

INFORMATION TECHNOLOGIES IN SOCIAL RESEARCH

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Abstract. The article discusses the features of the use of network analysis in social science research. Basically, the apparatus of information technology is used by sociology and philosophy, which have accumulated experience in conducting empirical research and processing their results, taking into account the achievements of cognitive sciences. Studies of the dynamics of social groups in social networks, taking into account the age characteristics of young people, are especially relevant. The results of these studies are used in educational work.

Information technology has become a part of modern society [1]. Their influence on individual and social consciousness has become the subject of study of the social sciences [2]. Information technology resources are actively involved in traditional research methods. The subject of the study was the disproportionate dynamics of the communicative and normative parameters of social networks. This phenomenon arose as a result of the fact that technological determinism formed the information environment of human communication faster than the institutional basis of law and ethics on the Internet was formed [3].

The lack of an institutional foundation did not bother users, as they thought they had found a place where freedom was the highest value, where responsibility and long-term consequences were meaningless. Hackers, manipulators of individual and social consciousness, programmers, groups representing the shadow economy and political interests were influenced by mercantile temptations.

Being a member of a networked society deprives the bulk of Internet users of a sense of security. Therefore, in virtual communication, netiquette issues come to the fore, since many of the subtleties of communication are unfamiliar to users. The old features are added to the new features. They are associated with the inability of the communication participants to conduct a productive dialogue based on national values and identity. This can be seen in the example of the functioning of the forums.

They contain text, hypertext, graphics and video. The functioning of the forums is accompanied by over clocking. It structures the communica-

tion content of the feedback in the form of a response. The received text of the letter is fully cited. The answer is posted behind it. This allows the rest of the communication participants to understand the topic of the dialogue. The attitude towards over clocking is ambiguous in terms of the amount of citation by the user of the received letter.

Letters received by one user can be automatically sent within the inner circle of communication for constant information about each other's affairs and possible discussion of information. Flood in the form of messages that have no semantic load can be integrated into this constructive atmosphere of maintaining the information space. In this way, individual participants in communication attract attention to them and keep attention on them, which is one of the manifestations of egoism, inadequate self-esteem.

This is actively used by participants in network communication with pronounced narcissistic inclinations. A separate issue is the problem of their safety, since for the sake of constant attention to themselves they expose almost all information about their specific location, sources of income, material and financial expenses, close people through whom you can get additional information about them and use it to implement practical actions in for selfish purposes. One of the forms of attracting attention to oneself in the network communication space has become a flame (an argument for the sake of an argument). In order to keep the attention on himself, the communicator provokes a scandal, behaves unbalanced, and allows personal insults.

Network communication has actualized the phenomenon of computer addiction, one of the manifestations of which is group addiction, the right to belong to a certain group, within which the user delegates to the group moderator the right to dispose of this user. This phenomenon reflects the broader problem of totalitarian psychology. This problem manifested itself at the level of big politics within the ideology of ultra-right movements, at the level of the movement of religious sects and religious terrorist organizations.

Features of age identity play an important role in the actualization of the psychology of group dependence. Adolescents and young people are the main risk groups. An informal moderator can use their behavioral resource in the game genre of an extreme situation. The tendency of adolescents and young people to such submission is due to the lack of a sense of real danger. This is due to the fact that the rules of virtual games are transferred to physical space. It is quite difficult to identify the risk zones of young people because of the role duality inherent in their psyche. This

means that relationships with different groups of people are carried out through a set of images of communicative action. In relationships with parents, this is one model of self-actualization.

Adolescence contains high risks of deviant behavior, which is masked by the heroism of secret affairs. It is for this reason that adolescents and young people become participants in provocative actions. In addition to individual informal moderators, network subcultures and network communities play an important role in the realization of the phenomenon of psychological dependence.

Against the background of psychological defects existing in the individual and group consciousness, the problem of the relationship in the network space of psychology and ethics is urgent. Moral norms, even if they are postulated, like legal norms, are not always respected by participants in a communicative action, since these participants cannot control their behavior under the influence of external factors, informational influence. An ethics of software engineering has been developed for programmers. Corporate ethical standards are integrated into the mentality and identity of a particular people.

The effectiveness of the implementation of regulatory procedures is largely determined by culture models. The most favorable for ethics and law is a post-figurative culture, in which the authority of elders plays the main role. As a result, the experience of generations is not questioned. The principle of continuity and solidarity between generations operates. Bearers of knowledge and experience in the image of older generations determine the long-term perspective of social activity and communication.

Cofigurative culture is based on the modernity. Contemporaries are becoming the main teacher. Learning in the form of socialization is carried out through information exchange processes. A representative of any generation can become a teacher if he has mastered a specific skill of the modern lifestyle. In such a situation, institutional authority gives way to competence authority. Everyone learns from each other, regardless of age [4].

Prefigurative culture almost completely levels the authority of the older generations on the grounds that old age deprives people of intellectual mobility and efficiency in mastering technological practices. Risks of social conflicts between generations of people are formed.

To explore all of these features, social science research uses network analysis. At the origins of this methodology was J. L. Moreno and the method of sociometry developed by him which he practiced to study small social groups. At the first stage, network research was carried out by a small group of sociologists, psychologists and political scientists.

Two magazines were published: «Connections» and «Social Network». In 1978 the International Network for Social Network Analysis (INSNA) was established.

James Barnes in 1954 defined the social network as a space of communication, as the world of communication between an individual and friends who do not always know each other. They highlight special role of structural anthropology and sociology of small groups for the development of this research paradigm. A distinctive feature of the network approach is that the mathematical apparatus of graph theory has been applied in it. As a result, the network approach began to be based on the methods of discrete mathematics.

Network theory describes the strength of a node in a network through the quantity and quality of its connections. Connections and exchanges have increased the value of some nodes at the expense of the fall of others. Along with software for statistical processing of research data, additional computer programs specially adapted for network analysis became available. This contributed to the development of research.

It is necessary to highlight two irreducible concepts that are generic features of any network research [5]. These are the concepts of knot and connection. The nodes in society are social actors, who, depending on the level and objectives of the study, can be represented both in the form of separate individuals and in the form of formal organizations or informal groups. There are certain relationships or connections between nodes. The collection of nodes and connections between them form a network that structures social relationships. The units of network analysis can be both separate individuals and groups of individuals, organizations, countries. It can also be friendship, kinship, influence, economic relations.

The most important for applied research are relations or connections between nodes, since they characterize the place the role of a node in the network. The description of the structure of a social network by means of visualization, in particular, mapping, gives researchers an objective picture of social reality. We take into account such parameters as strength (number of interactions) and direction of connections (influence). Depending on the needs and accuracy of the study, critical parameters of the communication parameters are determined.

Since the nodes and the relations between them are the subject of study of the mathematical theory of graphs, the concepts of vertices and edges have become part of the network method. Any social network is a graph, a combination of a finite number of vertices and edges. Formalization promotes scientific rigor. Graphs act as collections of sets of nodes (vertices)

and links (edges) between them. In the specialized literature on discrete mathematics, the term «digraph» (organized graph) is used, which is a graph with directional influence, that is, one where some nodes exert a one-sided influence on others or experience mutual influence on each other. If the influence is in one direction, then this is indicated by an arrow in one direction, and if the influence is two-way, then this is indicated either by arrows in both directions, or by a line without arrows.

The most important characteristic of digraphs is reach ability, the fundamental possibility of getting from one vertex to another. Connectivity and reach ability are integral parts of the most important characteristics of any graph, social network. Graph connectivity is how well vertices are connected. The most important characteristic of a graph is its density. This parameter characterizes the graph in terms of whether the nodes are directly connected to each other. Therefore, the densest graph has the greatest possible connectivity. The graph can split into several tightly connected vertices. In this case, the density of the graph will be relatively high, but the connectivity will not.

Social networks tend to form highly connected groups within them. This is the effect of clustering. Once in such a cluster, an individual inevitably gets to know and makes connections with the rest of the network clan. This is due to the role of centrality. An important role in the social sciences is played by the concept of the intermediate centrality of mediation. The network subject is all the more central, the greater the number of subjects between which it is located, it controls.

Various classifications of networks can be made according to the basic characteristics of social networks. In accordance with the connectivity indicator, we can talk about three types of networks: unconnected; loosely connected; tied tightly. You can also distinguish three groups of networks: high density; medium density; low density. According to the criterion of centralization, social networks can be distinguished as centralized, multi polar (with several centers) and decentralized (without pronounced centers). Typically, social media tends to gravitate towards some form of centralization.

The classification of social networks depends not only on the configuration of their connections, but also on the probabilistic nature of the implementation of these connections. Networks consisting of links, the implementation of which does not have one hundred percent probability, operate in a different mode than deterministic networks. The use of methods for analyzing neural networks in the social sciences is based on the

practical application of some of the basic principles of the work of human thinking.

These are two kinds of neural networks. First, these are layered networks (feed forward networks). In them, neurons are arranged in layers. Each node of one layer is linked to the nodes of the next layer. Complete communication networks are distinguished, when all nodes of the neural network are connected to each other. Social networking services on the Internet resemble artificial neural networks. In this case, the participants act as neurons with autonomous memory and the ability to learn. However, social networks on the Internet, unlike artificial neural networks, cannot be classified into two of their types. In the first case, the principle of layers does not work, and in the second case, there is no connection of all nodes with each other with full communication neural networks.

The network approach takes into account the cultural foundations of the emerging solidarities. These are specific practices and rituals, political ideologies, cultural discourses and practices. Their significance and influence on the actions of individuals is studied.

The network theory is synthesized with a modified model of rational choice, which considers not only material resources, but also collective identities as potential stimuli for action. Integration into activist networks increases the possibility that an individual will value the activist's identity and choose to act in accordance with it. Interaction is expressed in the form of a frame and a network.

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