SCRIPTA FAC. SCI. NAT. UNIV. PURK. BRUN.
Vol. 11 (1981), No. 7—8 (Geographia), p. 381—382

REVIEWS

Investigations performed in the departments of the Faculty of Science

LANDSCAPE RESEARCH

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Received for publication: November 1980

Till the 1970s, it means for 50 years, the research was being orientated in analytic geographical disciplines development, regional geography, and applied branches of research for problems solving using mentioned analytic disciplines in the context of geography growth not only in Czechoslovakia but at the Geography Department, Faculty of Science, Purkyně University, Brno, too. The Professor Vitásek's work on Moravian cultural landscapes might be the only exception. In 1950s and 1960s analytic physico and economico geographical disciplines absolutely prevailed here though their interconnections were quite effective.

Starting the 1970s some changes appeared. In 1967—1972 Professor B. Šimák and his colaboraters A. Hynek and P. Trnka realized research in cartographical interpretation of landscape sphere on planetary level in well known Fridays seminar. The research itself was focused to knowledge synthesis on litosphere, atmosphere, hydrosphere, pedosphere, biosphere, land use, and landscape sphere in holistic sense at the scale of 1 : 60 million. Professor B. Šimák very succesfully made the best of his experience as editor of Czechoslovak Military Atlas (1965) and managed the ample study of the world best geographical atlases. He obtained their excellent collection in Geography Department, first of all, from the U.S.S.R., Poland, German Democratic, and Federal Republic, United Kingdom, the U.S.A., Italy, France, Switzerland, Austria, Japan, etc.

Working group: B. Šimák, A. Hynek, P. Trnka proposed mutually corresponding categories of topics maps concerning landscape's sphere of the Earth and its components on ordinary maps, and hypothetical (ideal) continet and/or ocean, too. The key role was seen at their spatial expression — regions, their correlation, cause analysis, structural isomorphism.

There were two lines inspirated by Soviet "Physicogeographical Atlas of the Earth" Moscow, 1964: a synthesis of natural zones, and hierarchy of individual physicogeographical regions. Both the lines were tested, compared with latest information sources and integrated into final synthesis — planetary model of spatial natural land units.

Only the results appeared for geographical society after finishing the research 1972 in 1978 on the Czechoslovak Geographical Congress at Levice. The first stage of research was presented on the Czechoslovak Geographical Congress at České Budějovice (1972). Though unofficially, the research has not finished yet.

Up-to date idea of mentioned landscape sphere planetary model is closed to F. N. Milkov's concept distinguishing five variants according to combination of abiotic landscape components (atmosphere, litosphere, hydrosphere): dry land, shallow waters, sea level layer and bottom, glacial sheet. They are divided, on the 2nd step, to the highest individual physicogeographical megachores ("strany" in Russian) e.g. Central European highlands, the Alps, the West Siberian Lowland, the Amazonia, the Baltic Sea, Indian Antarctic Ridge, East Pacific Basin. At the same level we can identify the main climate types as humid tropical, boreal, torrid subtropical etc., and ocean masses e.g. equatorial, subantarctic.

The next step consists in recognizing the sequence of vertical stages (tiers) limited by certain

mountain province and/or lowland zone. We call them macrochores. Equivalents in the ocean have not been worked out so far.

Given three sub-levels of landscape sphere were investigated from the point of view interrelations among land components (landforms, rocks, soils, biotic etc.) and in relation to land use, secondary landscape structure. It was based on studying structures, processes, former processes response, spatial differentiation and integration. We understand landscape sphere in vertical narrower sense as a space of the most intensive contact of acting components.

As we said, in 1972 the research on planetary level was officially finished. And the year later the head of Geography Department Professor M. Nosek started as a leader research realized by the team of specialists from Geography Department in the Znojmo area (Southern Moravia). The research was done for broader social use though intended formerly for environmental protection. Being the first experiment with team-work in Geography Department it offered not only interesting results, but experience with cooperation in innovating regional research. For the short period (1973—1975) not all the objectives were reached. Nevertheless, the progress in geomorphology, climatology, hydrology, history studies, populational geography was evident. Understanding the landscape was the question of data combination from partial disciplines, a synthesis was left unsolved, though.

Situation changed after 1975 when A. Hynek and P. Trnka were not satisfied with final report on Znojmo area and kept on landscape research there. Having experience on upper levels of landscape sphere organization they tried to find out the elementary units of landscape — the tops level. Detailed landscape survey in the Dyje-river part of Znojmo area, land and land use examination brought qualitatively new results:

— elementary homogeneous spatial units (tops) and elementary heterogeneous spatial units (topochores) with strong correlation to terrain landforms and soil cover units were separated, they are unified by process of matter and energy flows: air, water, rocks, soils, organisms of certain landform and under certain land use interacting

— the higher levels above tops and topochores were named as monomicrochores, polymichrochores, monomezochores ... macrochores where landscape global level is starting

— landscape elementary units were examined using the basic method: synoptic, synergetic and synchoric

— they show four types of structures: scalar, gradient, vector, and mosaic, corresponding with natural horizontal flows in landscape

— land use is organized quite different way with structures: concentric nodal, linear, point — surfaced. The nodes hierarchy prevails in urban landscape, topochoric surfaces in rural and forest ones

— using the computer we based an information system on landscape at hexagonal network for socioeconomic management of landscape

— topochoric analysis and synthesis in the scale of 1 : 25 000 was done in the Dyje-river part of Znojmo area.

The 1970s' landscape research in Geography Department was finished in 1980 by final report on the Rosice—Oslavany area (mid-west Moravia). The team of analysts and synthesers both physical, and socioeconomic geography led by Professor M. Nosek (1976—1978) and A. Hynek (1979—1980) who was the editor of final report, examined natural and social components of territory with strong effort to synthesis in the form of microchores and/or nodal regions at the same level. Their intersection offers very important information source for area planning.

There were polymicrochores, monomicrochores, and topochores identified, all their natural components and relevant relations portrayed in connection to land use. Experience from the Dyje-river part of Znojmo area was used and more progress done in socioeconomic analysis and synthesis. For analysis of man's activity brought needed picture, we tried to identify spatial organization operating upon natural landscape. So the two interacting systems in landscape were found out: areal integrity of natural landscape units, their secondary landscape structure, and nodal hierarchy of population reflecting society activities: production, consumption, habitation, contacts, leisure, environmental perception.

We inteded landscape research in integrity sense as a connection of information and management systems. Data base on Rosice—Oslavany area for computer data processing has been performed and gradually is growing. The elementary unit, a carrier for data storing is a hexagon 1 cm^2 in the scale 1 : 25 000, i.e. 1/16 km^2 containing a vector of relevant data for landscape management. We are prepared for problems solving on applied level of investigation concerning the environmental protection, allocation, settlement planning, natural resources rational use etc.

Starting in 1980 the results of mentioned research will be gradually published in journals of Faculty of Science, Purkyně University — Scripta and Folia (Geographia).