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A Combinatorial Approach to Determining the Place of Psychology in The Classification of Sciences

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Abstract: This article explores the modern classification of sciences, the central role of psychology in the system of scientific knowledge, and the interaction between psychology and other disciplines. The methodology for identifying psychology's place in the classification of sciences using basic combinatorial arguments is presented.

Keywords: Classification of sciences, psychology, triangle of sciences, epistemology, combinatorial argument.

Introduction: In the modern era, the broad fields that make up the entire system of sciences have been conditionally divided into three major groups: natural sciences, social sciences, and technical sciences. Each of these groups differs in subject matter and methods. At the same time, they do not operate in isolation; instead, they actively interact with each other, and some fields occupy an intermediate position between the groups.

Modern natural sciences are divided into mechanics, physics, chemistry, biology, and geology based on their subject matter and epistemological methods. Social sciences are classified into the humanities and social sciences (history, philosophy, sociology, economic theory, political science, etc.).

Aim. To examine the modern classification of sciences, the main role of psychology in the system of scientific knowledge, and its interaction with other sciences, as well as to present a method for identifying psychology's place in this classification using basic combinatorial arguments.

Research Tasks. Psychology only secured its place within the system of sciences at the end of the 19th century. This development is based on objective reality, as psychology represents one of the fundamental aspects of cognition.

Today, the classification of sciences proposed by Russian philosopher and science methodologist B. M. Kedrov is considered to be the most relevant. He distinguishes two primary scientific objects: nature (organic and inorganic) and humans (human society and consciousness). Based on the unique features of these objects, natural and humanitarian sciences are distinguished; the latter are further divided into social and philosophical sciences. Thus, B. M. Kedrov identified three main branches of scientific knowledge, each representing a complex of disciplines [1].

This classification is nonlinear in nature and is presented in the form of a "triangle of sciences," reflecting multidimensional relationships based on the proximity of the disciplines to each other (Figure 1).

Figure 1. B.M. Kedrov's classification of sciences

The relationships between sciences follow these principles:

The principle of progression from lower to higher levels of development;

The principle of objectivity, since sciences and their research subjects are interconnected and should be placed accordingly;

The principle of scientific development governed by the internal laws of science and knowledge evolution.

According to Kedrov's classification, psychology has close links with many disciplines, occupying a central position not only as a product of these sciences but also as a potential explanatory source for their development. Psychology's position is due to the closeness of its subject and methods to those of other sciences, with its orientation depending on specific tasks, aligning with one side of the triangle.

B. M. Kedrov emphasizes that psychology is located closer to philosophical sciences within the triangle, rather than symmetrically across its edges. For example, thinking is a subject not only of psychology but also of dialectics and logic.

According to B. F. Lomov, the main role of psychology in the system of scientific knowledge lies in its ability to synthesize achievements from other fields and serve as an integrator of sciences whose research object is the human being. He proposed that psychology's interaction with other sciences occurs through its various branches:

With social sciences – through social psychology;

With natural sciences – through psychophysics, comparative psychology, and psychophysiology;

With medical sciences – through pathopsychology, medical psychology, neuropsychology, and psychopharmacology

With pedagogical sciences – through developmental, educational, and special psychology;

With technical sciences – through engineering psychology [2].

Research Methodology and Methods.

At different historical stages, the classification of sciences and the place of psychology within it have been determined by the level of development of psychological knowledge and philosophy as the methodology of science. It is noteworthy that no other field of knowledge has changed its position within the system of sciences as frequently as psychology throughout the history of society's intellectual development.

The issue of psychology's position in the system of sciences was given special attention by the methodologist Mario Augusto Bunge. He concluded that over the past century, the relationship between social sciences and biology has evolved, giving rise to a new "overlapping domain" which led to the emergence of sociobiology. Therefore, the current interaction between these disciplines can be illustrated using a two-dimensional scheme (Figure 2).

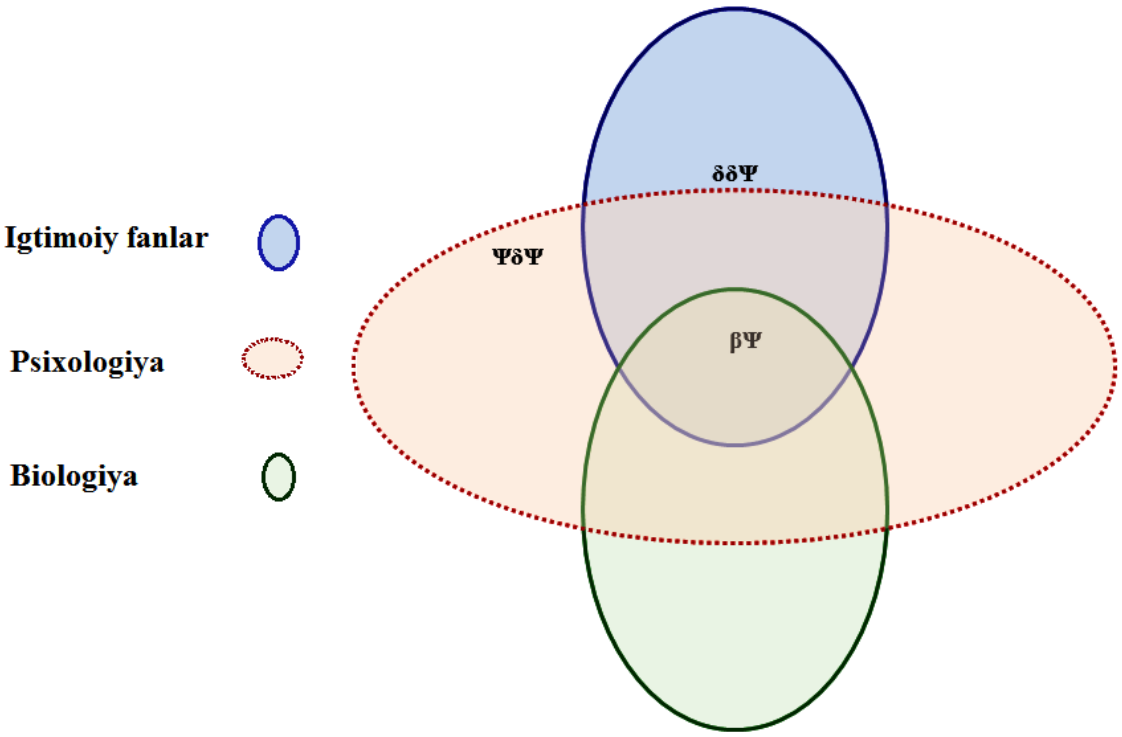

Figure 2. The Position of Psychology in the System of Sciences: βψ – biopsychology;

Ψδψ – psychological social psychology (physiological social psychology); δδψ – sociological social psychology.

The place of psychology among other sciences is undoubtedly linked to the principles underlying their systematization. If psychology is not classified among the sciences that constitute the system, it becomes "mixed in" or occupies a space between them. M. Bunge's model confirms the independent status of psychology by illustrating its connections with biology and social sciences [3].

Thus, the key conclusion reached in recent studies by methodologists is that psychology has gained the status of an independent fundamental science, possessing diverse connections with other areas of scientific knowledge.

In our view, the problem of classifying sciences should be approached from a physical point of view. Today, we believe it is necessary to address this issue based on a new epistemological theory derived from general physical concepts and the foundational principles of general psychology.

Since the main aim is to offer a solution to the problem of scientific classification, it is necessary to briefly, schematically address the concept of epistemology.

To conceptualize the structure of the process of understanding the surrounding reality, we base it on the connection between the process of cognition and the natural sequence of numbers from one to five.

If we equate the number one to the process of cognition, then the number two corresponds to the methods of cognition, since there are only two methods for understanding the surrounding world:

1) Empirical
2) Theoretical

The number three corresponds to epistemological approaches, as there are three generally significant methods of understanding:

1) Scientific
2) Religious
3) Intuitive

We associate the number four with the levels of cognition, based on the existence of at least four levels:

1) Physical
2) Psychological
3) Informational (mental)
4) Absolute

The number five matches the foundations of epistemology, as there are exactly five conditions required to create a complete system of cognition:

1) Consistency
2) Principle of correspondence (proportionality)
3) Completeness
4) Accuracy
5) Principle of bilateral compatibility

Initially, we aim to determine, within a general framework, the possible types of empirical and theoretical cognition and the forms of cognition that arise from them. Based on the epistemological definitions presented above, this can be done easily: the cognitive process occurs across four levels, using three methods, and in two ways. Using basic combinatorial arguments, we conclude that there are 24 possible types of cognition ($n = 2 \times 3 \times 4 = 24$), which correspond to the same number of purely theoretical and empirical forms of cognition (Table 1).

Table 1

Types and Forms of Cognition

T/r	Type of cognition	Form of cognition
1	Scientific-empirical knowledge of physical reality	Empirical sciences about matter
2	Scientific-theoretical knowledge of physical reality	Theoretical knowledge about matter
3	Scientific-empirical knowledge of psychological reality	Empirical sciences about psychology
4	Scientific-theoretical knowledge of psychological reality	Theoretical sciences about psychology

5	Scientific-empirical knowledge of spiritual reality	Empirical sciences about information
6	Scientific-theoretical knowledge of spiritual reality	Theoretical sciences about information
7	Religious-empirical knowledge of physical reality	Empirical creationism
8	Religious-theoretical knowledge of physical reality	Theoretical creationism
9	Religious-empirical knowledge of psychological reality	Mysticism
10	Religious-theoretical knowledge of psychological reality	Existentialism
11	Religious-empirical knowledge of spiritual reality	Spiritual practice
12	Religious-theoretical knowledge of spiritual reality	Religious philosophy
13	Intuitive-empirical knowledge of physical reality	Natural philosophy
14	Intuitive-theoretical knowledge of physical reality	Metaphysics
15	Intuitive-empirical knowledge of psychological reality	Art
16	Intuitive-theoretical knowledge of psychological reality	Literature
17	Intuitive-empirical knowledge of spiritual reality	Music
18	Intuitive-theoretical knowledge of spiritual reality	Fantasy
19	Scientific-empirical knowledge of absolute reality	The impossible
20	Scientific-theoretical knowledge of absolute reality	The impossible
21	Religious-theoretical knowledge of absolute reality	True faith (religion, belief)
22	Intuitive-theoretical knowledge of absolute reality	True knowledge
23	Religious-empirical knowledge of absolute reality	Fulfilled covenant
24	Intuitive-empirical knowledge of absolute reality	Revelation (divine discovery)

DISCUSSION

In the above, when discussing levels of cognition, the phrase "at least" was used. This implies that there are more than four levels of cognition, but all of them are derived from these four. To understand this, it is necessary to refer to the question of the origin of the levels of cognition.

All four levels of cognition are interconnected, and two

types of linkage can be observed:

1. Descending – "absolute ↔ informational ↔ psychological ↔ physical".

2. Ascending – "physical ↔ psychological ↔ informational ↔ absolute".

For clarity, we refer to the first linkage as prosperity and the second as evolutionism.

CONCLUSION

Based on the research results, the following conclusions were drawn:

1. In determining the place of psychology within the system of sciences, it serves not only as a multifaceted tool—classifying scientific knowledge, identifying the subject and problem fields of science, establishing interdisciplinary connections, and determining the main trends of development—but also as one of the methods of scientific reflection.

2. The views of psychologists and philosophers from the second half of the 19th century to the early 20th century regarding the position of psychology in the system of scientific knowledge were largely dependent on classification schemes. These schemes not only determined the specific features of the formation of psychology but also defined its status as an independent science and influenced its further development.

3. T. Whittaker's classification of sciences demonstrates the possibility of preserving psychology within the general system of scientific knowledge by dividing it into separate branches. Furthermore, our research has shown that the leading role in creating a periodic classification of sciences belongs not to B.M. Kedrov or J. Piaget, but to T. Whittaker.

4. Many well-known philosophers attempted to resolve the problem of classifying sciences. Among them, we highlighted the most significant ones. However, none of them managed to solve this problem convincingly. The core issue is that this problem cannot be resolved within the framework of philosophy alone.

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