a desirable opinion of the audience. Once committed to an ethos, stick to it forever. Tell the same story and convey the same message through all channels.

People make emotional decisions. These emotions are often driven by subconscious interpretations of words and images.

Semiotics helps decipher these subliminal messages, allowing you to improve your message and branding. There are also wider applications:

Competitive Analysis – You can decipher competitor strategies and uncover meanings.

Market research – you can understand the changes in the cultural environment and find free niches.

Segmentation – Find cues unique to customer groups to convey culturally more relevant concepts and ideas.

In each case, you will get a better idea of how your audience understands what you are conveying to them. You will be able to correct misinterpretations and keep all your landing pages and marketing campaigns consistent.

Social semiotics

By "social semiotics" we mean sign systems that regulate social behavior. The origin of social semiotics is usually associated with the publication of Halliday's book (1978), but this term was used by him earlier, in 1975. The famous 1978 book is called “Language as Social Semiotic: The Social Interpretation of Language and Meaning”, while the almost unnoticed 1975 article was called “Language as Social Semiotic: Towards a General Sociolinguistic Theory”.

Although M. Halliday's approach remained predominantly sociolinguistic and not semiotic, a change in perspective opened the way to a proper semiotic consideration. It is noteworthy that, strictly speaking, M. Halliday speaks not of social semiotics, but of social semiotics (social semiotic vs social semiotics).

The social semiotic was understood as a characteristic of a language described and interpreted in a certain socio-cultural space. The interpretation modus was extended to social processes and social interaction, which led to the introduction of such concepts unusual for linguistics as the semantics of social class and the system of power, which contributed to the consideration of these social phenomena as a special kind of sign systems.

The institutionalization of social semiotics and its delimitation from sociolinguistics occurred after the publication in 1988 of the book “Social Semiotics” by Robert Hodge and Günther Kress. It is often interpreted as a natural continuation and generalization of Halliday's ideas by his followers. Meanwhile, an imperceptible linguistic difference – Semiotics instead of Semiotic - was intended to mark a fundamental difference, if not a change in the research paradigm.

The methodology of functional analysis in the spirit of the London School is combined with Marxist-oriented critical discourse analysis.

Only biosystems, for example, a genome, can be non-social semiotics; the authors even consider communication between two machines as a social process, since they and their programs are created by people. The main work that inspired the authors is the book by M. M. Bakhtin “Marxism and the Philosophy of Language”. R. Hodge and G. Kress call him the founder of social semiotics.

The co-authors also rely on some of Peirce's ideas about the dynamic nature of semiosis, but do so with significant reservations. It is in Saussure's critique of "linguistic objectivism" that Hodge and Kress see the foundations of the new semiotics. According to the co-authors, the ideas of Bakhtin and Voloshinov, due to their Marxist orientation, on the one hand, they were not accepted by Western European and American linguistics, on the other hand, they did not gain popularity in the Stalinist Soviet Union either.

Everything that Saussure denies or recognizes as unimportant becomes the main position of social semiotics. The main object of semiotics is speech, not language. In addition to natural language, it is necessary to have other sign sys-

tems that are no less essential for the communication process. Diachrony and history, rather than synchrony, turn out to be decisive for describing the characteristics of sign systems. The linguistic sign in speech is motivated, not conditional. External linguistics (social and cultural factors) is given preference over internal. The priority task is to describe not the signifiers, but the signifiers.

There is a correlation between the significative and referential aspects of semantics. The rationale for these provisions is the analysis of various forms of combination of verbal and non-verbal codes – these are modern mass media, and classical literature, and the art of the Renaissance. The heterogeneous material is intended to show the universal nature of the methodology proposed by the authors. Subsequently, G. Kress, speaking of the book “Social Semiotics”, called the reinterpretation of the concept of a sign the most important in it, as well as another position: the object of semiotics is not a sign, but semiosis.

As for the further development of social semiotics, it is only partially based on the ideas of the book “Social Semiotics”. Disputes with traditional semiotics turned out to be excluded from the field of view of the discipline. Claims to combine semiotics with critical discourse analysis aimed at revealing political relations were also excluded.

Social categories (power, solidarity, control over the context, manipulation through signs) are replaced by educational tasks (multimedia learning, communication efficiency). Social semiotics appears as a description of the functional contexts of the language, practices (frames) of its use.

In general scientific terms, the semiotic approach lays the foundations not only for the implementation of interdisciplinarity, combining the possibilities of the natural, social and human sciences, but also for their convergence. In economics, the semiotic approach opens up an adequate understanding of the nature of a commodity as a carrier of value, returns to an adequate reading of the Marxist theory of value, which is extremely relevant in our time (the concepts of value chains and networks, new forms of rent, etc).

Social semiotics is an approach that is expressed not so much in the social contexts (modes, modalities) of the language, but in the semiotic (sign) analysis of social phenomena and processes, which is manifested in the expanding semiotic analysis of visual and other non-verbal communications.

Digital social semiotics

In digital reality, a person does not need long thoughts that a writer and reader of novels of the 19th or second half of the last century or participants in correspondence of the same time could afford. The simplification and acceleration of the presentation of meaningful narration has reached such an extent that the presentation of meanings is not required to leave traces of such a presentation – as in snapchat technology, when information disappears shortly after its presentation. Signifiers (signs, texts) do not need signifieds, they are not narrative, but performative. From the viewer, listener, reader, not reasoning and justification of understanding are required, but reactions – assessments and actions ("like, ban and buy").

The clip (mosaic) consciousness that excited the philosophical community at the end of the 20th century turns into a gamer's one before our eyes, in reaction to the situation set by the algorithm.

Emotional experience is associated not so much with the position taken, as it is a direct, preferably quick (automatic) reaction to the situation, which can be qualified as one of the aspects of the new animality (J. Agamben). A person, losing the skills of systematic reflection, begins to respond to the images and stimuli of the scanned reality. Humor is developed at the level of memes.

If a person who has been formed in the culture of building narratives, tracing storylines, is able to understand fairly complex semantic constructions, then a person of screen digital culture operates only with the meanings of the Twitter format and cannot work with symbolic and semantic structures of arbitrary complexity. The semantic picture of the world and its carriers have a tendency

of ever greater divergence, distrust and aggression, increasingly moving from on-line to off-line.

In the situation of Internet communication, the problems of the truth (truthfulness, reliability) of the text, statement, as well as the intentions of its author, acquire new relevance. Is it possible to recognize the imitation? Do well-known theories of text and communication allow us to answer this question? The situation of Internet communication is becoming a test for the established in the twentieth century. theories of text and communication. If the text (statement) is not designed for dialogue, is not a manifestation of an independent author's position, then we are talking about imitation.

The possibility of generating texts by means of computer programs without the participation of the author and the functioning of these texts in the space of social networks again actualize the problem of text in linguistics and philosophy of language.

Of particular importance is the problem of the authenticity of authorship and the sincerity of the author's intentions. Trust in the author becomes a certain guarantee when evaluating the text. It is possible to artificially provoke a response, but such an imitation will not be associated with meaningful content and with the author's self-realization.

Therefore, it can be found, especially in a communicative context. The ability of a text-statement to dialogue as a criterion of its (text) significance, non-randomness, as well as a way of manifesting the true intentions of the author, remain in force. Is public opinion formed in such discussions? An unequivocal answer to this question would be premature. The fragmentation of Internet communication is too strong, it confuses the possibility of exclusion from the dialogue. Internet communication is changing rapidly, but the question of the vector of change remains open.

Physicality of a sign

Social semiosis cognitively duplicates human activity, reinforcing and increasing the resources and opportunities for people's survival, optimizing their existence. Semiosis creates many umwelts, including mutually included spaces of the internal (one's own) and the outside (not one's own), as well as the corresponding contexts. It also cognitively shapes the positions and functions of the agent. A series of emergences and emergent forms (structures, functions, system integrity) can be analytically represented as a series of similar modules.

Each next module includes the previous ones in the nesting algorithm with the formation of more and more multidimensional structures. The creation of more and more perfect forms of autopoiesis involves the selection (more frequent occurrence and stability) of non-random (effective, perfect, intentional) variants of autopoietic forms.

From a semiotic point of view, a palimpsest stands out as a body of a sign with special characteristics: as a specific plane of expression from the point of view of Saussure's semiotics or as a special unilateral sign of Peirce's semiotics. A significant part of semiotic constructions are palimpsests. Any edited manuscript is a palimpsest. It is almost standard to apply the term "palimpsest" to repeated temple paintings or written icons. In the same logic, almost every not completely new interior or urban development is a palimpsest. A human costume is also a palimpsest. Palimpsests are parks and gardens. A feature of parks and gardens is that their components are living beings, which are the focus of attention in biosemiotics. Palimpsests of living organisms are very diverse.

The most universal biosemiotic phenomenon inherent in all living beings is the existence and functioning of the genetic apparatus based on nucleic acids. Its semiotic status is a matter of intense interest to biologists, linguists, semioticians, and physicists. These two roles of the palimpsest are very similar to the two modes of attitude to folk etymologies of linguistic units – the fact that they are absurd from the point of view of historical linguistics does not prevent them

from being part of the linguistic picture of the world of the people, the home of the being of the spirit.

With each DNA replication associated with cell division, some processes occur that lead to a change in this DNA and affect larger or smaller fragments of it. In the case of point mutations affecting one pair of nucleotides, either transitions or frameshifting deletions can occur, in which one or more nucleotides are lost, or insertions are accompanied by the insertion of one or more nucleotides.

Deletions and insertions can be quite large, and then they can act as macromutations. Macromutations can be represented by recombinations, in which the sequence of DNA sections changes and their movement from one chromosome to another, and inversions, which consist in turning a DNA section, when during its transcription the end of this section turns out to be its beginning and vice versa, as well as other DNA transformations. With each cell division, a fairly large number of point mutations and macromutations occur.

Transitions and transversions are the result of crossing out one nucleotide and replacing it with another. With insertions and deletions, one or more nucleotides in the analyzed position are replaced with the one inserted during the insertion or displaced during the deletion. In all the cases considered, one segment of the genetic text is overwritten by another, which makes it possible to qualify the transformations that have taken place as an elementary link in the formation of a palimpsest. Considering that all modern organisms (including bacteria) are continuously connected through cell division with their ancestors, who have existed since the discovery of life on Earth 4.2 – 3.8 billion years ago, their genomes have been rewritten an incalculable number of times.

Another aspect of the genome as a palimpsest is the phenomenon of gene overlap, which means that the same piece of DNA can be read as part of more than one gene. Palimpsest is also the immunological memory of an individual organism. Turning to phylembryogenesis, one can compare archallaxis with

erasure of the text, and interpret deviation as archallaxis followed by anabolism, so that embryogenesis resulting from deviations is comparable to palimpsest.

The Haeckel-Müller biogenetic law (as well as other laws similar to it) acts as a means of revealing the layers of the palimpsest of one or another stage of ontogenesis. At the same time, heterochrony of heterobatmy of different parts of the body is revealed, which resembles the situation with palimpsests on parchment. Very striking examples of palimpsests are present in animal communication. Palimpsests are territory boundaries.

The biocenosis existing in each specific territory changes over time, turning into another biocenosis. The sequence of such transformations composes a succession series, ending with a climax, in which the biocenosis can stay indefinitely. In the context under discussion, it is important that each member of the successional series is a palimpsest, and fragments of previous states can be recognized in it. In this context, it is very remarkable that some palimpsests, which are members of successional series, can be studied by quantitative methods in the case when there are several synchronic representations of this palimpsest at different moments of its existence.

Then changes in the component (for example, vocabulary, but possibly also morphemic, grapheme) composition can be represented through the structural-topological dynamics of the rank distributions of these components. This method can be formally used both for palimpsests that preserve the thematic continuity of their different layers, and for those in which there is a change in themes, as in the palimpsest of Archimedes.

Technically, it is easier to obtain material for such studies when each potential layer of a palimpsest is represented by a separate list. The study of such lists of the “Tale of the Battle of Mamaev” gave an unexpectedly clear picture of the identification of vocabulary that enters and leaves the text over time. For economic cenoses, the fruitfulness of this method of studying dynamics is especially evident.

The development of ideas about successions is phylocenogenetics, which describes the nature of changes in successions on geological time scales, and among phylocenogenesis, analogues of deviations can be distinguished and the results of at least some phylocenogenesis can be interpreted as palimpsests. At the same time, mathematical methods of study can also be applied to them, although this will be associated with significant methodological difficulties. Some generalization of the appearance of ecological palimpsests is the idea of metabiosis as the habitation of some organisms in places where other organisms lived before them.

In such places, traces of former organisms remain (including the waste products of their activities, which can be a food base for subsequent organisms), so that, as a result, full-fledged palimpsests are formed in these places. Thus, palimpsests are an extremely widespread and diverse semiotic phenomenon, which is more the norm than the exception. This gives grounds to speak about the universality of the status of any semiotic object as a palimpsest.

Since the identification of palimpsests as a special cultural phenomenon is based on the features of the body of the sign, the conversation about the diversity of palimpsests largely concerned their physical features, including the methods of physicochemical study of palimpsests in order to identify synchronic layers in them. A palimpsest as a cultural artifact draws attention to itself when it represents a certain integrity (a separate story, a separate building) that exists separately or is included in another integrity (a fragment of a chronicle, a building in a block with adjoining walls). Otherwise, such an artifact is perceived as a chaotic pile of fragments, cacophony, eclecticism, and the question of disassembling such a conglomerate into components is immediately raised.

After cutting off the conglomerates, semiotic constructions remain, consisting of components more or less comparable in size, which do not sharply disturb the composition of at least relatively compatible materials, etc., which allows such constructions to act as integral artifacts. Further, it is found that such a

structure includes components that violate paradigms, or are not included in them. Vocabulary of different styles begins to coexist in a literary work, grammatical and spelling forms of different eras and territories, some irregular components that are not provided for by the corresponding usual grammar are found.

This indicates that the alternative members of one paradigm have lost their alternativeness and have become syntactically identical. This indicates that the alternative members of one paradigm have lost their alternativeness and become syntactically compatible with each other. In the same way, in what seems to be a single architectural structure, traces of a different layout appear.

Cultural codes as images

The style of clothing, the brand of the car, the design of the room, the nature of the food – everything has an iconic aspect. To comprehend the world means to give human meaning to the world as a whole and its individual objects and phenomena. The human meaning of an object is its socio-cultural symbolic otherness. Symbol systems are cultural codes. The internal logic of any figurative sphere and its proximity to adjacent spheres determine the features of its symbolism. The cultural code is hierarchically divided into sub-codes.

This hierarchy is multi-level. The totality of cultural codes with their horizontal and vertical relationships forms a figurative system of culture. Signs of cultural codes (images) have a variable substance of the expression plane. The image is embodied in different media - natural (such as a natural Christmas tree) or artificial (such as a synthetic Christmas tree or images of a Christmas tree on greeting cards).

The substance changes, but the form and symbolism remain unchanged. A special case is the verbal embodiment of an image, in which the plane of expression has not only a specific (sound) substance, but also a specific (verbal) form. If, for example, gypsum as a material for sculpture is itself amorphous and represents a pure substance of the plane of expression, then a verbal sign, even be-

fore becoming a substratum of a sensory image, has its own external and internal form. The structure of the image, receiving a verbal embodiment, adapts to the structure of the language, intertwines with it and absorbs it.

The linguocultural code is a modeling system because it contains a structural analogy (model) of any area of being, revealing its internal laws and contributing to its comprehension. The linguocultural code is a regulatory system because it influences human behavior to some extent. Codes, woven into the verbal code, participate in the generative process.

E. Cassirer, the founder of the semiotic approach, calls man a symbolic animal (animal symbolicum), which uses religious rituals, artistic images, and linguistic forms to communicate with reality. Almost any cultural artifact can be considered a cultural code.

The cultural code allows you to establish a correspondence between the designated phenomenon and the meaning or content that is invested in it, that is, to decipher the inherent deep meanings of cultural phenomena. Secondly, the cultural code can be both verbal and non-verbal in nature.

The cultural code is a set of basic concepts, attitudes, values and norms. As an element of the human psyche, it is included in the structure of the mentality of a particular social community, and allows you to move from meaning (the generally recognized designation of an object or phenomenon) to meaning (an element of the language of a particular culture).

The cultural code, being based on the collective archetypal ideas of the people, makes it possible to reveal these ideas in various forms: myths, religious beliefs and traditions that have survived from the time of paganism and successfully entered Christianity, works of art. And the language, being a form of cultural code, embodies the cultural symbolic content of the essence of the mentality of the people.

Digital history

Digital history is a direction in historical science that uses modern software products, communication tools and the Internet to study the past and present historical research to the general public. On the one hand, digital history is a wide field of communication between scientists and society, including new educational courses in the digital environment and various forms of data representation. On the other hand, digital history is a method that allows you to use the capabilities of modern technologies to organize, process and analyze historical data. Using digital methods, scientists “digitize” the past, creating a framework for studying facts, social phenomena and processes.

The Digital History program is designed for:

• mastery of digital tools for presenting history in the public sphere

• acquisition of skills in the development and promotion of commercial historical and cultural projects

• use of digital technologies in scientific research

• application of digital technologies in education

The competitive advantage of graduates in the labor market is the possession of competencies related to working in a digital environment:

• use of digital technologies in scientific research

• web development basics using website builder

• design of presentation materials

• understanding the logic of programming languages

• the ability to draw up a task for technical specialists

• possession of tools for promoting historical and cultural projects

• creation of online courses

• use of digital technologies in scientific research

• web development basics using website builder

• design of presentation materials

• understanding the logic of programming languages

• the ability to draw up a task for technical specialists

• possession of tools for promoting historical and cultural projects

• creation of online courses

Profile disciplines:

• Historically oriented information resources

• Archives in the digital age

• Methodology of historical research

• Web-development in historical and cultural projects

• Public History

• Popular programming languages

• Soviet city: analogue and digital studies

• Geoinformation systems and geocoding in historical science

• Digital Humanities

• Practical marketing and crowdsourcing of historical projects

• Digital educational technologies

• Management of digital historical and cultural projects

• Museum in the digital age

Professional activity:

• Historical and cultural projects in museums, cultural institutions, NGOs, companies involved in museum projects

• Education (universities and schools): creation of online courses, digital competencies for schoolchildren and students

• Scientific research: postgraduate studies, work in universities and academic institutions

• Commercial sector: mapping, marketing, web designers, project work

Digital storytelling, 3D-printed elements and robot-created exhibits – digital technologies help museums accurately recreate the context of any era and any region. MuseumTech is still in its infancy, but exhibition organizers are already introducing new developments with which you can immerse yourself in the past

and better understand the present. Jan Wisinberg, partner and creative director of the Lorem Ipsum creative studio, spoke about museum innovations and their practical application.

MuseumTech: from storytelling to robotics

Fully analog museums are a thing of the past: even exhibitions in small towns use digital technologies, such as mobile guides and QR codes, while immersive projects are gaining popularity all over the world, including in Russia. In general, museum attendance is growing: only in Russia it increased by 1.7 times from 2012 to 2019. This is due not only to the expansion of museum collections, but also to the use of new technologies. Almost half of the Moscow and St. Petersburg museums are undergoing a digital transformation process, and another 43% are preparing a digitalization plan. At the same time, the majority plans to experiment with virtual reality and artificial intelligence.

Technology is becoming an auxiliary tool for the realization of the idea, but storytelling plays a key role in the 2020s. The development of a museum concept begins with the construction of a story that can engage the visitor both intellectually and emotionally. Museums analyze the behavior of the audience, its interests, habits and preferences in order to create interactive exhibitions and engaging content. To do this, projects involve UX designers and researchers, as well as communication and storytelling experts. And only after that the team determines which solutions to use to implement the plan.

We also applied this principle when working on the exhibition “Yamal. Warmth of the Arctic. At an early stage, the team collected a colossal amount of information, so they initially decided to divide the exposition into semantic chapters. To do this, we focused on individual objects and facts that best reflect the history of the region. For example, natural gas in a liquefied state takes up 600 times less space than ordinary gas – this fact can be reflected using visualization. We also determined the semantic core – the warmth of the Arctic. The concept of the exhibition was built around this paradoxical contrast: Yamal is

located in the far Arctic north, but at the same time it radiates warmth far beyond its geographical boundaries – both in a physical and metaphorical sense. This denominator, like a single line, connected all the chapters.

In the case of Yamal, we were faced with the task of showing different aspects of the region: on the one hand, its powerful transport infrastructure and developed oil and gas industry, and on the other hand, the harsh and wild Arctic nature, crafts and traditions of the peoples of the North. We placed most of the exhibits in the likeness of snow globes filled with imitation snow. Like time capsules, they store the conceptual modules of the 90-year history of the YNAO, which is why we chose this form factor.

To build complex semantic chains, museums turn to creative studios that are proficient in both digital technologies and narrative practices – together they create unique exhibits, write exhibition scripts and promote them. Experts from related disciplines are now also joining the work on museum projects: for example, the Peabody Museum in Essex has a neuroscientist on staff who studies the effect of visual stimuli on the human brain.

In recent years, the pool of specialists who work on expositions has expanded. The project involves researchers and screenwriters, architects and designers, conceptual artists and visualizers, industrial designers, constructors and 3D modeling specialists. The whole process is coordinated by the technical director, but the whole team selects the appropriate solutions.

The selection of technologies in the museum environment should be approached carefully. Fashionable and new developments do not always enrich the experience and often draw too much attention to the technological solution, rather than to the essence of the exhibition. Therefore, experts talk about the so-called technological agnosticism. The team first of all forms the message, determines the tone of the story and creates content.

And only then selects the appropriate technologies, for example, using robotics or using 3D printing – as an interactive element, as a means of producing

exhibits, or both at the same time. For example, artist Sugwen Chung creates paintings using robotic arms, which she independently develops and programs – before the pandemic, they even participated in her offline performances. But even in this case, it is important to consider how technologies correspond to the idea of the exposition, its purpose and content. The choice is also influenced by the genre of narration – after all, an exhibition, like a text, can be turned into a fascinating non-fiction or an action-packed detective story.

Museum halls in the digital age

New technological solutions affect not only the museum culture, but also the infrastructure. Thus, with the advent of video projections, museums began to choose more subdued lighting more often. And interactive sound installations have changed the approach to designing exhibition spaces – designers have begun to pay more attention to acoustics and zoning.

Interactive expositions have also changed the trajectory of moving around the museum: guests began to move more freely and independently build a route without relying on a guide. Moreover, it became possible to visit exhibitions remotely. So, in 2020, some museums conducted remote tours using teleconferencing robots. The visitor remotely controlled a movable module with a webcam, which allowed him to freely move around the halls and even interact with objects and personnel.

However, technology still cannot replace guides and curators, as they have unique experience and give the author's interpretation of facts and events. Therefore, today the visitor himself chooses the most comfortable format of interaction: it can be an autonomous acquaintance with the exhibition or immersion in the context with the help of a guide.

Sometimes immersive content literally leads a person through the halls of the museum – in this case, the visitor independently follows the prescribed route and engages in active learning. These immersive exhibitions have much in

common with a feature film or theatrical production, and the museum experience is more like an “audience session”.

Immersion technologies

• Immersive elements

Of course, new technologies enhance the effect of immersion. For example, audio augmented reality allows you to design soundscapes (soundscapes) that accurately recreate the atmosphere of a particular era or environment. Immersive elements help to form a more solid and voluminous picture of the world. This is especially important in the case of tragic pages of history, such as the Holocaust or repression.

Research proves that VR and AR solutions increase empathy: even in the aggressors, they cause a feeling of compassion for the victim. Augmented reality is often used in historical and ethnographic contexts, as these areas are saturated with collective memory, contradictions and resentment. The immersive AR format reflects different points of view and makes it possible to build not a linear, but a multidimensional narrative.

Audio and video broadcasts also help to create an immersive effect. Of course, for this it is not enough to put a powerful speaker and a standard projector. Museums use acoustic systems and panoramic screens that work in conjunction with 4K laser projectors – these are the devices we use at the Yamal. Warmth of the Arctic.

Immersive technology also allows stories to be told in the first person, creating a connection between eyewitnesses and museum visitors. An interesting example in museum practice is a series of interviews with Holocaust survivors conducted by the staff of the US Institute of Visual History and Education. Conversations were recorded on 23 cameras covering 360 degrees.

Using the received recordings, the authors of the project created realistic holograms of the characters. Visitors can not only listen to monologues, but also

ask questions to eyewitnesses: an AI-based system processes their requests and selects the most appropriate answer.

• Interactive

Interactive elements make it possible to immerse the audience in a certain ethnographic context and history: interacting with objects, visitors take the position of a researcher, not a passive observer. For example, how to show the speed and coverage of the transport network of the Northern Sea Route?

Touch panels, voice and tactile interfaces remove the barrier between the visitor and the exhibit. However, other technologies also cope with this task. For example, with the help of 3D printing, museums recreate objects and allow people to touch them. Unusual tactile artifacts are made by Factum Arte, which recently recreated an exact copy of Rafael Santi's grave using printed components. Thanks to realistic replicas, even people with visual impairments can get acquainted with the exhibits.

• New production technologies

3D printing technology has really simplified the process of creating museum exhibits – even the most complex and non-standard ones. So, for the exhibition “Yamal. The Warmth of the Arctic, the Lorem Ipsum studio team has created an ultra-realistic model of an arctic cloudberry. The miniature berries have been 3D printed and the leaves are airbrushed natural silk. In order for visitors to see the object better, optical experts have developed magnifying glasses. A model of deer antlers was also created on a 3D printer – the largest in Russia and Europe – they were painted by hand and supplemented with symbols of the indigenous peoples of Yamal.

Robotics is also used to create objects. So, for the exhibit “On the Tracks of Polar Bears”, our engineers used a KUKA robotic arm – the apparatus applied laser engraving to the surface of the ball.

Museums also involve experts in materials science in the development – and even invent new materials. For example, in order to achieve the effect of a

real snow globe, the Lorem Ipsum team has developed a special fraction of polyethylene foam, which, in combination with different types of impellers, creates a “fabulous snowstorm”. For each exhibit, the balls were created individually by hand, so it is impossible to find analogues on the market. By the way, one of the largest and heaviest objects of the exhibition weighs about 270 kg and combines original artistic and technological solutions. This ball shows the layers of underground rocks – they are made of transparent colored acrylic, glued with epoxy and CNC machined.

Artifacts are now created using a range of manufacturing technologies, so museums are turning to labs, workshops, and contract manufacturing facilities that include welding and paint shops, large-format printing, woodworking and milling, as well as 3D printers and assembly lines. An integral part of any project is a team of equipment integrators and distributors.

The MuseumTech market is growing every year, and the range of available solutions is constantly expanding due to the democratization of technologies – for example, AI, augmented reality and 3D printing are becoming more accessible. There are also developments for the museum "back office", for example, programs for digitizing archives and 3D restoration of objects.

The line between offline and online technologies is gradually blurring. Museums are also moving to new digital platforms: virtual tours or creative Instagram stories no longer surprise anyone. The next round of evolution is exhibitions in game universes. Gallery owners are creating interactive spaces in Fortnite, and major museums are sharing their masterpieces with Animal Crossing gamers. And this is just the beginning of a new trend.

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The key role in the formation of new museum products is played not by technologies, but by narrative practices – they also evolve and become more and more effective thanks to innovative solutions. Whether the museum is constructing new worlds or recreating a historical context, exhibition spaces are becoming more and more alive and interactive. All this allows you to immerse the visitor in the constructed context, and most importantly, to give him a new unique experience.

Digital ethnography

Digital ethnography, also known as virtual or mobile ethnography, is a branch of ethnography. It is a form of online ethnographic research that refers to a method of understanding behavioral and social patterns in the digital world. Digital or online communities also allow researchers to understand and study how people communicate with each other around the world through digital platforms. Virtual worlds on digital platforms are an example of cultural realities on the Internet. One worth exploring.

Digital ethnography is similar to traditional ethnography. The only difference is that the communities under study exist online and therefore the observations made are also online. Ethnographers take advantage of technologies such as the Internet and Internet-enabled devices to conduct research, gathering detailed information online about human needs, behaviors, perspectives, and experiences.

This type of ethnography is becoming more and more popular. It is not required that the researcher physically visit the site, as the communities being studied are online. Therefore, the study can be carried out remotely. Either from home or anywhere else in the world as long as you have an internet connection. In addition, it is a more convenient, less time-consuming and economical way to collect reliable data than traditional ethnography. It also proves to be safe, especially during a pandemic like the one we're going through right now. In the end, remote research will avoid the risk of transmitting the virus in person.

Carrying out digital ethnography

Participants are selected in the same way as is usually done in traditional ethnography. They can be selected by contacting them before the start of the study and then by using chain sampling. Alternatively, they may even use the services of a qualitative research recruiter.

Participants gather in a closed online space and receive tasks that are supposed to be completed daily. For example, participating in discussions and keeping an online journal, or recording video or audio to basically document your life, thoughts, and emotions. These tasks will show the researcher what they are doing instead of telling the researcher what they are doing.

There is a difference between what is done and what is said. Digital ethnography may also include observational chat rooms and online discussion groups. A successful digital ethnography can provide deep, unstructured information about a research group. The researcher then processes the texts and graphics on these virtual platforms to formulate a theory or draw unbiased conclusions.

Digital psychology and Digital sociology

Digital psychology is a branch of psychological science that considers a person in the context of interaction with modern means of communication, both individual and mass. Identifies and describes the main components of media cul-

ture, the psychological patterns of relations and behavior of people in media spaces, studies the phenomena and mechanisms of human perception of media culture, the interaction of the individual and the mass media in the modern culture of information and communication technologies.

Digital sociology is a new direction of scientific and practical activity for the world and Russian science, which consists of:

• in the analysis of the practices of human use of digital media (primarily social networks: Vkontakte, Facebook, Instagram, Odnoklassniki, etc.), as part of everyday life, as well as the socio-psychological consequences of these practices;

in the study of how various digital social technologies shape patterns of human behavior and social interaction;

• in studying the mutual influence of social processes occurring in the real and virtual (primarily in social networks) worlds.

In other words, digital sociology is a branch of sociology that is recognized to become a communication basis for the interpenetration of various methods of studying social media (linguosemantic methods, analysis of "big data", analysis of photo and video content, thematic modeling, sociological methods) in order to solve new urgent research problems. social development.

Topics of research activities within the framework of the scientific direction "Digital Sociology":

• social media and their impact on the dynamics of social processes;

• digital profile of a person and features of his behavior in the network;

• digital methods for obtaining primary social data;

• use of "big data" in the analysis of social processes;

• improving the methodology of sociological online surveys;

• social technologies in the digital space.

Digital law

Digital law is a field of law that includes several branches of law at once and regulates relations related to IT. There are no separate sections in the Belarusian legislation related only to the regulation of the digital environment, and these norms are dispersed under different laws. Digital law includes the regulation of relations in the field of IT projects, the publication of information on the network, blockchain, the processing of personal data, big data, artificial intelligence and other areas.

They intersect and complement each other, and ultimately the scope of digital law expands as digitalization enters new areas of our lives. In the field of digital law, the following sections can be conventionally distinguished: – Copyright for digital entities; – Software law; – The right of digital money; – The right of digital operations; – Law of digital disputes; – Law of software robots; – The right of digital public administration; – The right of digital government; – The right to access data and protection when accessing. Legislation relating to digital law is constantly evolving.

For example, in the Republic of Belarus, the active development of e-government and the creation of a “digital state” are being carried out, which will make it possible to more effectively solve problems in various fields. The solution of the tasks of forming an effective e-government and a single information space for the provision of electronic services based on the integration of information systems and the use of a single infrastructure will be carried out following the results of the implementation of the State Program for the Development of the Digital Economy and the Information Society for 2016-2020, approved by the Resolution of the Council of Ministers of the Republic of Belarus dated March 23, 2016 No. 235, at the next stage (2021-2025), during which the creation of a "digital state" is necessary.

To keep up with what is happening in the field of digital law, you need to regularly watch the news, read legal reviews and communicate with experts.

Why do you need to know digital law? Most people come across digital law in everyday life, but entering into a legal relationship in this environment usually takes place unconsciously, although it concerns many actions performed online and related to digital services. Increasingly, cybercrime, privacy-related offenses and other events are occurring as many services and capabilities go digital.

Well, if you are just a user, then you need to know the basic legislative norms in order, for example, to understand what information you can be held responsible for publishing on the network. Digital law is important for those who launch projects in the IT field, own websites, and provide any services in the digital environment. Faced with all this, many people think about turning to specialists who are competent specifically in the field of digital rights.

Many lawyers need to navigate digital law, as more and more legal relations are moving into the digital environment. To know the basic laws, concepts and practice of application in digital law is something that sooner or later can be useful to every lawyer.

Digital law is a dynamically expanding legal entity: today it covers, in particular, the issues of electronic payments, electronic and mobile money, electronic banking, consumer protection in payment markets, artificial intelligence, big data analytics, competition in the era of big data, block chain, crypto currencies, smart contracts, digital identity and authentication, privacy, competition law and intellectual property intersection, search engines. The digital rights of a citizen may be infringed by the state (for example, by law enforcement agencies), as well as the digital rights of a citizen may be infringed by a provider who has announced its readiness to provide digital services.

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