Landscape Ecology and Beyond

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Hartmut Leser defined Landscape Ecology ("*Landschaftsökologie*") throughout his career as "the area of research and teaching focusing on factors and their interactions in a landscape ecosystem. The examined factors are relevant for the functioning of the landscape system, but also determine its outer appearance. The diversity of landscapes and the resulting complex spatial structure has caused distinctive, specific spheres of interest within Landscape Ecology, with different methodological approaches to particular sections of the landscape ecosystem. Landscape Ecology is motivated by both a basic scientific and an applied understanding of landscape ecosystems and is conducted by a wide range of disciplines within the Environmental Sciences" (translated from *Leser* 2010). This definition can be distinguished from the more common definition in the English literature which considers landscape ecology as "the broadly interdisciplinary study of spatial variation in landscapes at a variety of scales, including the biophysical and societal causes and consequences of landscape heterogeneity" (based on IALE 2011). The key difference between these two definitions lies in the role of the visual distinction of spatial units in a landscape. *Hartmut Leser's* definition emphasises the difference in appearance of ecotones. This emphasis of the possibility to distinguish different ecotones is more important than might appear at first glance. *Hartmut Leser* offers a perspective on Earth's surface which includes humans' perception of their landscape and surrounding environment. This reflects his background as a geographer, but also his aim to gain a holistic understanding of a landscape as a dynamic space occupied, used and transformed by humans, which lies beyond a problem-based, cause and effect perspective defined by IALE. The wider understanding of Landscape

Ecology, especially the spatial dimension and the interaction between visually different ecotones, offers an opportunity to connect research, teaching and management of what are generally considered to be different surface units or spheres, e.g. forest, agricultural land, water bodies, or urban areas. Through the recognition of landscape perception, a connection to the public is also possible, promoting an understanding of place and environmental services. – The papers in this special issue of DIE ERDE reflect the role of the visual appearance of the landscape emphasised by *Hartmut Leser*. Most papers were presented at a symposium entitled '*Landschaft und Umwelt im Wandel*' (Landscape and Environmental Change) held on November 20th 2009 at the University of Basel to mark *Hartmut Leser's* 70th birthday. Aim of both the symposium and this special edition entitled *Landscape Ecology and Beyond* is to honour the distinguished scholar and teacher of Geography *Hartmut Leser* and his wider, integrated understanding ("holistic approach") of Landscape Ecology. In particular, the contributing speakers and authors want to acknowledge his contribution to the development of Landscape Ecology in German-speaking Environmental Sciences, but also to promote his definition of Landscape Ecology to a wider, English-speaking audience. The range of topics presented in this issue of DIE ERDE reflects this need for a new promotion of Landscape Ecology in general, but also the importance of connecting perception of landscape to environmental issues of public or political interest. *Kuhn*, presenting experimental work on soil organic matter erosion, shows the potential relevance of small-scale erosion processes for global climate. The results highlight the need for integrating process-based research with methodological approaches to up-scaling point-measurements to global geochemical cycles. His experimental approach and the visibility of farming in the landscape also offer easily identifiable vehicles to connect land use to climate change. The paper by *Caviezel, Kuhn* and *Meusburger* on the use of archival data from the Ursern valley crosses the boundary between Human and Physical Geography, emphasising the need for an integrated approach to landscape research described in *Hartmut Leser's* definition of Landscape Ecology. The actual or perceived relationship between land cover, climate change and mass wasting is easily identifiable in the landscape and also well-documented in the written archives in the Ursern Valley. This provides a connection between stakeholders, environment, especially the vista of mass wasting scars, and impact of land use and climate change. The need for considering the perception of landscape and environment by the stakeholders is also emphasised by *Karl Herweg* and his co-authors. They argue that transdisciplinarity should be part of a wider-defined applied Landscape Ecology in complex and uncertain developing environments, aiming at a co-production of knowledge by all stakeholders involved. Both *Herweg* et al. and *Caviezel* et al. highlight the relevance of the impression a landscape and its change generate on the public and thus the political discourse on human-environment relationships. The relevance of a mental image of the environment and the associated risks is illustrated by *Rempfler* in his paper on 'Systems Concepts of Youths: Design and Results of an Explorative Pilot Study on the Topic of Avalanches'. His work suggests that the perception of the environment determines human behaviour more strongly than any scientific knowledge. Conflicting realities, caused by a natural and social science perspective on the environment, are also highlighted by *Ehlers* in his paper on 'The Anthropocene – A New Chance for Geography?' As a consequence of differences in the perception of environmental problems caused by human activities, he demands the development of a human-environment Geography focusing on an holistic study of the Anthropocene.

The range of topics covered in this special issue of DIE ERDE illustrates the need for bridging a potential gap between perception of the environment in science, including economics, law and the social sciences, in the general public, the media, special interest groups, and eventually the political decision-makers. It is our firm belief that a more widely-defined Landscape Ecology based on *Hartmut Leser's* geographic perspective offers an opportunity to serve as common ground for all stakeholders due to its consideration of visual appearance and thus tangible approach to describing the quality of life at the Earth's surface.

IALE (International Association of Landscape Ecology) 2011: Landscape Ecology. What is it? – Online available at: http://www.landscape-ecology.org/what_is.html, 30/05/2011

Leser, H. (Hrsg.) 2010: DIERCKE-Wörterbuch Allgemeine Geographie. – 14. Auflage. – München, Braunschweig

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