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# The Phenomenon of Matter-Independent Knowledge Coding Principles

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**Abstract:** In this article, from the point of view of the theory of coding and information transfer, the existence of a new type of human interaction with knowledge is proved. This method is characterized by the fact that knowledge, thanks to consciousness, being in a digital code (in computers in the form of BIG DATA), have found a way to independently transfer from one material medium to another. Therefore, along with the usual coding, another phenomenon appeared - matter-independent data coding. This phenomenon is the result of natural selection - the competition of forms of information coding. It is important to mention that in the psyche (in phylogeny) there was no disappearance or replacement of forms of coding knowledge about the surrounding material world. It was the constant addition of new forms of knowledge coding. Every form of knowledge that encodes 3D, 2D or 1D can be transmitted to the human brain for processing (in its nerve tissue). The phenomenon of material reality surrounding a person has always been realized as a three-dimensional phenomenon. However, the model of the phenomenon in the human psyche and the three-dimensional nervous tissue of the brain can be three-dimensional, two-dimensional or one-dimensional. Hence, the coding of zero knowledge is a continuation of the previous forms. This zero coding consistently, persistently and not without success gets rid of the influence of the material medium. Finally, it became a form of coding knowledge, completely independent of the material carrier. For example, cloud technologies and electronic money are becoming a model for matter-independent coding of knowledge. Thus, the emergence of a matter-independent coding has led to the fact that the transfer and storage of digitized knowledge from the past to the future is no longer necessarily carried out with the participation of a person. The brain remains a model of the carrier of consciousness only in material-dependent coding.

**Keywords:** BIG DATA, Cloud Technologies, Knowledge Coding, Information Carrier, Knowledge, Matter, Matter-independent Phenomenon

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## 1. Introduction

There is a trend for creating computer viruses which is a negative side effect in digital technologies. The computer virus is usually a relatively small program code attached to the tail of a program running in the computer's RAM. It remains attached to the program forever. Now the computer program is a virus carrier to other computers. The virus is an example of another level of coding development. The virus is knowledge of a programmer-hacker and has a coded property

to protect itself from disappearing. Practically, the virus itself can move between computers from the past to the future without human participation.

Similarly, in cloud technologies, coded knowledge is kept and protected from disappearing. Therefore, it moves from the past to the future without a man. It is a paradox, but knowledge kept on paper, films, paintings on canvases can disappear forever if its material carrier disappears. Formally, it should be admitted that coded knowledge "on clouds" also has a material carrier in the form of hard drives on servers

and this is exactly the matter-independent type of coding making the storage of knowledge invulnerable and providing knowledge restoration on materials like paper or film.

The self-preservation of knowledge through matter-independent coding cannot be considered as a gift, according to V. I. Slobodchikov [1], which passes from the older generation to the younger according to the anthropological nature of man. The phenomenon of matter-independent coding of knowledge is a cybernetic phenomenon versus the concept of nobility which is the result of human consciousness.

However, it is wrong to assume that scientists, engineers, and technologists when creating intelligent robots provide them with a possibility to spread knowledge of their own will. Generally, it is another mistake to consider that progress in matter organization and intelligent robots could produce human consciousness.

The purpose of this work is to provide systematic and dialectical analysis information of the matter-independent principles of knowledge coding. The matter-independent principle of knowledge coding is the phenomenon of spreading knowledge by coding but without the participation of the usual material carriers. So, we are now at the border of research of the artificial and natural intelligence *intersection*.

## 2. Results: Approaches, Principles of Thoughts

*Psychological essence of the information.* In this work, we identify the concept of knowledge with the concept of information. At the same time, there is no single definition for “information” in computer science yet [2]. Professor A. Y. Friedland has recently proposed the most “anthropocentric” definition [3]. He showed the inconsistency of definitions based only on natural sciences. According to Friedland, information necessarily contains a psychological component, that is “meaning”. The second component is “data”. In the definition, the information contains a component that reflects not only matter but also psychology, that is the “soul” of a human.

With this interpretation, information (as a phenomenon of Nature) becomes an adequate and important definition of the function of human thinking, i.e. thinking as a meaning-forming mind process [4]. As thinking has the property of forming new information when a man develops the function for the future object and the goal of the performed action.

Along with the parameters of physical bodies, the human mind adds a semantic component as a sign to the physics of the physical body. A physical phenomenon, reflected in the brain, becomes the carrier of meaning. In case of adding to the information about the parameters of physical bodies the information about the anthropological function of the body (for example, the purpose of actions with it), then it cannot be considered as simple filtering of information coming from outside of the world.

More correctly, this phenomenon should be considered as

a “curvature” of the information flow by a certain prism. The prism does not only filter but also adds information about itself to the flow.

As a result, A. Y. Friedland analyzed the existing definitions of information proposed earlier in physics (A. Migdal, D. Ursul), in cybernetics (A. P. Ershov, V. M. Glushkov), in philosophy (K. K. Colin) and concluded that it is necessary to introduce the “meaning” component into the definition [5-9].

## 3. Coding Information in the Brain

In connection with this definition of information, there is the question about the mechanisms of coding and storing the meaning of knowledge in the brain. The authors [10-12] considered the possibility of memorizing the meaning of knowledge in the brain based on the matter-dependent principle of its coding with a certain channel number.

In both interlocutors, the brain accepts approximately the same topological structure of signal processing channels. Conventionally, the first person can be considered as a transmitter of the event and in his brain, the  $D_a$  detector was activated. The second person who received this message through the word is the receiver of this event. Therefore, in the second person's brain the similar neuron detector  $D_a$  will be activated in a similar place. Thus, one interlocutor learns what semantic event (from the set of  $\Sigma D$ ) occurred or was reflected in the brain of the other interlocutor. That happens without presenting the second person with a sensory stimulus. In this case, the first person can send a stimulus in the form of a word (in oral form). The heard word provides the same excitation effect in the sensory cortex of the same detector for both.

*Categorization of knowledge.* The knowledge that man operates should be divided into two categories. The first category when the previous generation obtains and transfers to the next one:

- a) knowledge in the form of laws of physics, chemistry, mathematics, biology, medicine, and astronomy discovered by man;
- b) knowledge about the culture of people, history, morality, and ethics;
- c) religious, philosophical, and genealogical knowledge.

The second category is the knowledge that today forms the basis of a common competent approach to learning, which is far from adequate to learning the first category of knowledge. This knowledge is only needed to make a career, build a family, provide recreation and entertainment during a life. It is needed only during the period of life and therefore there is no transfer to descendants (or society as a whole).

In this paper, the phenomenon of matter-independent coding is considered in relation only to the case of developing knowledge, i.e. knowledge of the first category. We do not consider the knowledge of the second category within the appearance of the matter-independent coding phenomenon.

*Psychophysical coding of information.* The knowledge in

human phylogenesis obtained from life experience is passed from generation to generation. At first, before drawing and writing, knowledge was coded in the mind and external media three-dimensionally [18]. With the advent of drawing, knowledge began to be coded (for transfer) not only in three-dimensional but also in the two-dimensional space of matter. The matter behind and in front of the drawing has stopped to code information about the meaning of knowledge in the drawing. Consequently, the matter-independence of such coding has increased by a step.

Further, with the advent of writing (in terms of the dimension of the material medium), the form of knowledge coding in the human brain (and on an external medium) left only the horizontal arrangement of the medium important. Linear coding of knowledge with signs appeared. The matter located above and below the line stops to be a carrier of knowledge in this form of coding [17, 21]. This form of knowledge coding by the human psyche is considered one-dimensional in the space of the material carrier.

## 4. About the BIG DATA Technologies

Today, with the advent of cloud and BIG DATA technologies, it is time to code knowledge in a zero-dimensional space (without a material carrier). At the same time, zero-dimensionality means that the location of knowledge on the material carrier is independent of the nature of the carrier. Before considering this zero-dimensional form of coding, let's consider why the analysis should link the dimension of the material carrier space with the dimension of the code.

In psychophysiology, there is a hypothesis about spatial (in the human brain) coding of external objects which is a discovery of a neural mechanism of coding a signal by the channel number (coding by place) [13-15]. The mechanism of the coding is associated with the stimulation of local groups of neurons in certain (specific) physical places of the human brain. The location of the neuron in the space of the sensory and motor cortex of the brain codes the specifics of the stored information.

The old forms of knowledge coding in the human brain for transfer from generation to generation combined with new ones less dependent on the matter (as a “mandatory” substrate for transferring knowledge from the past to the future). Therefore, cloud technologies and BIG DATA can be considered as a part of the natural selection of knowledge coding forms. It is the ideal form in which matter does not influence the survival of knowledge.

*Information coding models.* So, it is legitimate to conclude that in the psyche (in phylogenesis) there was no extinction or replacement of forms of knowledge coding about the surrounding material world. This was the constant addition of new forms of knowledge coding [16]. The 3D knowledge coding is reflected in the brain (in the space of neurons) in the form of the 3D figures of three-dimensional events around a person. Then the 2D knowledge coding appeared in the human psyche. Then the 1D form of knowledge coding

was defined.

Each form of knowledge coding 3D, 2D, or 1D can pass to the human brain for processing (in its neural tissue). The phenomenon of the material reality surrounding the human has been always realized in Nature as a 3D phenomenon. However, the model of the phenomenon in the human psyche and the 3D neural tissue of the brain could be either three- or two- or one-dimensional.

Therefore, zero-dimensional knowledge coding is a continuation of previous forms. This zero-dimensional coding consistently, persistently, and not without success gets rid of the influence of the material carrier. It has finally become a form of knowledge coding that is completely independent of the material carrier.

## 5. Conclusion

The concept of knowledge can be identified with the concept of information. The information contains a psychological component, that is “meaning”. The second component is “data”. With this definition, the information contains a component that reflects not only matter, but also human psychology. It is clear that with this interpretation, information (as a phenomenon of Nature) becomes an adequate and important definition of the function of human thinking, thinking as a meaning-forming brain process.

Today, in cloud technologies, knowledge coding has reached a level where this knowledge is protected from disappearing. Therefore, it is transferred from the past to the future, regardless of the will of man. Of course, it should be admitted that knowledge coded “in the cloud” also has a material carrier in the form of magnetic terabyte disks of servers. But the trick of the new matter-independent type of knowledge coding is to make the storage of this knowledge invulnerable (by replicating the same knowledge on a set of mutually remote servers).

The phenomenon of matter-independent knowledge coding cannot be considered as a great technique of a man when promoting their knowledge as a product on the market, or when providing information services. This phenomenon cannot be considered as an epistemological regularity of human consciousness development, as a pedagogical passion of a man to transfer knowledge to descendants. In the phenomenon of matter-independent coding, it is not man and his consciousness that is “guilty”, but knowledge itself, as another substance of Nature that was able to remove man from the process of preserving himself.

The self-preservation of knowledge by matter-independent coding cannot be considered as a gift [1], which the older generation transfers to the younger one, according to the anthropological nature of the man. The phenomenon of matter-independent knowledge coding is cybernetic, while the concept of nobility is created and formed by the human mind.

A new round in the dissemination of knowledge and the emergence of its freedom from the material carrier cannot be interpreted as the appearance of certain information robots

with artificial intelligence [19, 20]. The dissemination of knowledge without the participation of a material carrier is evidence of the discovery of a new, previously unknown principle of coding, digitizing itself, a principle that facilitates the transfer of knowledge from the past to the future in comparison with the already known. This is the evidence of the presence of another natural selection in Nature, the principles of information coding.

The knowledge that man operates should be divided into two categories. The first category when the previous generation obtains and transfers to the next one:

- a) knowledge in the form of laws of physics, chemistry, mathematics, biology, medicine, and astronomy discovered by man;
- b) knowledge about the culture of people, history, morality, and ethics;
- c) religious, philosophical, and genealogical knowledge.

The second category is the knowledge that today forms the basis of a common competent approach to learning, which is far from adequate to learning the first category of knowledge. This knowledge is only needed to make a career, build a family, provide recreation and entertainment during a life. It is needed only during the period of life and therefore there is no transfer to descendants (or society as a whole).

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