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RECENT CHANGES IN CENTRAL EUROPEAN LANDSCAPES: AN INTEGRATIVE ECOLOGICAL APPROACH

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Landscapes in Europe in general and those in Central Europe in particular should be mostly considered cultural landscapes, i.e. landscapes that have passed century long cultivation by man. Mutual interactions between nature driven processes and human activities can be thus seen as a feature deeply interwoven into any particular landscape structure(s) as well as function(s), for more discussion see e.g. Kovář (1999).

These interactions can be conceptualised in many ways, nevertheless, the concept of systems dynamics is applied frequently as the most general integrative and unifying view (Allen, Hoekstra, 1992). Once we adopt this concept we tend to view landscape as a complex socio-ecological system (e.g. Anderies et al., 2004), and to describe and interpret changes in its behaviour by use of general systems terminology – as system resistance, adaptive capacity, identity, etc (e.g. Holling, 2001; Cumming, Collier, 2004; Walker et al., 2004).

Also Naveh (2001) followed this line, but seemed to go one step further when introducing the term of multifunctional landscape. According to his definition, multifunctional landscapes can be seen as tangible, mixed natural and cultural interacting systems that are supposed to be concrete, self-transcendent and self-organizing Gestalt systems of our total human ecosystems. Ranging from the smallest mappable ecotope to the global ecosphere landscape, they should be studied, upscaled, managed and evaluated in an integrative manner. For this purpose multifunctional landscapes have to be treated simultaneously as product of material, natural biogeophysical as well mental cognitive noospheric systems. Understanding of a landscape defined this way, Naveh continues, can be achieved only with a help of innovative approaches and research methods, in close cooperation among landscape researchers from natural sciences, social sciences, the humanities and the arts, as well as professionals involved in all phases of land use decisions.

In this definition we can find three very innovative aspects of integration. The first one concerns integration of natural and social sciences (and humanities, of course); the other is about integration of outward landscape with its reflection in human mind, i.e. integration of landscape and inscape; while the third aspect consists in an effort to integrate scientific

knowledge (supposed to be objective and value free) with normative attitudes of practically minded decision-makers.

Naveh can be seen as one of pioneers to carry holistic approach in landscape ecological research (see e.g. Naveh, Lieberman, 1984). Nevertheless, nowadays his definition illustrates more general standpoint rather then an isolated view. The tendency to cooperate across disciplines can be documented by pile of works, mostly of methodological nature, done in recent landscape ecological research. Their authors, though using different terminology, seem to describe in fact the same principle. Terms of interdisciplinarity and transdisciplinarity frequently occur in this discussion. Both terms were used by Tress et al. (2003a, b) for example, when they described the "Wageningen approach". The suggested approach is intended to bridge the humanities ("alpha-sciences"), natural sciences ("beta-sciences"), and social sciences ("gamma sciences") by crossing disciplinary borders (interdisciplinarity) and capitalise of alpha, beta, and gamma sciences in cooperation with stakeholders (transdisciplinarity).

It is matter of fact that the concept represents an ideal which can hardly be achieved entirely in any research, though extensive it could be. Nor this special issue has the ambition to cover the whole scope. Papers composing this issue cope with the problem of integration in their own individual way. They obviously take one of the three above-mentioned aspects as a guideline of interpretation while the remaining ones are used as supportive ones, to make a picture more complex. Nevertheless, all the contributions share the attempt to apply systems view when describing and interpreting particular research topics in landscape ecological context. We have ten contributions altogether composing the issue. Having been written in "multi-dimensional way", they can hardly be classified unambiguously. Overlaps seem to be inevitable. When thinking about their arrangement in the issue we sticked in the end to the classical lining up, having a long tradition in the discipline of landscape ecology, and started with two papers that focus primarily on natural features.

The first one discusses the reproductive strategy of plant particules (Šerá, 2005). Diaspores as an agent of propagation, represent a coherent system, sensitive to environmental change. As the proportion between annual and perennial herbs illustrates the habitat conditions, the total number of diaspores correlates with the biotic and abiotic conditions of the locality. The analysis of reproductive strategies (population viability of single species) can improve the understanding of historical development and vegetation succession of the study area. The other paper focuses on screes as an important ecosystem. They are analysed in relation to the general processes of global warming (Zacharda, Boucníková, 2005). In its context they are supposed to play double role in monitoring of environmental change. As an ancient ecosystem it can serve as "knowledge or data base" or "deposit of data" documenting climate changes that occurred in the past; as a fragile system sensitive to global warming it can simultaneously be used as "early warning system" of some kind to monitor ongoing environmental change by global warming.

Two papers focus primarily on biotopes (habitats), namely on problems with their mapping and evaluation. While Guth, Kučera (2005) introduce the methodology of the habitats mapping, which was applied within the establishment of NATURA 2000 network in the Czech Republic, Cudlín et al. (2005) build on this basis and use modified Hessian method

to evaluate individual biotope types economically, with the final aim to produce the cost map of particular area.

It has been frequently discussed in pertinent literature, that in many cases, these are concrete decisions, that act as a triggers or decision catalysts that induce a change in land-use of particular locality, region or country (e.g. Forman, Godron, 1984). Socio-economic driving forces as triggering mechanisms introducing profound changes in land-use are analysed or at least tackled in most contributions forming this special issue. Boucníková, Kučera (2005) for example, exploring this theme, suggest typology of landscapes within the Czech Republic which uses changes in land-use practices within the last fifteen years. They define six major landscape types and assess the habitat quality of CORINE Land cover in different spatial scales and organisation levels. Their structural view exploring the historical data is complemented by the study produced by Lapka, Cudlínová (2005). Authors in this case adopted dynamic and anticipative approach and analysed, by use of the method of scenarios formulation and evaluation. The potential changes in land-use that can be expected as a result of introduction of five types of politics adopted at European level.

Landscape as a rule can be used in multi-functional way. When discussing multi-functional exploitation, we need to include a problem of multi-agent decision on possible land-use practices in particular areas into this debate. Three contributions focus on this issue. Within this context, Zemek et al. (2005a) in their paper discuss the problem of abandonment and potential resettlement of particular territory, namely the effect the abandonment and resettlement might have on local biotopes and ecosystems. Kušová et al. (2005) on the other hand, analyse the relation between nature protection and socio-economic development in selected protected areas questioning the myth on a-priori contradiction between these two ways of land-use regimes. The third contribution, written by Zemek et al. (2005b), represents a mirror view to some extent, as it explores the situation when multi-agent negotiation on land-use is missing, and documents thus the situation when negative feedback is absent in decision making on land use.

The paper concluding the issue cope with the concept of unusual landscape feature, as it was introduced into professional literature by Forman, Godron (1984). This concept, together with the concept of landscape character, is used to explain the role huge nuclear power plant plays within the rural landscape of South Bohemia (Těšitel et al., 2005).

The statement saying that particular scientific results obviously generate additional questions rather than produce final satisfactory answers, can by applied fully to landscape ecology. Contributions forming this special issue should be then viewed from this perspective – as questiones trying to explore particular aspects of extremely broad field of study. Questions that may initiate a discussion either on the pages of coming issues of this Journal, or elsewhere.

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