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ARTIFICIAL INTELLIGENCE IN THE CONTEXT OF NOOSPHERE STUDIES

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Abstract

The article analyzes consequences of the predicted convergence of artificial intelligence systems and telecommunications networks. The predicted convergence represents a qualitatively new level of convergence and interaction of high order. Artificial intelligence systems can influence behavior of transpersonal informational structures which can transform public consciousness. The analogy of global systems with neural networks is used. The best evidence is a neural network model of the noosphere. Its features are determined by fundamental properties of arbitrary neural networks. In the theory of neural networks, it has been proved that their memory is distributed, it is impossible to identify separate “memory cells”. The neural network can be likened to a hologram: each individual fragment restores the same wave front as a source of a worse quality. Based on this analogy, one can say that there is a certain amount of information that is inherent in all members of the community; it is on this basis that a completely objectified interpretation of the collective unconscious phenomenon can be given. The behavior of transpersonal informational structures is illustrated on a number of prototypes which are topologically equivalent to the neural Hopfield processor; for mathematical description of the global communication network, a simulation model is used. The conclusion about the existence of a global communication network, whose ultimate case is the noosphere, is important. Spontaneous” development of artificial intelligence systems (integrated with telecommunication networks), is associated with certain hazards. Thus, it is necessary to understand consequences of the development of artificial intelligence systems.

Keywords: Noosphere, artificial intelligence, sociocultural code, neural network, communication space.

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1. Introduction

Numerous studies performed by the researchers of the Crimean Federal University actualized provisions of the noosphere theory. The neosphere model, within which individuals are analogs of biological neurons, and the noosphere is an analogue of the brain, was developed. This model makes it possible to give a natural-scientific interpretation of such concepts as “social consciousness”, “mentality”, etc. It was established that social consciousness is a system property not reduced to the consciousness of individuals. However, the meaning of these concepts has not been revealed. Analysis of the noosphere (or its fragments, for example, ethnic groups) as an analogy of neural networks allows us to show that there is a transpersonal level of information processing, indirectly associated with the memory of individuals. At this level, the processes that determine peculiarities of mentality, a sociocultural code occur. This level of information processing generates public consciousness.

2. Problem Statement

The conclusions drawn in (Rimskij, 2009) are supported by simple illustrative models (Sulejmenov, Gabrielyan, Sedlakova, & Mun, 2018; Sulejmenov, Panchenko, & Gabrielyan, 2017). They consider the voting procedure (for example, during the thesis defense). It was shown that each member of the Council can be considered as an analogue of a neuron (when voting, he converts the array of information into a discrete variable: “For”, “Abstained”, “Against”). The decision made by each of the members is formed not only on the basis of an array of input information (for example, the dissertation report). In fact, the members of the Council influence each other: a good dissertation gets a “black ball” due to the fact that the author of the dissertation is a student of an opponent, etc. As a result, the Council members (provided that their mutual influence on each other exceeds a certain critical threshold) form an analogue of a neural network; the voting council scheme is topologically equivalent to the Hopfield neural processor scheme (Sulejmenov et al., 2018; Sulejmenov et al., 2017).

This means that the decision is made by the analogue of the neural network that the members form. In other words, there are situations in which collective effects prevail over aspirations of individuals: the communication environment subordinates users. When the analogs of neural networks become more complex, the effects increase.

In particular, the rapid development of the telecommunications industry caused the emergence of non-trivial man-machine systems, communities formed by users of social networks. These systems demonstrate a nontrivial behavior which is not reduced to the behavior of individual users (Gabrielyan, 2008; Byryak, 2011).

Regardless of simplicity of the model (Sulejmenov & Gabrielyan, 2018; Sulejmenov et al., 2017), the results make it necessary to revise the theory of social choice: it is necessary to take into account the structure of the existing relations between the voters.

Of course, it is not always possible to consider an individual by analogy with an individual neuron of the network. This analogy becomes valid only under certain conditions, in particular, when the behavior of an individual can be characterized by a set of discrete variables. In this case, the consumer behavior is described by binary variables, and their influence on each other is also pronounced. When buying a product,

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individuals take into account opinions of other people which shows that the system of potential buyers is topologically equivalent to the Hopfield neural processor. This influence is very significant due to the considerations expressed by J. Baudrillard. Namely, any use value of any product has two components. One of them is directly related to its functional purpose, and the other one is responsible for using the product to demonstrate the status of the owner (as cited in Suleimenov, Panchenko, & Gabrielyan, 2016).

However, these limitations are not significant. Indeed, if two people enter into a dialogue, information is exchanged between two individuals. However, this is the first approximation. In fact, there is an exchange of information between neurons that make up the brain of each interlocutor. It is possible to substantiate the existence of a special form of the neural network – a global communication network. Its features are determined by fundamental properties of neural networks. The theory of neural networks proved that their memory is distributed, it is impossible to identify separate "memory cells". The neural network is associated with a hologram: each individual fragment of the hologram restores the same wavefront as the original one with a degraded quality. Thus, there is a certain amount of information that is somehow inherent in all members of the community. Phenomena of collective unconscious can be interpreted on this basis.

3. Research Questions

The simulation model constructed according to the scheme illustrated in Figure 01 can be used for mathematical description of the global communication network. This model considers the neural network consisting of individual fragments. It is assumed that the density of connections between neurons localized within each fragment is high, and the density of connections between neurons belonging to different fragments is low.

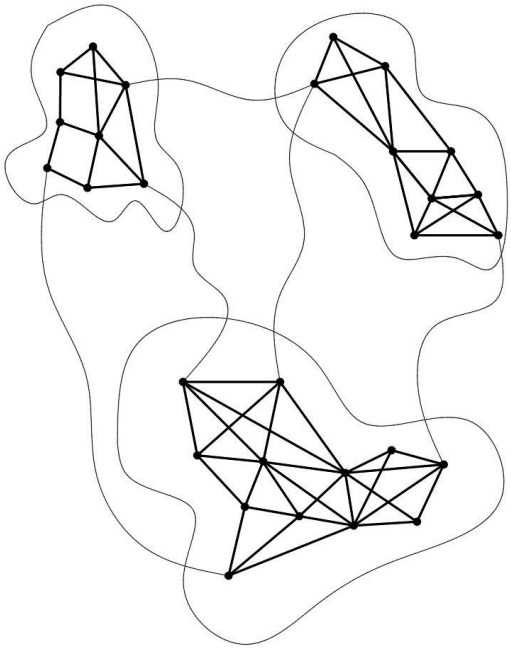

Figure 01. Diagram of the simulation model reflecting basic properties of the global communication network

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This model shows that there is information recorded in the global neural network. It is indirectly related to the information that is stored in the memory of individuals. Significant isolation of consciousness of each individual is determined by the fact that the density of connections between neurons within the brain significantly exceeds the density of connections between neurons localized in the cerebral cortex, but this does not reject the idea of a global communication network.

4. Purpose of the Study

The article analyses consequences of the predicted convergence of artificial intelligence systems, telecommunications systems and human society.

5. Research Methods

The conclusion about the existence of a global communication network, whose ultimate case is the noosphere, is important. It is well-known that the exchange of information between elements neurons of the human brain generates human consciousness. Is this informational entity unique?

This question requires a philosophical understanding of the nature of information (Sulejmenov & Grigor'ev, 2008). Human consciousness can be considered as an example of an informational entity that acquires non-trivial behavior and becomes independent. The relative independence of this entity does not require extensive evidence: it is well known that some neurons can die off, but this does not have a decisive influence (at least for some time) on the brain.

One can conclude that there are other informational entities in the global communication network. It can be illustrated using any scientific theory (any paradigm). It is distributed information. It has relative independence (its own developmental logic); supporters of this theory may die, but new ones continues to live, etc. (Suleimenov, Massalimova, Bakirov, & Gabrielyan, 2018). Any natural language which is a self-organizing system that develops according to its own laws, is indirectly associated with aspirations of individuals. The well-known expression “language speaks us” acquires a rather unexpected meaning.

There are a lot of such information objects. These include, inter alia, a sociocultural code which is an executable program recorded in the global communication network. The argument in favor of this conclusion is the existence of a dictatorship of the environment which often forces people to meet expectations of other people to the detriment of own interest.

We can draw the following conclusion directly related to the discussion (Bodrijar, 2008) of the Turing test, according to which intelligence is identified on the basis of comparison with human intelligence. Searle who formulated the concept of the “Chinese room” argued that the machine is able to pass the Turing test without even “knowing how” to think, not perceiving the semantics of the language.

If the nature of intelligence has not yet been disclosed, should artificial intelligence be close to the human one? “Can a car think?” “Is intelligence associated with human intelligence?”

This problem is not only philosophical. Creation of artificial intelligence systems will actualize any entities that reside in the global communication space. “Inhabitants” of the noosphere on may become part of everyday life. This follows from obvious considerations: in recent decades, there has been a clear convergence of computing systems and communication facilities (Viber, WhatsApp). In the near future,

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the convergence of artificial intelligence systems and the telecommunications industry will be possible. There are numerous applications based on neural networks that analyze information about specific users of social online networks (e.g., to improve efficiency of Internet advertisements.).

Improving artificial intelligence systems can reinforce these trends and integrate them with telecommunications networks. At present, these networks are closely integrated with society, whence it follows that artificial intelligence will inevitably get access to the transpersonal level of information processing. It can be argued that it will become an intermediary between informational entities residing in the noosphere (or its relatively independent fragments) and people (Figure 02). Their interaction will become much closer.

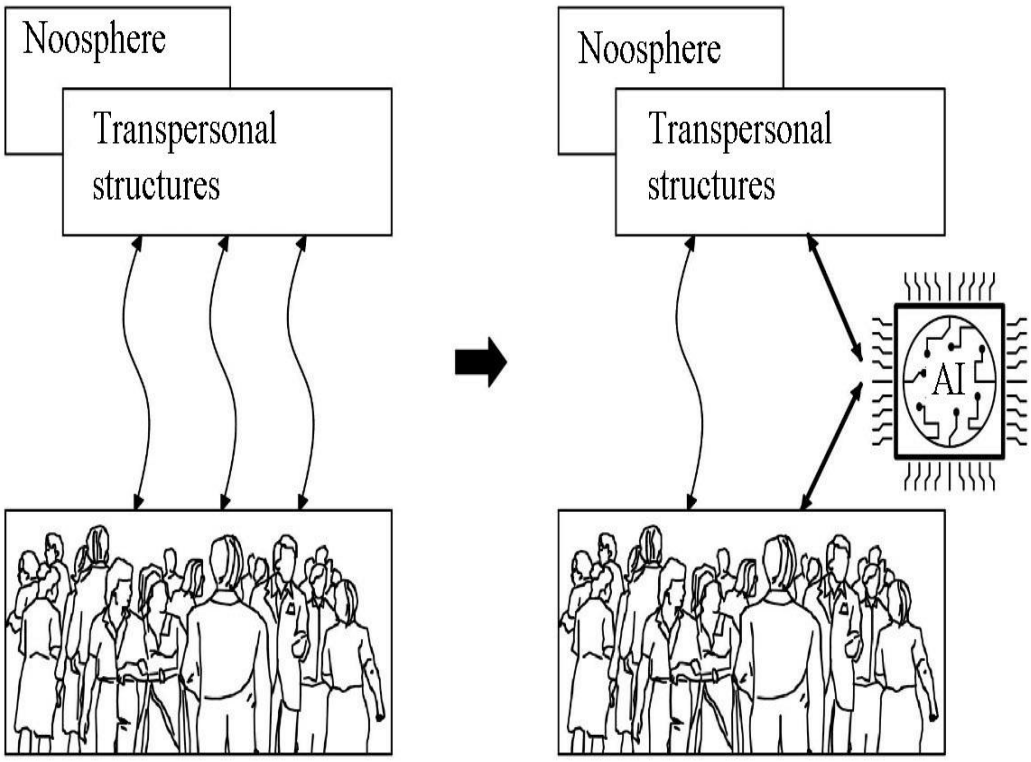

Figure 02. Artificial intelligence linked with transpersonal informational entities.

It is appropriate to emphasize that there are systems having the signs of "inhuman" intelligence (Smirnov, 2009) (e.g., the bureaucracy that has gone through several stages of self-organization, which allows us to consider administrative systems as uncontrollable to the User. The bureaucracy should be demonized (Sulejmenov, 2017). However, we cannot agree with Weber and his followers (Chen & Burgess, 2018; Weber, 1980) who consider the administrative apparatus as a software and hardware system whose algorithm is designed to ensure the most efficient performance of management functions.

The presence of parasitic (not provided for by job descriptions (Gorbacheva, 2014)) information transmission channels within the administrative apparatus initiates self-organization processes that generate the system whose true program code is unknown to the User (Smirnov, 2009). As the example given in (Sulejmenov et al., 2017; Gabrielyan, 2008; Byryak, 2011) shows, any administrative system is transformed

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into an analogue neural network which cannot be programmed. A vivid illustration is a “manual control mode” used by top managers solving problems that should be solved by lower-level managers. The resulting analogue of the neural network is similar to the instinct of self-preservation, nontrivial behavior, expressed in the obvious desire to expand its "element base", and other features similar to those possessed by modern systems of artificial intelligence.

6. Findings

While analyzing the interaction with transpersonal informational entities, one will inevitably have to face manifestations of inhuman intelligence (transpersonal informational entities have their features). If the obvious convergence of artificial intelligence systems and telecommunication networks is predicted, the current stage is a kind of bifurcation point: in the global communication space, the competition between “human” and “non-human” will be inevitable.

7. Conclusion

“Spontaneous” development of artificial intelligence systems (in particular, those integrated with telecommunication networks), is associated with certain hazards.

First of all, it is necessary to understand consequences of the development of artificial intelligence systems.

This will create a basis for the development of possible scenarios for the transformation of society in order to create artificial intelligence systems meeting social needs. It is necessary to take into account “interests of society” which are shifted towards scientific and technical competition.

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