


Analyzing dynamics and values of cultural landscapes

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What are cultural landscapes?

Does the term ‘cultural landscapes’ refer to just the few emblematic global hotspots of landscape beauty, such as the Balinese rice terraces and water temples or the vineyard landscapes of the Piedmont in Italy? Or does the term also include our everyday landscapes—not necessarily aesthetically appealing or historically valuable—that have also been strongly shaped by human activities? In other words, do we speak about a minority or majority of the global land surface when we refer to cultural landscapes?

We face a wide diversity of definitions and applications of the term cultural landscapes (Wu 2010). Of course, there are the gems, where long-term interactions between people and landscapes have resulted in valued landscapes. Such landscapes, typically characterized by unique agricultural systems,

are also often called traditional cultural landscapes (Solymosi 2011; Fischer et al. 2012). The cultural and natural heritage values of such landscapes have become important in landscape policy and management, for example in the UNESCO World Heritage Convention, the Satoyama Initiative that evolved around the UN Convention on Biological Diversity, and the FAO initiative on Globally Important Agricultural Heritage Systems (GIAHS). This increasing attention has been triggered by the fact that the characteristics and values of many traditional cultural landscapes have been disappearing or are threatened in many places around the world. These changes have been associated with a reshaping of landscape appearance and functioning caused by a wide range of human activities such as urbanization and intensification of agriculture and forestry. However, the interpretation of the term cultural landscapes applied in this special

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issue is a more encompassing one, one also adapted in the European Landscape Convention, reflecting the fact that most landscapes today have been heavily influenced by humans, often for centuries and millennia. Part of this understanding of the term cultural landscapes is the notion that we continue to shape cultural landscapes that potentially provide a sense of place to current generations and heritage values to those of the future.

Our basic proposition here is that landscape research needs to conceptualize the diversity of human impacts in the present as well as in the past, and the feedbacks between people and landscapes. The objective of this issue is to demonstrate recent progress in addressing these feedbacks and the embedded cultural dimensions. In addition to documenting this progress, an important aim is to identify challenges that remain to be tackled in the research of cultural landscapes. The special issue assembles papers presenting insights gained in the recently finished European research project “Sustainable Futures for Europe’s Heritage in Cultural Landscapes, HERCULES” (<http://www.hercules-landscapes.eu/>), complemented by studies of cultural landscapes in Asia, Africa, and the Americas. The special issue is being published in parallel with a special issue of the journal *Landscape Research*, where further studies and insights derived from this project are presented (Shuttleworth and Palang 2017).

Landscape research on and for society

The common ground of all contributions assembled in this special issue is the interconnectedness of people and the landscape. All studies share an understanding that cultural landscapes are not frozen in time but evolving dynamically, containing values for society worthy of being protected and promoted. These values are threatened by factors and pressures ranging from invasive species (Montti et al. 2017) to technological innovations and economic turmoil. Consequently, the question of how to secure the distinct values of cultural landscapes, especially if they are not economically profitable, is among the most pressing issues in landscape research (Hernández-Morcillo et al. 2017). Assessing these values, assigning them to a specific place, and determining the factors shaping their spatial pattern reveal a lot about the complex relationship

between people and landscapes. The study by Garcia-Martin et al. (2017) highlights this for Europe, showing that accessibility, presence of water, settlements and cultural heritage are important determinants for the recreational potential, aesthetics and social fulfilment of cultural landscapes. More essential ecosystem services provided by cultural landscapes are in demand in poor rural settings, e.g. in Ethiopia, where Dorresteijn et al. (2017) reveal household-specific profiles in ecosystem services but also disservices received. The unequal distribution of benefits and burdens around ecosystem services within a community has to be considered in the sustainable management of cultural landscapes, a task that requires integrated ecological and social science approaches.

Ecosystem services supplied by cultural landscapes are not stable over time, and they are not simply a reflection of present land use (Bürgi et al. 2015). Ziter et al. (2017) conceptualize three processes leading to time-lag effects between land-use change and ecosystem service supply, i.e. slow ecological processes governing ecosystem service supply, time lags between land-use change and ecosystem response, and threshold relationships. Time-lag effects between land-use change and ecosystem response are illustrated by Li et al. (2017) through an example from the eastern Qinghai-Tibetan Plateau – a vast grassland often not perceived as a cultural landscape but rather as wildland. However, long-lasting pastoralism in varying intensities triggered land-use changes and, in recent times, subsequent signs of rangeland degradation.

In a study focusing on several types of US landscapes, Ziter et al. (2017) conclude that investigating ecological effects of urban abandonment, a process visible in Detroit, Michigan and elsewhere deserves high research priority. This process did not show up on the list of processes responsible for changes in cultural landscapes across Europe found by Bürgi et al. (2017), i.e. agricultural abandonment, afforestation, deforestation, expansion and intensification of agriculture, and expansion of settlements. In this Europe-based study using comparative historical analyses, access and infrastructure, political shifts, the labor market, technological innovations, and climate change were identified as main driving forces of landscape changes. The changes in relevant driving forces over time in the past imply that different and

partly novel driving forces may change the future development of cultural landscapes as well. In a European setting, agri-environmental support schemes and direct payments are a major factor that should be considered when assessing the future of agricultural landscapes. Tieskens et al. (2017) studied the impact of agri-environmental schemes on decisions made by farmers of different types of farms and specifically considered consequences on a specific and emblematic element of cultural landscapes—hedgerows in South West Devon (UK). Farm size and payment level were found to be influential. A very different, but no less decisive, factor influencing the future of cultural landscapes worldwide is the presence of invasive species. For example, Montti et al. (2017) demonstrate how an invasive Asian tree restructures subtropical forest landscapes in Argentina tremendously. Information on the particular vectors and susceptibility of cultural landscapes to invasive species can assist in identifying adequate measures and allow determining possible ecological consequences ahead of time.

The diversity of approaches in cultural landscape research is reflected in the diversity of tools and methods applied. In the studies presented in this special issue, these are remote sensing image analyses and species distribution modelling (Li et al. 2017; Montti et al. 2017), oral history interviews (Bürgi et al. 2017; Li et al. 2017), stakeholder workshops and Agent-Based Modelling (Tieskens et al. 2017), Public Participation GIS approaches (Garcia-Martin et al. 2017), expert elicitation (Hernández-Morcillo et al. 2017), and household surveys (Dorresteijn et al. 2017).

Challenges for research

Preserving and developing cultural landscapes of outstanding value, as well as everyday cultural landscapes, pose specific challenges to landscape research. Some research priorities reflecting a European perspective are proposed by Hernández-Morcillo et al. (2017). These authors show that scientists, policy-makers and practitioners alike emphasize the need to better understand how to maintain cultural landscapes where they are not economically profitable. Achieving such understanding might be more of a practical concern than an actual research

challenge. Examples of how to increase the economic strengths of cultural landscapes are manifold (Mann and Plieninger 2017) and include promoting initiatives for sustainable tourism and labelling traditionally produced agricultural products. There have also been many studies looking into monetizing ecosystem services to give the non-marketable values of cultural landscapes more weight (van Zanten et al. 2016). Still, these attempts seem to be of foremost regional importance and collectively have so far not been able to significantly take pressure off cultural landscapes.

Cultural landscapes are dynamic, i.e. they cannot be preserved in a specific state, within a rapidly changing global environment. All cultural landscapes have evolved over time and will continue to do so in the future, triggering research interest in uncovering the prerequisites and circumstances that enabled the development and preservation of outstanding values. Such studies might result in insights for the planning and design of novel cultural landscapes and for recognizing land-use systems that have the potential to create new values in the landscape and become valuable heritage in the future. Analyzing the circumstances under which the cultural landscape “gems” have been preserved might in turn lead to insights into regimes of governance or stewardship that provide a suitable context for the preservation of strong cultural values in such landscapes.

If conceptualized as social-ecological systems (Termorshuizen and Opdam 2009; Cumming 2011), the notion of cultural landscapes provides an ideal perspective and template upon which questions of sustainability and sustainable development can be addressed. A landscape perspective is genuinely integrative, focusing on the analysis of trade-offs between ecosystem services and sustainable development goals (SDGs) in (everyday) cultural landscapes. Establishing links between ecosystem services and the SDGs is in this sense an important step for opening up novel avenues for landscape research to become relevant for the global challenges ahead (Freeman et al. 2015). Analyzing changes and values of cultural landscapes and projecting them into the future provides guidelines and contributes to monitoring systems for SDGs. Recently, the Global Landscapes Forum recognized the integrated landscape approach as “the most promising tool for realizing the Sustainable Development Goals (SDGs) and Intended Nationally Determined Contributions (INDCs) as outlined

under the Paris Agreement” (<http://www.landscapes.org/glf-marrakesh>). This call to adopt such an approach has yet to be taken up fully by the landscape research community by studying questions such as: How might landscapes that lessen trade-offs between ecosystem services and that reach sustainable development goals look in different regions of the world?

An especially promising avenue for landscape research to do so is to create stronger links with land system science when studying cultural landscapes. Indeed, there are striking parallels between research agendas brought up by the land system science community (Verburg et al. 2015) and the direction outlined above for integrative research on cultural landscapes. These include linking spatial pattern analyses more closely with actors and their networks of interaction, identifying causal mechanisms that bring about landscape change, analyzing land-use conversions and intensification jointly, assessing land system states and possible regime shifts between them (Ramankutty and Coomes 2016), and exploring how landscapes are increasingly ‘telecoupled’ (i.e. incorporated in global networks of trade, information sharing, capital flows, and interaction of actors (Friis et al. 2016)). Using these new analytical lenses and tools in landscape research have tremendous potential to increase our understanding of why and how cultural landscapes are changing, and which policies and other management initiatives might be effective in steering change in these landscapes into desired directions.

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