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**TOWARDS EVOLUTIONARY CONCEPTS IN GEOGRAPHY.
REMARKS ON THE ECOLOGICAL APPROACH**

Few are the scientific terms which, like „ecology” and „environment”, would bloom in so spectacular a way in the past fifteen years. Today, they are present equally in journalism, language of practical economic activity, and in a broad spectrum of scientific publications. Though this should discourage one from entering the discussion, the setbacks in realization of the plans prepared by science for development can prove, among others, the existence of still unanswered questions and the inadequacy of the theories. The purpose of this article is to point out to the most important of those problems and to sketch the research promising to relieve them.

ECOLOGICAL APPROACHES: METHODOLOGICAL QUESTIONS

The ecological approach was developed mainly by the applied sciences, carrying on specialized research in the particular production branches (human production systems). The narrow technological treatment of the problem was the main shortcoming of this approach. D.L. Johnson (1980) states in his report on the management strategies for the dry lands that the present technological knowledge of that management is sufficient, but it is the ability to recognize and overcome the obstacles in the implementation of this knowledge that is most inadequate. This proves the existence of a gap in our knowledge about the relationship between the social, economic and cultural processes, and the ecological ones. It also proves that the place given to the human factor in the plans for the management is inadequate.

There are many specific problems yet unsolved, important for the research on the management of the drylands. Some of them refer to the preferred scale of projects, to the unity of management units and ecological units, to the criteria for evaluating the management methods, to the human carrying capacity of drylands, etc.

Two general problems seem to be of the fundamental methodological meaning and influence both the way of forming and the way of solving the specific problems. They may be formed into the following

questions: (1) Should the social, economic and cultural processes occurring in the natural environment be considered as governed by separate laws? (2) Does, therefore, the possibility of integrating these processes exist?

The scientific discussion of the two problems has lasted since the days of criticism of environmental determinism and of the appearance of the reaction to it, i.e. a trend of possibilism of Vidal de la Blache. This criticism of determinism led to the decades of abandoning of problems of links between man and environment, and to the appearance of a deep division between physical geography and human geography. As the threat of degradation of the natural environment (caused by man's economic activity) grew, it became clear that it would be necessary to return to the neglected problems. Despite the unprecedented growth of the number of publications joining together in various ways ecology and the science of natural environment with the human activity, the basic methodological problem seems to be unsolved. The possibilities of integrating the physical and the human geography were lately discussed in details by R.J. Johnston (1983). His conclusions, drawn on the basis of an Anglo-Saxon analysis of studies on „Resource analysis and management” are rather pessimistic. He states that the majority of the researchers have come near the place where the two disciplines overlap. However, they studied merely either the environment as a factor affecting people — without analysing the processes within it, or the influence of people on the environment—but not the reasons behind their activity. Some researchers completely ignored the processes of the two disciplines, without reaching, without even searching for any integration. Johnston thinks that the complete integration is possible only when a team is at work. He also believes that this should mean the studying of processes in the environment, as well as in the society. It is a common opinion that the experience and knowledge of more than one man is needed for such a study. Other authors stress that the ecological approach often leads to oversimplifying the social and cultural processes. On the other hand, this approach, when applied in social sciences is characterised by the inadequate comprehension of the processes within nature (Spooner 1980).

The difficulties arise not only from the complexity of the problem. It is a general scheme of the relation of man and environment, that seems to be more significant, and that, like the already historic environmental determinism, comes from the philosophical tradition of positivism. Some faults of this scheme become especially conspicuous in the light of the contemporary evolutionary thought.

FOR THE EVOLUTIONARY APPROACH IN GEOGRAPHY

According to V. Berdoulay (1983), an outstanding expert in history of the geographical thought, the authors adopting the positivistic model of scientific explanation must become environmental determinists, precisely for the above-mentioned methodological reasons, despite the fact that it is necessary to distinguish positivism, the method in natural sciences, from the logical positivism. The positivists' only alternative in avoiding determinism is to reverse the dependences and to carry out the research on how man influences nature. Such studies, really numerous, led to a greatly simplified presentation of the environment and of the society as well (narrow technological approach). The simplification here means setting man's activity against the passiveness of nature. It is the scheme, exactly opposite to that of the environmental determinism, that was often rightly blamed for imputing to man a passive dependence on nature. Neither approach seems accurate. Such a presentation of the various attitudes, either passive or active, both in relation to nature and human behaviour may stem from the language we use: it serves not only to describe but also to direct our thoughts. Thus the language depends on the direct human experience, limited to either an active or a passive role. The psychiatrist and neurologist H. von Ditfurth (1985, p. 125) wrote in his latest book of the series on popularization of the contemporary knowledge of the evolution of the Universe : „Our language allows us to describe events exclusively in the form of statements about the actions or the feelings of a subject, for that is all that corresponds to our own experiences, and the entire world is reflected in it as perspectively subordinated to the subject". Hence we perceive drastically the difference between the acting man and the nature subjected to his activity. This opinion is only partly true, for although man really does create great changes in the natural environment, these changes occur in an organised system and are characterized by their own internal dynamism.

The difficulties arising from the philosophical tradition of positivism were removed by the Vidal de la Blache's possibilism. *Genre de vie* is a form of adaptation of man to environment, but it is, nevertheless, subjected to the influence of man's activity. From what the environment can offer, man chooses what agrees with his cultural heritage, with the structure of his mind. These factors determine a method of his coming in contact with the environment. It is the intuitionally adequate view of man's position towards nature that gives vitality to possibilism. There is no need, however, as V. Berdoulay would like to prove, to look for the strength and significance of possibilism for the contem-

porary geographical research, in its neo-Kantian philosophical foundation. The *a priori* categories of Kant: space, time, and causality structures, which, for him, were an irrefutable argument for the impossibility of ever finding out anything about the real world, today can be considered a real, innate knowledge of the external world. The discovery of an evolutionary background of the *a priori* participation of our thinking ability and imagination makes a little less pessimistic evaluation of our chances for cognition possible.

The concept of evolution, which played a significant role for philosophy by permitting to formulate the evolutionary theory of cognition, should also be used in geography to verify its theoretical concepts. And thus, thanks to this concept, the standpoint of possibilism acquires a philosophical background according to the achievements of the contemporary natural sciences. It provides a uniform explanation of both phenomena (very adequately interpreted by the possibilists) which have a decisive impact on the methods by which man forms his connections with the natural environment, that is his innate, intellectual structures, developed by the evolution and his cultural heritage. What we call „the knowledge of culture” is, according to F.A. von Hayek (1979), a system of rules of behaviour creating the evolutionally conditioned supraindividual knowledge. If we reject, in our drive to rationality, various, defined by tradition norms of behaviour, unfavourable effects may appear because in the cultural transmission there is knowledge exceeding in many respects any individual cognition.

The accepting of the concept of evolution as a philosophical foundation for the relation man-environment explains another, important theoretical problem. It is a problem of the reciprocal relation of accidentality and general laws. It refers to scientific research in general, while in the context of man-environment relations it was repeatedly presented as a contrast between the systematic structure of nature, and the acting of man, always introducing the element of accidentality. In geography, the problem was discussed, among others, in the form of antinomy: the uniqueness or universality of the geographical phenomenon (Kimble 1951), or in the form of opposition of facts to certain regularities, studied by respective branches of geography (Bunge 1962). According to V. Berdoulay, the search for the general laws was the methodological source of the environmental determinism. The opponents of this trend contrasted man with his free will, who thus introduced the element of accidentality — with nature, representing, in turn, the orderly and regular structures. When analyzing the problem from the evolutionary point of view, one must admit, that the element of accidentality is not specifically connected only with man. Mutation, its character and

its role in the evolution is a good example here (Kunicki—Goldfinger 1974). Mutation is considered accidental because the disturbances in the process of coding (i.e. in mutation) occur with the help of the processes taking place on an elementary particle level, with no connection with the biological needs of the organism. The contemporary evolutionary thought describes the situation quoting an outstanding bio-physicist M. Eigen, who said: „the laws of nature are governed by accidentality” (Eigen, Winkler 1973). M. Eigen proved that the accidental occurrences on the level of molecules can cause fluctuations, which affect also the macroscopic level. This statement refers to the matter in general (in physics, such a proof was presented by a Belgian physicist I. Prigogine). The traditional antinomy between man, introducing the element of accidentality and the orderly structures of nature thus lost its sharpness, for the inanimate matter also demonstrated its dualistic character.

The evolutionary point of view makes one consider the world as one, ever evolving, single reality, subjected equally to laws and to accidentality. The specialization of research in the natural sciences is not an effect of specialization of nature, but rather, of the fact that we are unable to study and to fully grasp the whole of it at once. The development of science so far proves such a method of acting quite effective. Serious difficulties appear only when science comes in contact with practice, which does not tolerate the omission of any important links. This happens quite often, when the new strategies of exploitation of natural resources, or the plans of development are being prepared.

FURTHER IMPLICATIONS

The response of science to increasingly complicated economic and ecological problems of our civilization was the creation of the foundation for the general theory of systems and an attempt to apply it in the natural sciences, as well as in the social and economic ones. The theory introduces a new language and a new methodological conception, which can be also applied to the studies of relations between man and environment. The concept of an open system is an intellectual construction, well-corresponding to these relations. It is characterized by a drive towards disintegration according to the second law of thermodynamics; therefore, an exchange with the system's surrounding is necessary. The concept of the autonomy of man, which does not exclude, but, on the contrary, demands some dependence upon the surrounding is thus drawn and clarified. Also, the concept of feedback permits the detachment from the scheme of a one-way causality in relations between man and environment.

Despite numerous advantages, the system approach was not yet widely employed in solving the basic economic and ecologic problems of our days. This approach, while giving a new, intellectual scheme, permits, at the same time, to answer a new type of questions. The majority of these questions is not related to any particular difficulty in carrying the plans for development into effect. According to the theory of systems, the analysis includes the studying of such properties of the system as: structure, behaviour, environment, state, and parameters. Such an approach permits the studying of the organized entities, not permitting, however, (so far?) taking into consideration those social and cultural factors which are known to be important for the interdependence of man's activity and the natural environment.

Thus the continuation of the traditional model of studies seems equally advisable. The potential of the ecological approach, as well as of its new trend known as „ecodevelopment” is still inadequately exploited. The ecological concepts contain the rational exploitation of the natural resources, the employment of proper technology and organization, which would equally take into consideration the natural conditions and the existing specific social and cultural characteristics of the society. These concepts which are rooted in the basic needs of organisms and of man provide good methodological foundation for the research of man-environment relationships.

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