

## GEOECOLOGY AS AN INTERACTION OF GEOGRAPHY AND ECOLOGY

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### SUMMARY

Sharpening the problems of man/nature interaction, caused mainly by vast increase of production, which — by means of technology — more and more intensively use natural resources of our planet and greatly changes man's environment, led the science both in its own development and by social demand to join in solving them. It is social problems that determine direction on science both in applied and in basic research.

Coming into the 80's people face the necessity to solve such global social problems as ensuring food, energy, raw materials and effective protection of nature. Conflicts between social demands, economic potential and natural resources become sharper on local and regional levels. They are called up by growing pressure of society on nature and by its response appraising as degradation of nature and deteriorating quality of environment.

The decline of functional stability of natural processes, first of all biotic ones, lowering landscape diversity, its invariants destruction, and genofund, too, danger became warning for mankind, which may bring even complicated problems in the near future. But we must not give in to illusions of "coming back to nature" in the sense of social regress or pessimistic vision of total fail of human civilization as a convergence of impossibility to manage society and nature interaction.

### INTRODUCTION

The main role in solving ecological situation in the system of society-nature interaction is played by social relations reflecting the process of production. Only that society which removes antagonistic relations is able to manage this interaction in behalf of the society with endangering the nature. And this is the task to be solved by the science: geography or ecology? landscape ecology as formulated by C. Troll (1939)? human ecology? landscapeology? The answer is in their social relevance!

### 1. GEOECOLOGY AS THE FIELD OF INTERDISCIPLINARY COOPERATION

Ecology has recently gone through unprecedented development, reaching higher integration levels till meeting with geography in landscape. Gradually a line of landscape study has been formed, called landscape ecology or geoecology by C. Troll (1939—1970). It surmounts descriptive methods of landscape study, laying emphasis on studying functional relations among landscape components and on their dynamism. In landscape ecology the conjunction occurs between "geographical and spatial" and "ecological and functional" ways of landscape study.

The results of landscape ecological research are not only of theoretical importance but, in their application form, they present also an important basis for landscape planning, including environment protection and creation, management. That's why landscape ecology becomes the field for interdisciplinary cooperation of geographers and ecologists, and even of experts in forestry and agriculture, urbanists, sociologists, economists and others, socioeconomic geographers not excluding. The question of competency between geographers and ecologists cannot suppress the need of cooperation aimed at solving problems of society and nature interaction.

The requirement of ecologically responsible decision-making and actions is fixed firmly in materials of the 16th Congress of the Communist Party of Czechoslovakia in the appeal of its Central Committee, of the National Front and Federal Government of the 1982, in election programmes, in educational and pedagogical activities within the framework of the Czechoslovak educational system and also in scientific tasks fulfilled by the Czechoslovak and Slovak Academies, etc.

## 2. PHYSICAL GEOGRAPHY, LANDSCAPE ECOLOGY, SOCIAL ECOLOGY AND SOCIOECONOMIC (SOCIAL) GEOGRAPHY

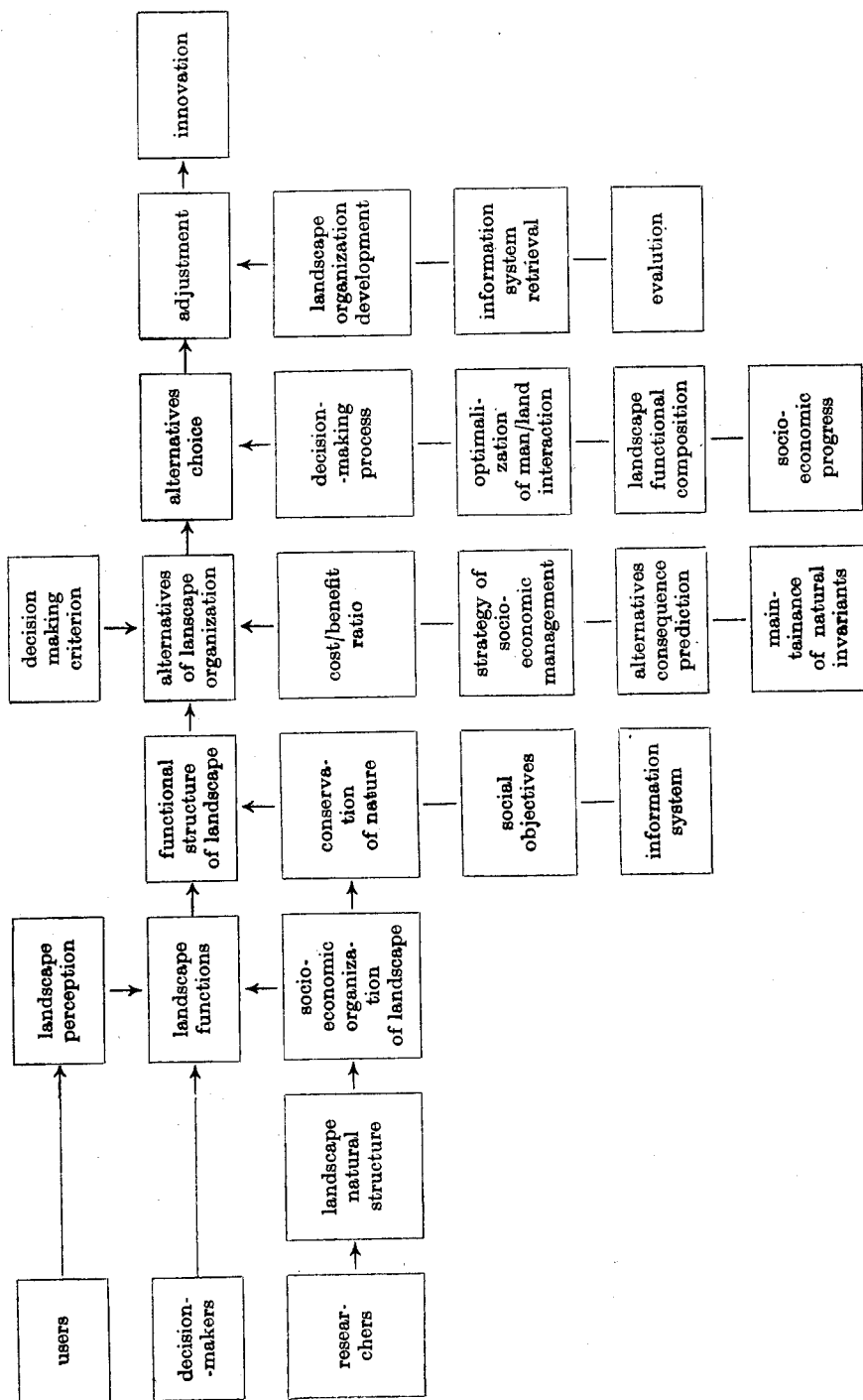
The physical geography's object is landscape sphere which had existed on the Earth long before human society came into being. It was formed in abiotic phase of atmosphere, lithosphere and hydrosphere interactions; in the biotic phase it came into pass and when human society appeared, it was gradually transformed by man into man's environment.

The physical geography subject are natural processes and their forms in landscape sphere, its time — spatial from topic (site) to planetary dimension; it analyzes both component and natural processes (synergetic & synchoric) and their forms including their anthropogeneous modifications. There are various definitions of landscape extent but all of them include man's environment — the most favourable conditions for life: organisms and human society development. Therefore geoecology as a field of interdiscipline cooperation should not avoid studying interactions of abiotic processes biocentrically, study of which is dealt with by ecology.

At present another branch of ecology — social ecology is being developed which inquires society, man and nature interaction.

L. E. Ziring and V. D. Komarov (1981) define its subject as specific laws, principles and methods application of society and nature interaction in the interest of civilization progress. The emphasis is laid on the adjective "social" for man with his biotic nature and social substance is in the centre of study. In our opinion socioeconomic geography should share more effectively in interdisciplinary cooperation within the framework of social ecology, as physical geography has shared in interdisciplinary cooperation within the framework of landscape ecology.

LANDMIS (landscape management — information system) for SEELO (socioeconomic and ecological landscape organization)



### 3. OPERATIONALIZATION: PHYSICAL GEOGRAPHY REVALANCE WITHIN THE FRAMEWORK OF ECOLOGY WITH THE POSSIBILITY OF JOINING SOCIOECONOMIC GEOGRAPHY AND SOCIAL ECOLOGY

At the Congress of Slovak geographers (July 1982) we presented an information system for landscape and environment research the geographers may also participate in. An adapted version is a part of the contribution made by A. Hynek (in press). We present the third approximation — LANDMIS. It is an analogy of LANDEP and EET programmes by the authors M. Růžička and L. Miklós (1982). Their 5 steps: analysis—synthesis—interpretation—valorization—preposition in biological landscape planning keeps to be a bearing line for landscape ecology.

In our contemporary conception we follow physical geography's application in interdisciplinary landscape ecology as well as the whole geography application as link up with social ecology.

We distinguish 4 basis stages of landscape management — information system: evolution and present state of landscape, suggestion of landscape functional structure changes, the choice of socioeconomic and ecological landscape organisation (SEELO), alternative and implementation of the new SEELO.

Landscape ecology should cooperate with social ecology in the sphere of users, scientists and decision-makers perception. Landscape perception represents senses response of environment, the approach and intentional activities in relation towards environment, it has its own spatial attribute of behaviour, evaluation, decisioning and action. Differentiation of users, scientists and decision-makers categories ensues from the fact that they are necessary to take part in landscape management. Physical geography is active first of all in the study of natural processes functioning in landscape and forming it. It inquires natural components of landscape, the ways of links, connections, relations among them, matter and energy cycles in relief morphogenesis, lithogenesis, weathering, pedogenesis, hydro-cycle and biotic processes, sun radiation and heat transport, biogeochemical cycles etc. Natural processes maintain a particular invariable character, they have their own dynamics and evolution, they appear as certain forms — landforms, rocks and rock debris, soil horizons, water, biogeocenoses, etc. Differentiation of elementary homogeneous units) and topochores (elementary heterogenous units) as basic operation units for landscape use, keeps to be almost unsolved problem in Czechoslovak physical geography (A. Hynek, P. Trnka 1981).

It is possible to study their natural processes modifications evoked by man's activities and natural disasters, to propose them for protection or certain ecosystems maintenance; to evaluate them; to form a functional integrative landscape structure. We should have an effective information system about these units with the use of computers and find out their optimal use by means of interpretation computer maps. Landscape passes through continuous changes; at present their main dealer is man who creates a particular functional landscape structure by using its natural resources. The need of society and nature interaction optimalization comes to the fore, with respect to social demands, nature protection and ecosystems maintenance. Geography can also participate in landscape use alternatives choice, prediction of natural processes anthropogeneous modifications, it strives for timely recognition of natural hazard strengthened by improper employment of

natural resources. Therefore geography is operative even when choosing alternative of responsibly deliberated SEELO.

Maybe weakest point of scientific activities organisation is its absence in realisation, implementation of research projects. It must not always be expressive monitoring, but following fortunes of research, practical interventions in landscape according to other alternatives. That is to say that only practice can serve as a measure of decision-making informations relevance for the need of management.

#### 4. CONCLUSION

For the sake of reinforcement geography's application it is advisable to take part in interdisciplinary cooperation in the field of landscape and social ecology where it may help to solve a lot of contemporary problems of man/nature interaction. The programme LANDMIS that we have presented is a certain phase of joining geographers in solving these problems, reaching a certain social relevance of geography.

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