Natural law and principles of sustainable development of nature and society in a heterogeneous landscape environment

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Abstract. Axioms of natural law are revealed using principles of sustainable development of nature and society and taking into account the heterogeneity of the geographical environment reflected in landscape maps. In the axiomatic system, the environmental characteristics are not considered, and the laws are interpreted in a “pure” form as the laws of internal freedom of sustainable development of social systems. Axioms of natural law occur through the interpretation of the laws of the general systems theory in terms of the activity theory. The postulates of sustainable development determine the need to preserve nature, save sustained economic growth and maintain accelerated free development of society. In mathematics, the number of independent coordinates that completely determine the position of objects in space is called the number of freedom degrees. In this case, a high degree of freedom of life is a prerequisite for freedom in the socio-political and ethical terms as freedom of will in the local space of activity determined by the external environment. This is the geopolitical essence of landscape planning as well as legal zoning and territorial land-use policy where the same legal laws are manifested in different ways in different locations, taking into account local geographical restrictions.

1. Introduction
The implementation of global, regional and local environmental policies should be based on clear ecological and social principles and take into account the knowledge of geographical location particularities. This suggests the general character of related legal structures and consideration of geohistorical and national identity of legal systems formed. This approach is associated with the concept of natural law (NL) as a system of unshakable principles, rights and values determined by the objective social nature of man and independent from the specific state regimes. The NL is considered an ideal model or prototype for the formation of a positive (current) law, i.e. the NL is manifested in the course of the historical development of society. The NL is recognized as ideal, being reflected in legal axioms, from which other legal norms follow in a sequence of theoretical justification.

The basic written (legislative texts) and unwritten (customary) laws of the NL should be simple and obvious for each person and society at all levels of its life organization, observed in any place and period, supplemented, transformed in the appropriate geographical, historical and cultural surroundings. Universal laws are interpreted in the context of a particular geohistorical situation as a confluence of different circumstances (conditions). The exclusion from the legal analysis of environmental conditions gives the basic ideas of the NL-axioms of permissible activity. Comparison and evaluation of social actions are possible only at the level of pure legal consciousness. In particular, to properly understand the legal text, following its claims, it is necessary at every moment, in any
situation to comprehend it in a new and different way by logical means of hermeneutics [1]. The application in practice of legal laws is to bring particular cases of life under the relevant laws, provided in a general form, taking into account the actual circumstances of the particular case. The conceptual apparatus of hermeneutics provides a transition from an understanding of the meaning of universal laws to the only correct version of its interpretation in a particular environmental situation. It allows entering a broad context of scientific knowledge to establish relations not only between cultures but also with nature [1]. In particular, V. Kozin [2] proves the necessity of inclusion in the general scientific approach of the landscape-ecological environment as an integrated environment for developing ecosystems and social system and mapping inventory of the environment to assess the ecological capacity of territories. This approach is naturally implemented in the practice of the landscape planning technology [3], legal zoning and mapping of land use policy [4].

2. Methods

The objectivity of legal axioms is postulated for all spheres of activities, according to which it assesses status, supports business activities, plans environmental protection, and obtains positive significant results. In case of negative consequences, for example, in the application of landscape planning in urban planning practice, strategic assessment of the location of industrial enterprises, the development of territorial schemes of development and environmental zoning of territories, it has necessarily to arise legal and other liability. This implies the objectivity of legal laws, which violation necessarily causes a violation of social integrity; the same as non-compliance with physical laws in the construction leads to the destruction of buildings and structures.

Axiomatic approach and deductive method in the legal theory with or without mathematical formalization have long been practiced in legal science and are designed to improve its methodological foundations [5, 6]. Axioms of law are self-evident basic legal ideas and basic elementary truths of law as a social phenomenon. Axioms express legal ideals, moral foundations of law and its universal content [7]. Legal axioms are simple rules of life, which reflect the principles of justice. These are the basic rules of law, which have huge moral potential. The implementation of axioms should not only protect the current state of society but also contain the potential for its further sustainable development.

Legal axioms are discussed within the framework of activity theory but rather on the highest level of its implementation as social systems of the general form, which includes issues of ethics, politics, institutions, general sociology, philosophy of history, and general issues of existence and development of interactive through system "nature - production - society". Activity is studied as a social action, an active part of social relations, generating socially necessary (recognized and significant) changes (phenomena, actions, projects, costs, goods, and prices). Activity implies the presence and expansion of the activity space of individuals, groups, communities, organizations, and institutions. The activity (opportunity) space is a coordinate space, where each coordinate reflects one of the possibilities (alternatives, layers or types) of actions.

Total (global) and local spaces of possibilities are distinguished. Each activity is a generalized function of the coordinates of this space. First, the coordinates are the coordinates of geographical space-time in the corresponding geometric interpretation, to which independent coordinates with the thematic content of the special theory are added. Usually, coordinates are considered types of the existence of systems in this theory; for example, people of different professions, various government institutions, distinct states, etc. The manifestation degree of a set of these types is characterized by the structure of a complex formation, in particular, the structure of the landscape in the coordinates of facies types expressed in the areal allocation of different facies on the territory. The space of activity has a hierarchical fractal structure when a set of local spaces is formed in the global space, in which their local subspaces appear. Based on this hierarchy, the activities are classified according to their complexity; the position of all activities is determined in coordinate space and on the classification scheme (taxonomy), and the connections of different types of activities are investigated. As a result, the space of activity determines the diversity of life in the same way that biodiversity is determined by
the occurrence and number of species on the territory. Diversity is the main primarily felt welfare of life.

3. Models
In mathematics, the number of independent coordinates, which fully determines the position of objects in space, is called the number of degrees of freedom. In this sense, a high degree of freedom of life is a prerequisite of freedom in the socio-political and ethical terms as freedom of will in the local space of activity determined by external environmental conditions. The peculiarity of the landscape environment limits the freedom of man and business, and in different places, it appears in varying degrees. This is the geopolitical essence of landscape planning as well as legal zoning and territorial land-use policy when the same legal laws vary in different locations, considering local geographical restrictions and encumbrances. Freedom and independence from circumstances imply the existence of legal universal, abstract and pure knowledge comparable to each other regardless of the geohistorical environment. This pure right must be recorded in axiomatic concepts. For this purpose, environmental conditions are excluded from consideration (local variant and relative law), or the environment is not taken into account at all (global variant) due to its absence (absolute law).

Let $S_i$ is $i$–th system of activity with a specific set of features $X_i=\{x_{ij}\}$ in alternative coordinates of global space $X=\{x_j\}$. In space $X$, a manifold (surface) $X_0=\{x_{0j}\}$ is determined by a specific function of the $i$-th activity $X_0=\{x_{0j}\}$ and characterize the environment of this activity (figure 1). The diversity of the landscape environment is shown in a graph (figure 1) or a landscape map (figure 2), on which each point or plot corresponds to the milieu state type.

The freedom index $Y_i$ depends on a scale: the scale of the individual, quote of investment, dimensions of a state, etc. Freedom is a measure of this scale for each coordinate and in the entire volume of activity. The understanding of the real situation $X_i$ involves consideration of all...
circumstances of activity $X_i = Y_i + X_{0i}$ and the peculiarities of the environment $X_{0i}$. The problem of free activities $Y_i$ is to get rid of the shackles, escape from the environment, overcome the circumstances, rise above the traditions, and generate new knowledge and skills. This is, in particular, the meaning of the transition from extensive to intensive use of natural resources and high technology, being an expression of industrial independence from the availability of natural resources. There is no freedom, when $Y_i=0$, and the activity does not stop but is completely determined by the environment $X_i = X_{0i}$.

The differences of social systems $S_i$ are determined in the sum by free and milieu components $X_i=Y_i+X_{0i}$, and milieu component becomes the indicator (invariant, norm) of the system independence, system personality and identity. Norms $X_{0i}$ and deviations $Y_i$ from these norms are matched for different layers (types) of activity. The comparative legal studies are related to this operation for identification of the special $X_{0i}$ and common $Y_i$ components in legal systems of different locations. The set $X_{0i}$ is identified with the sources of law, and $Y_i$ is law enforcement on the example of real social phenomena.

The creation of the true axioms of the law theory occurs through the interpretation of basic concepts and laws of general systems theory in categories of activities [9, 10]: for any system $S_i$, its changes $\Delta S_i$ and action $D_i$ are truth 1) the universal system $S$ exists, i.e. it is identical to the quality of the existence $S \equiv C$, 2) the universal change $\Delta S$ exists ($\Delta S \equiv C$), 3) and any change in the system $\Delta S_i$ definitely corresponds to appropriate action $D_i$ ($\Delta S_i \equiv D_i$).

The introduced axioms are the postulates of free sustainable development [11] into a universal system "nature – production - society" and require nature conservation ($S \equiv C$), sustained economic growth ($\Delta S \equiv C$) and free accelerated development of society ($\Delta S \equiv S$). The concept of sustainable development is based on the contradiction of simultaneous preservation, change and accelerated development as a source of the worldwide evolution of the geosphere.

4. Conclusion
As a result, the projection of universal system laws on the laws of society forms the basis of natural law. These principles define the rules for selecting the right activities, believing that something is true if it ensures sustainable development in a heterogeneous landscape environment. To fully understand the content of sustainable development, it is necessary to enhance the original position of nature conservation with the positions of economic growth and social development coordinated with the natural potential, which in different interpretations is included in the UN list of principles (goals) of sustainable development. Consequently, sustainable development acquires broad social and legal content and importance.

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