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The Relationship Between Law and Neuroscience

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Abstract: The article examines one of the possibilities of naturalization of law using the results of research in the field of neuroscience.

Keywords: naturalization of law, law and neuroscience, neuroscience in law, free will, motivation, possibilities of neuroscience.

Recently, there has been a great deal of interest in projects devoted to the naturalization of law. The very concept of "naturalization of law" is quite ambiguous. Without going into its possible definitions, in this article, by the concept of "naturalization of law" we will mean the use of research results from such sciences as sociology, psychology or neurobiology in law. The most far-reaching attempts to naturalize law consist in constructing a model of law based on the achievements of empirical sciences. In this text, we will focus on one of the possibilities for naturalizing law using neuroscience. By the term neuroscience we mean interdisciplinary scientific research into the nervous system; it is a science that combines research results in many fields, including biology, medicine, biochemistry, biophysics, cognitive science, philosophy and psychology. First of all, it should be noted that neuroscience is becoming increasingly popular among legal practitioners and theorists, since its methods allow us to study very complex brain processes using relatively simple techniques. The increasing interest in the use of neuroscience (especially cognitive and behavioral neuroscience) is mainly due to the increased availability and sensitivity of neuroimaging methods, such as functional magnetic resonance imaging (hereinafter referred to as FMRI), positron emission tomography (hereinafter referred to as PET), and single-photon emission computed tomography (hereinafter referred to as SPECT). Not surprisingly, the popularity of neuroscience research has led to the emergence of new sciences, such as neurocommunication, neuromarketing, and even neurolaw. [1]

From a legal point of view, there are undoubtedly several very important questions , the scientific explanation of which will not only affect the development of legal research, but will also allow us to adapt existing legal models to the nature and essence of man, to the way his brain functions. Research work at the intersection of neuroscience and law can be divided into two main areas. The first is focused on the problems that underlie law. Such issues include, among other things, research on free will, responsibility, and motivational processes. Resolving these problems

may lead to the need to change the entire legal system. The second area concerns tasks limited to only a certain area of law. In other words, the results of this work find application in a certain fragment of legal reality, in particular, these include the following studies:

— subjective states, such as pain, memory, or truthfulness;

— the trial process, in particular the evaluation of evidence (e.g. witness testimony), and the decision-making process of judges;

— juvenile delinquency;

— in the field of drug addiction and mental illness [2].

Taking into account these examples, it is obvious that the results of the studies of the second group, interesting and informative, will not have a significant impact on the solution of key legal issues. A more interesting possibility is to use the empirical data from the studies related to the first group to create an adequate model of law. Is this possible? We believe that this is not feasible in the near future, and forecasts about the imminent emergence (or even existence) of neurolaw can be interpreted as promising and promising directions for further research. Note that the real points of intersection of law and neuroscience do not yet coincide with the promises and declarations of experts in this field. As a result, many studies declared as important and revolutionary for law remain legally irrelevant. In order to demonstrate this, we will now present the most significant achievements in the field of neuroscience that concern issues essential to law, i.e., problems of free will, emotions and motivations. But first, let us make two necessary remarks. First, we will focus only on the problems of free will, emotions and motivations, since it is simply impossible to present the results of all significant studies in this essay; in addition, the problems under consideration occupy a particularly important place in jurisprudence. Second, although the study of the above factors influencing behavior is of colossal importance for legal science, we are still sure that it is not the only one. The study of behavior, undoubtedly remains only one of many areas of legal science. Therefore, we in no way try to reduce the subject of legal research to the behavioral component, but want to show how relevant the point of view on these problems accepted in neuroscience is in relation to the subject of jurisprudence.

Research on the existence of free will is also conducted from another point of view. Scientists conduct experiments aimed at determining what influence our behavior has on whether we believe in free will or not.

From a legal point of view, the results of these studies may be of particular significance. They show that belief in free will leads to us being able to control our behavior more easily. For example, R. Baumeister's research showed that workers who believed in the existence of free will were characterized by greater efficiency and dedication at work [3]. People who believe in determinism are more prone to cheating — these are the conclusions reached by A. Brown and T. Lewis, who conducted an experiment in which two groups of subjects read different texts before completing mathematical problems. The first text was about how our behavior is the result of genetic and environmental factors and that we cannot control it, i.e. it represented a deterministic point of view. The second described various factors that influence our behavior, i.e. it was neutral. Before the participants started solving the problems, they were informed that due to a program error, the solutions were displayed on the screen, and the participants had to turn it off as quickly as possible without looking. It turned out that people who read the first text, while solving the problems, much more often used the answer they saw, i.e. they cheated much more often [4].

True, it should be recognized that the use of neuroscience significantly expands experimental possibilities, opening up a broad horizon for scientists to further study the correlation

between the activity of our brain at the neural level and our behavior and experiences. However, taking into account even the data presented above, concerning specific issues, we believe that we are at the very beginning of a long journey to understanding the principles of our brain functioning. Nevertheless, evaluating the results of work in the field of neuroscience, it is worth paying attention to the fact that neuroscience has some limitations that need to be taken into account in further research.

Firstly, the comprehensive and complex organization of the brain, as well as the heterogeneity of the structure and function of the studied
brain areas, are often not taken into account.

Secondly, in most of the experiments conducted, the experimental
tasks greatly simplify the complex reality of the issues under study.
However, using the example of the works presented above, for example, those related to free will, we can note that the tasks performed
by the subjects are very simple; moreover, most often they are significantly limited by time, i.e. they must make a decision in a very short time. Consequently, the conclusions formulated on the basis of the results
of such experiments often seem premature, and in some cases even exaggerated.

Thirdly, the reliability of the results of such studies is often
disputed for methodological reasons. In works in the field of neuroscience, scientists quite often use the method of introspection, which can be unreliable and problematic.

Regardless of the above limitations and difficulties that neuroscience faces, its use in law remains an extremely interesting prospect. Research in this area has the potential to fundamentally change the approach to law. In addition, neuroscience can find application in many areas of law, for example, in criminology. The main hope for the application of neuroscience in law is associated with the possibility of creating an adequate model of human behavior, i.e., determining the influence of these factors on our behavior and their significance. In the future, on the basis of such a model, it will be possible to establish such norms that will effectively and fairly influence people's behavior.

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