THE ROLE OF THE CATEGORY OF STRUCTURE IN THE GESTRUCTURAL PARADIGM IN PHYSICAL GEOGRAPHY

https://doi.org/10.5281/zenodo.14549109

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Abstract: *The article comprehensively analyzes the paradigms of physical geography, including the geostructural paradigm. In this paradigm, the role of the category of structure is viewed from a scientific point of view. Particular attention is paid to the tree-like structure of small deltas of the modern Amu Darya delta. In addition, the structures of the uplands and sandy massifs of the modern Amu Darya delta are considered.*

Key words*: category, paradigm, element, structure, tree form, small delta, hills, sand massif, relationship, relationship.*

V.N. Solntsev, having analyzed the theoretical natural geographical scientific ideas of the XXIII International Geographical Congress, which have different concepts, first reported that there are four natural geographical paradigms in the science of natural geography at the present time. These include the following paradigms: 1. Geocomponent; 2. Geocomplex; 3. Ecological; 4. Geostructural.

Scientific research encompasses a large number of separate ideas and views, which are grouped into specific concepts and methods. As a result, they are united by a common theory and methodology. However, despite the significant differences in some theories and methods, they can be combined according to the commonality of their similar logical-philosophical foundations and methodological guidelines. To describe the “uniform unity of theories” of a similar general nature, the American scientist T. Kuhn (1977) proposes the concept of “paradigm” [1].

T. Kun understood a paradigm as a scientific theory that serves as a model for posing and solving a scientific problem for the scientific community during a certain period and is recognized by many. According to the scientist, the exchange of paradigms leads to scientific revolutions, that is, the paradigm ensures the unity of the scientific community. The scientific community consists of scientists who recognize a certain paradigm. The concept of a paradigm includes not only the scientific theory itself, but also the methods of collecting evidence, their classification, conclusions for personal and general scientific goals, that is, the methodology of all knowledge. At the same time, a scientist who is a supporter of one paradigm also pays special attention to the stage of applying the achievements of science in practice when using a certain theory and method. In a word, by paradigm we understand a specific organization of a whole scientific activity. That is why P. Hoggett and R. Chorley define a paradigm as a “solid scheme of scientific activity.” In short,

a paradigm is a concept and principle that is accepted as a model for solving scientific problems in modern sciences based on the theoretical-methodological and value system of science and approved by the scientific community.

If we consider one of the paradigms, the geostructural paradigm, then in terms of its development history it is considered much younger than other paradigms. The emergence of this paradigm is associated with the emergence of the concept of geosystem in the science of natural geography. According to some scientists, it is appropriate to call this paradigm a geosystem paradigm. However, V.S. Preobrazhensky concludes that since the main attention within this paradigm is focused on the study of structure, it is appropriate to call it a structural paradigm, that is, this paradigm proves that the object is a system by studying its structure. This paradigm is also supported by A.Y. Reteyum, K.N. Dyakonov, V.N. Solntsev and other researchers.

Since the main attention in the geostructural paradigm is focused on the study of the structure of the geosystem, we will first of all dwell on the concept of geosystem. According to V.B. Sochava, the geosystem is “a whole consisting of interacting components of nature, subject to the current laws of the geographical shell or landscape sphere”. Since the emergence of the geostructural paradigm is associated with the doctrine of the geosystem, the recognition of this doctrine is a requirement of the time, or in the words of V.B. Sochava, “The recognition of the doctrine of the geosystem, which forms the basis of modern natural geography, should not cause anyone any doubts or hesitation, it is in a position to satisfy the further development of our science”. To understand the essence of the geosystem, we need to clearly understand the initial conditions of the geostructural paradigm. This process is carried out by understanding the integrity of geosystems that have arisen as a result of the specific interaction of geocomponents reflected in the spatial and temporal structure.

From the initial conditions for knowing such an object, one can draw the following important methodological conclusion: in the geostructural paradigm, the main means of knowledge in studying the essence of a geosystem is not the category of “system”, but the category of “structure”. Only by defining the structure can one “find” the system and explain its integrity in a reasonable way. Specifically, since each system has its own structure, first of all, the structure, and then, based on knowledge about this structure, it is studied as an individual system (Antipov, Koritny; Kaloshin). In other words, if we study the alluvial plains of the present-day Amu Darya delta, first of all, we will depict the tree-like structure of small deltas on large-scale relief plastic maps. Then, by studying the relationship between the natural components of each small delta and the tree-like structure, it is proved that it is a system, that is, each small delta is an element in relation to the current Amu Darya delta, and knowledge about the elements can serve as a basis for considering the current Amu Darya delta as a specific geosystem.

The category of structure is a fundamental concept not only for geography, but also for all sciences. Structure is an integral attribute of all objects and systems that exist in

reality. In other words, the tree-like structure is an attribute of small deltas [2]. An attribute is an integral property of an object, without which the object cannot exist, it is impossible to think about it (Dictionary of Philosophy, 2004). That is why many geographers have turned to the geostructural paradigm, that is, the category of structure serves as a fundamental concept for understanding the stable nature of the system in space and time. In other words, it is natural for a landscape structure to have a structural feature in an object that has elements that make up a system.

Our geographers, like other natural scientists, always consider the concept of element to be the main methodological order of our science when studying the structure of an object. The concept of structure has been used in natural geography for a long time, and its place in the geostructural paradigm is of particular importance. V.N. Solntsev, analyzing the numerous definitions of structure in natural geography, comes to the following conclusion: “Structure is understood as either a feature of the internal structure of an object or a feature of the distribution of an object in space” [1]. In other words, the idea of the structure arises from the idea of the object. At the same time, in the geostructural paradigm, information about the “geosystem” (object) is formed from information about the “structure”, and information about the “structure”, in turn, is formed from “interaction”. The fact that a geosystem has a specific structure arises from the interaction of the elements that make up the object.

In the study of landscape structure, the study of the structure of the soil cover, which is its mirror, plays a special role. In this regard, the authenticity of I.N. Stepanov is especially notable. The scientist writes about the soil cover structure map based on relief plasticity: “Since the flows that arise as a result of the interaction of the elements (elevations and depressions) shown on the relief plasticity map are the basis for studying the interaction of elementary soil areas, the use of this map in studying the structure of the soil cover is a requirement of the time.” In other words, I.N. Stepanov comes to the conclusion that the contour of the soil cover structure should be based not on relief types, but on the structure of the relief. This conclusion of the scientist fully confirms the following opinion of T.V. Zvonkova, that is, the scientist also came to the conclusion that the relief should be based on all landscape contours. In a word, in the formation and distribution of landscapes or soils, relief plays a key role, as V.V. Dokuchaev said.

Based on the doctrine of relief plasticity, A.K. Urazbayev highly assessed the role of surface water flows in the formation of the current relief structure of the Amudarya delta, writing: “The relationship and connection of elements (elevations and depressions) in the tree-like structure formed as a result of the activity of surface water flows in the delta conditions should not cause any doubt that the method of relief plasticity plays an unlimited role” [2].

The third type of systematic study of landscape structure is chronostructural research. In such research, there is a need to substantiate the concept of the chronostructure of natural geographical, including landscape processes. In this regard, for

any type and size of landscape structure, it is always possible to determine the time interval between the emergence of a holistic state, the age of each period and the transition to its evolution, that is, as a result of which it becomes possible to study the current state, historical period and evolutionary development of the landscape structure. In this regard, the following types of chronostructural research are distinguished: current, historical and evolutionary. By the evolution of landscape structure, we mean a form of development consisting of quantitative changes that continue continuously and lead to qualitative changes. For example, if we study the landscape structure of the current Amu Darya delta chronologically, we should pay attention to its historical period up to 1961, its state from 1961 to the present day, and its evolution in qualitative changes in the landscape structure in the future. The above-mentioned types of main landscape structures (simple, fragmentary-whole, linear, high-regional, etc.) differ fundamentally from each other in their historical period, current state, and evolutionary development. At the same time, the above-mentioned landscape structures can be local, regional, and global, depending on their scale. Thus, the systematic methods used in the study of landscape structure - substructural, chorostructural, chronostructural approaches - are closely interconnected and can be considered as a unique methodology as a holistic system of principles and methods used in the study of landscape structure.

Although the emergence of geostructural paradigms is associated with the doctrine of geosystems, in the first half of the 20th century, our scientists directly or indirectly paid special attention to the study of the structure of an object. The role of B.B. Polinov in the study of the structure of an object is very large. B.B. Polinov introduces the concept of “elementary landscape” into the science of landscape geochemistry and divides “elementary landscapes” into four groups: eluvial, trans-eluvial, superaquatic, aquatic. In other words, B.B. Polinov takes the elements of the relief as a basis for dividing the “elementary landscape” into groups. He studies the migration of chemical elements between “elementary landscapes” and emphasizes that each object has its own structure, which is why it is fundamentally different in its geochemical properties from a geochemical landscape with a different structure.

According to N.A. Solnsev, depending on the type of geological deposits, specific urochishas and facies are located in the "place" of the largest morphological units. The scientist noted that the diversity of geological structure plays a major role in determining the structure of morphological units [1].

According to A.A. Abdulkasimov, in determining the structure of landscapes in large intermontane depressions of Central Asia, along with typological and regional units, paragenetic landscape complexes also play a special role. According to L.A. Alibekov, in determining the structure of landscapes, not only landscape morphological units play a role, but also the interaction of landscape classes, that is, mountain and plain landscapes, is of great importance. Indeed, as the scientist rightly noted, due to the presence of mountains and plains in Central Asia, unique landscape structures were formed both in the

mountains and in the plains. Thus, the geostructural paradigm is a paradigm based on the doctrine of the geosystem and aimed at studying the structure of its system, that is, its internal structure. Since the structure is an attribute of each object, we can approach knowledge about the system only after studying the structure of the geosystem on the basis of the geostructural paradigm. In short, the main goal of the geostructural paradigm is to prove that an object is a system with its own internal structure by studying its structure.

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