



Sustainable Futures for Europe's Heritage in Cultural Landscapes:

Tools for understanding, managing, and protecting landscape
functions and values

A framework on European landscape research

Tobias Plieninger



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Background:

- Framing of overall perspective on cultural landscapes within HERCULES needed to link WPs and disciplines
- Unification of concepts that come from a variety of disciplines including history, archaeology, ecology, conservation, planning, and cultural geography

Objectives:

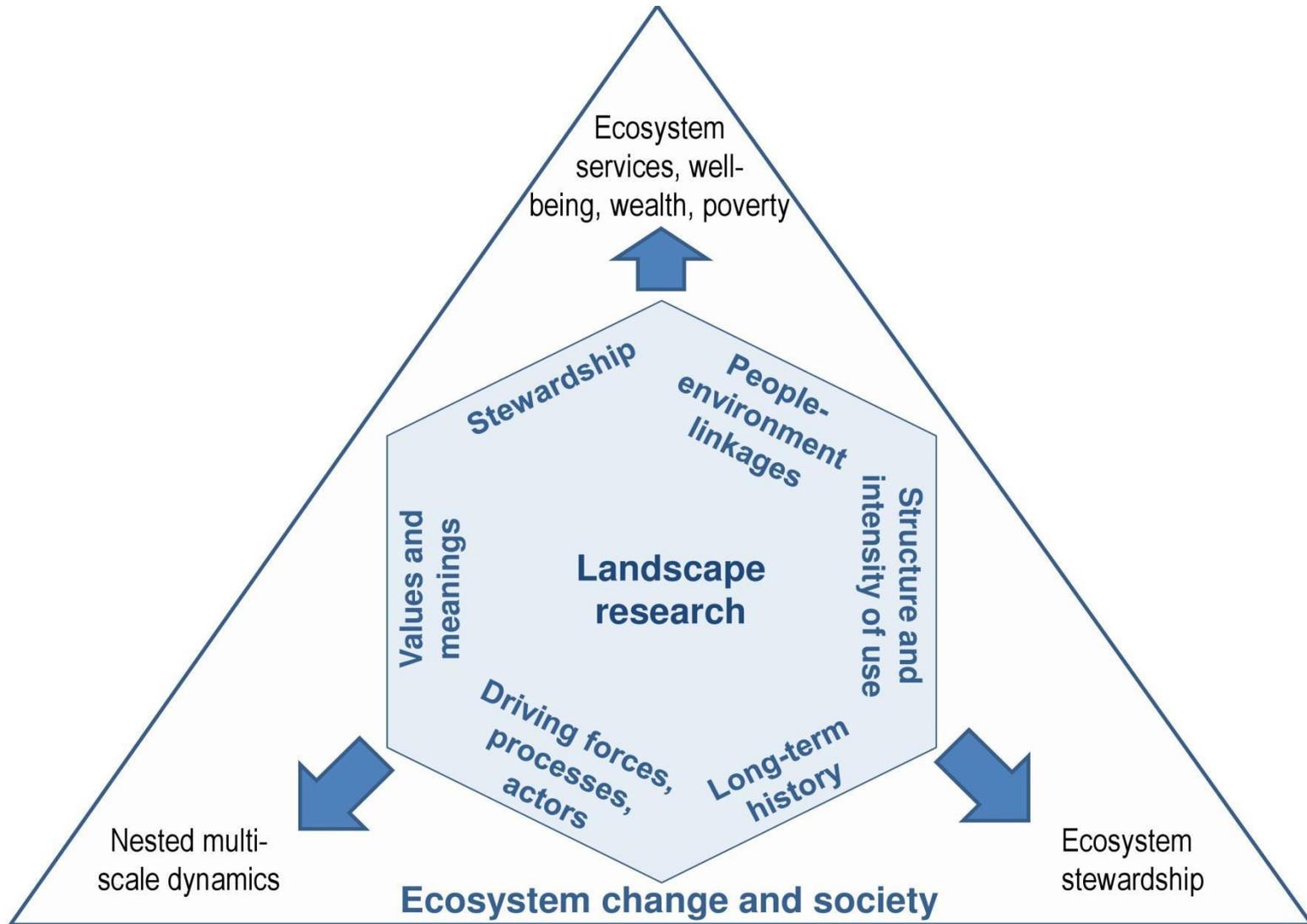
- To establish a brief family tree of landscape studies
- To review and synthesize findings from six important areas of landscape research in Europe
- To discuss how these findings may advance the study of ecosystem change and society

Assumptions of HERCULES approach



1. Landscapes are shaped by the connections and disconnections between people and their environment
2. Landscapes exhibit important biophysical structures and land use intensities
3. Landscapes have experienced long-term histories, which have left land-use legacies that critically determine the functions and values of many contemporary landscapes
4. Landscapes are undergoing change at different rates, with a multiplicity of driving forces, processes, actors, and outcomes
5. Landscapes entail broad and diverse sets of values and meanings for people
6. Landscape governance can follow a preservation or a stewardship approach, with the latter becoming increasingly influential

Framework



- Landscape is a boundary object, useful for studying the complex interactions between human activities, social structures and physical features concerned with land.
- Potential to contribute to study of ecosystem change & society, e.g. regarding historical perspectives, quantification of change processes, understanding of driving forces and actors, values and meanings, governance
- Complementarity of landscape and ecosystem change & society approaches

- Online dictionary of terms
- Publication in „Ecology & Society“ journal
- Linkage to „Program on Ecosystem Change & Society“
- Presentation and discussion at HERCULES workshop/Green Week, Stockholm Resilience Centre and IALE conference

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Synthesis, part of a Special Feature on *Programme on Ecosystem Change and Society (PECS): Knowledge for Sustainable Stewardship of Social-ecological Systems*

Exploring ecosystem-change and society through a landscape lens: recent progress in European landscape research

*Tabias Plieninger*¹, *Thomas Kizos*², *Claudia Bieling*³, *Laurence Le Dé-Blayo*⁴, *Marie-Alice Budniok*⁵, *Matthias Bürgi*⁶, *Carole L. Crumley*⁷, *Geneviève Girod*⁸, *Pip Howard*⁹, *Jan Kolen*¹⁰, *Tabias Kuemmerle*¹¹, *Grega Milcinski*¹², *Hannes Palang*¹³, *Kathrin Trommler*¹¹ and *Peter H. Verburg*¹⁴

ABSTRACT. Landscapes are closely linked to human well-being, but they are undergoing rapid and fundamental change. Understanding the societal transformation underlying these landscape changes, as well as the ecological and societal outcomes of landscape transformations across scales are prime areas for landscape research. We review and synthesize findings from six important areas of landscape research in Europe and discuss how these findings may advance the study of ecosystem change and society and its thematic key priorities. These six areas are: (1) linkages between people and the environment in landscapes, (2) landscape structure and land-use intensity, (3) long-term landscape history, (4) driving forces, processes, and actors of landscape change, (5) landscape values and meanings, and (6) landscape stewardship. We propose that these knowledge areas can contribute to the study of ecosystem change and society, considering nested multiscale dynamics of social-ecological systems; the stewardship of these systems and their ecosystem services; and the relationships between ecosystem services, human well-being, wealth, and poverty. Our synthesis highlights that knowledge about past and current landscape patterns, processes, and dynamics provides guidance for developing visions to support the sustainable stewardship of social-ecological systems under future conditions.

Key Words: *ecosystem services; European Landscape Convention; landscape governance; landscape stewardship; landscape values; multiscale landscape modeling; social-ecological systems*

INTRODUCTION

Research on environmental change is characterized by striking contrasts in spatial scales. Global-scale data and increasingly sophisticated quantitative methods allow the assessment of such issues as planetary boundaries (Steffen et al. 2015), food security (West et al. 2014), or future land use (Schmitz et al. 2014), often in a top-down style (Verburg et al. 2013). A complementary view emphasizes that, to acknowledge the complexities of current sustainability challenges, among others, profound alterations of ecosystems and the services they provide, we additionally need to connect global to regional and local scales through place-based approaches, thereby taking context, meaning, and real-world relevance into consideration (Fischer et al. 2011). The Program on Ecosystem Change and Society (PECS) has been established within the International Council for Science (ICSU) global change programs to strengthen such place-based research through comparative and collaborative approaches, thus facilitating insight into three focal areas: (1) the nested multiscale dynamics of social-ecological systems, (2) the stewardship of these systems and their ecosystem services, and (3) the relationships between ecosystem services, human well-being, wealth, and poverty (Carpenter et al. 2012).

The Program on Ecosystem Change and Society builds heavily on the concepts of social-ecological systems, which have paved the way for the increased recognition of the dependence of humanity on ecosystems in science and policy. Among the existing frameworks to describe social-ecological systems (Binder et al. 2013), the ecosystem services concept appears to be prominent. This concept suggests that human well-being depends on

ecosystem services and that assessment and acknowledgement of these services leads to more sustainable ecosystem management (Raymond et al. 2013). In the ecosystem services concept, the social system is understood to comprise humans acting as users of the ecological system and as valuing agents. The ecological system is conceptualized to focus on ecosystem integrity and functions that ensure the continued availability of ecosystem services (Binder et al. 2013). Despite a wealth of research on social-ecological systems and ecosystem services, the approach still needs advancement in terms of understanding and governance of social-ecological interactions between regions; attention to long-term drivers; understanding of the interactions among power relations, justice, and ecosystem stewardship; and development of a stronger science-society interface (Fischer et al. 2015).

One research project endorsed by PECS is specifically dedicated to the study of landscapes and their role in European culture and societies (<http://www.hercules-landscapes.eu>). This project has a particular focus on dynamics, actors, and cultural values around landscapes. In general, landscape research seeks to draw connections among people, between people and places, and between societies in their environment at the landscape scale (ESF 2010). In Europe, landscape research has received broad attention since the adoption of the European Landscape Convention (CE 2000). More recently, landscape approaches have found substantial resonance also outside Europe (Sayer et al. 2013). We review and synthesize findings from six important areas of landscape research in Europe and discuss how these findings may advance the study of ecosystem change and society.

¹University of Copenhagen, ²University of the Aegean, ³University of Hohenheim, ⁴Université Rennes 2, ⁵European Landowners' Organization, ⁶Swiss Federal Research Institute WSL, ⁷Uppsala University, ⁸CIME, ⁹Forrest Communication Network Ltd., ¹⁰Leiden University, ¹¹Humboldt-Universität zu Berlin, ¹²SINERGISE, ¹³Tallinn University, ¹⁴VU University Amsterdam