1 The Emergence of Landscape Stewardship in Practice, Policy and Research

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Introduction

Traditional cultural landscapes – century old terraced olive groves, cultivations of spectacular carob trees and extensive almond orchards – shape the foothills of the Sierra de Tramuntana of Mallorca (Spain) (Fig. 1.1). But although these landscapes are greatly appreciated by visitors and locals for the nature experiences that they offer, more and more of the fields are facing land abandonment. Recently, estate owners and tourism representatives teamed together in a land management network assisted by environmental non-governmental organisations (NGOs) and public funds in order to support traditional agriculture and pastoralism and so be able to contribute to sustainable rural development. Landowners create access to their estates and practice land management that enhances the qualities of the landscape, while the tourism sector helps to channel funds towards these activities, e.g. by developing and commercialising local landscape products such as premium olive oil. Joint activities include conservation of protected flora and fauna, repair of dry stonewalls and other forms of rural heritage, development of rural trails for ecotourism and creation of educational materials for visitors. The result is a lively 'working landscape' where biodiversity conservation, low intensity agriculture and sustainable tourism are complementary to each other and rural outmigration is consequently relatively low, compared to other parts of the Mediterranean.

An ever increasing number of people live in cities and urban inhabitants frequently lack direct and accessible exposure to nature in outdoor settings. Such 'extinction of experience' has led to a loss of connections between society and the environment, which has been frequently deplored. In the city of Roskilde (Denmark), citizens have deliberately created interactions with nature by establishing local 'grazing associations' that manage cattle, sheep and – individually – horses (Fig. 1.2). These associations are run by local neighbours, most typically families, who are fully responsible for taking care of the livestock. Organisation in a group enables exchange, learning and development of responsibility for animals, and facilitates such experiences particularly to children. Grasslands are managed without use of pesticides, with the soils being fertilised with human waste from a nearby housing development. These activities assure that the area will be preserved as open space and surrounding inhabitants and visitors enjoy the open vistas. For the landowner, which is the municipality, delegating grassland management to the grazing groups is much cheaper than other forms of land maintenance. Similar livestock associations have emerged throughout Denmark and represent a new kind of

Figure 1.1 Landscape stewardship by estate owners and tourism representatives in the Sierra de Tramuntana, Spain. Photo: Tobias Plieninger.

Figure 1.2 Grazing association in Roskilde, Denmark. Photo: Jørgen Primdahl.

Figure 1.3 Community-supported fisheries in Brighton and Hove, UK. Photo: Murdo MacLeod.

relationship between city and country, in which management of the landscapes of the urban periphery helps to build social capital among urban residents.

The question of sustainable management practices not only arises for rural and urban spaces but also for seascapes. In many areas of the world, the traditional fishery sector faces serious problems: Marine biologists call attention to depleted stocks as well as habitat destroying practices, e.g. dragging large nets across the seafloor. With decreasing stocks on the one hand and ever increasing competition from industrial-scale fishing enterprises on the other, it gets more and more difficult for local small-scale fishers to make a living. Adding to these problems, consumer demand is focused on a very limited set of universal species like cod or salmon, whereas other species are considered as useless 'bycatch'. However, there is also a developing trend of consumers requesting local fish from sustainable catching methods. Taking up this demand and responding to the problems in the sector, models for community supported fisheries have recently emerged. In the Catchbox initiative in Brighton and Chichester on the UK south coast for example, citizens sign up and pay upfront for a share of a local fisher's catch (Giorgi et al. 2013) (Fig. 1.3). For the fishers this includes a stable return which is higher than on the conventional market. Fishers are working with small boats, allowing them to apply a sustainable approach to how and what they fish. For consumers, participation increases the knowledge and awareness regarding fishery issues, which also results in changed behaviour e.g. regarding a higher willingness to consider whole fish and local species they have not been familiar with in the past. In sum, Catchbox contributes to the sustainability of the marine environment, brings economic benefits to local fishers,

changes consumer knowledge and behaviour and catalyses the local community by bringing diverse local actors closer together.

What do these three cases – that appear so different in their environmental, socio-economic, geographic, political and practical characteristics – have in common? An answer might be easier to find when looking at what these cases do not illustrate. Management of natural resources is not carried out by public authorities but in a bottom-up process by people committed to landscapes that organise themselves (although frequently encouraged by public policies). The initiatives described do not pursue single landscape interests (e.g. increasing farmland profitability or protecting flora and fauna), but achieve multiple objectives, combining for example nature conservation with opportunities for tourism. Activities are not carried out by an individual land manager on one plot of land. Rather, they are collaborative efforts that work at the scale of a landscape. Actions tend not to be started with a fully pre-designed management plan, but they build on learning, adaptation, ingenuity and combination of different knowledge forms. Some are limited to a certain period of time, some sustain over long time scales, some are formalised into public land management policies. The combination of these features forms the core of landscape stewardship.

People develop stewardship for landscapes, as these are a basic component of our natural and cultural heritage; they contribute to the formation of local cultures and provide ecosystem services both for the benefit of individual and societal wellbeing (Bieling et al. 2014). After the adoption of the European Landscape Convention (ELC) in 2000, the protection, management and planning of high-quality landscapes has attracted broad attention from scientists, policy makers and the general public in Europe. As a result, increasing importance has been given to the preservation and development of the regional diversity and heritage of both ‘special’ and ‘ordinary’ landscapes (Penker et al. 2013, Enengel et al. 2014). Indeed, thousands of landscape stewardship activities have been inventoried in Europe (Quer et al. 2012, García-Martín et al. 2016). Similar activities have gained ground in other continents: In Asia, Africa and Latin America integrated landscape initiatives are growing rapidly (Estrada-Carmona et al. 2014, Milder et al. 2014), aiming to realign agriculture, rural livelihoods and ecosystem conservation at the landscape scale. In North America, working landscape partnerships foster effective stewardship and conservation of land through active human presence and management (Huntsinger and Sayre 2007, Abrams and Bliss 2012, Charnley et al. 2014). In Australia, the Landcare movement is successful in promoting landscape-scale, community-based natural resource management (Prager 2010, Gill 2014). At global level, the Satoyama Initiative has promoted stewardship of social-ecological production landscapes as a means to achieve the aims of the UN-Convention on Biological Diversity (Takeuchi 2010).

This book responds to the call from prominent voices in landscape ecology and related landscape studies to move towards a science of landscape sustainability i.e. towards a ‘place-based, use-inspired science of understanding and improving the dynamic relationship between ecosystem services and human wellbeing in changing landscapes’ (Wu 2013, p. 999). We propose landscape stewardship as an inclusive notion for all collaborative efforts towards landscape sustainability. At the heart of landscape stewardship (also referred to as cultivation of ‘deep care’ for landscapes, Musacchio

2013) is the appreciation, awareness and actions of people for multiple landscape values that they perceive as crucial for their own wellbeing (Nassauer 2011). Our starting point is the finding that the disruption of multiple connections between people and their environment in landscapes is at the heart of much environmental and social malaise (Selman 2012) and that reconnection (Folke et al. 2011) through landscape stewardship is a major contribution to sustainable development.

What Is Landscape Stewardship?

Landscape stewardship comprises all 'efforts to create, nurture and enable responsibility in landowners and resource users to manage and protect land and its natural and cultural heritage' (Brown and Mitchell 2000, p. 70). In this book, we understand landscape stewardship as a place-based, landscape-scale expression of broader ecosystem stewardship ('a strategy to respond to and shape social-ecological systems under conditions of uncertainty and change to sustain the supply and opportunities for use of ecosystem services to support human wellbeing', Chapin et al. 2010, p. 241). In general terms, stewardship strategies assess and reduce vulnerability to known stresses, develop proactive strategies to shape uncertain change and advance transformational changes to potentially more favourable trajectories (Chapin et al. 2010). In its most typical expressions, landscape stewardship (Laven et al. 2012, Sayre et al. 2013, Milder et al. 2014):

(1) Seeks to simultaneously improve heritage, food production, biodiversity and/or ecosystem conservation and rural livelihoods and particularly acknowledges the interconnections between social justice and environmental health
(2) Works at a landscape scale and includes deliberate planning, policy, management or support activities at this scale (while at the same time considering the complex and often non-linear interactions with processes and practices at other scales)
(3) Involves intersectoral co-ordination or alignment of activities, policies or investments at the level of ministries, local government entities, farmer and community organisations, NGOs, donors and/or the private sector
(4) Is self-organised and highly participatory (including people not only as variables affecting landscapes but also as participants in those landscapes), supporting adaptive, collaborative management within a social learning framework and
(5) Values a diversity of perspectives and 'ways of knowing', including local and indigenous knowledge of landscapes and natural resources.

In the European Landscape Convention, 'landscape' is considered 'an area, as perceived by people, whose character is the result of action and interaction of natural and/or human factors' (ELC 2000). Defining landscape as a central arena for sustainable development, the Convention has become the governing document steering both landscape management and inadvertently, landscape research in Europe. Landscapes are visible artefacts of natural and societal processes (Nassauer 2012). By this, they express a tight interplay of physical features of the human environment with social

structures and human ideas (Selman 2012). Emphasising the cultural dimension of such coupled systems implies a holistic view, in which humans perceive and value the existence of landscapes and at the same time interact with them and even create them. With this, landscapes not only integrate the natural and the human realm but are also at the nexus of material and immaterial, perception-based dimensions (Plieninger and Bieling 2012). Multiple (and sometimes contradictory) concepts of 'landscape' prevail in disciplines including geography, anthropology, planning, architecture, ecology, environmental sciences and the humanities (Plieninger et al. 2015). By this, 'landscape' is less an established theory but should be seen as a useful medium for science-society synthesis and a method for environmental invention (Nassauer 2012).

'Stewardship' is not only a management approach but – perhaps even more – an ethic that emphasises responsibility, collaboration, participation and communication in the planning and management of land resources (Gundersen and Makinen 2009). The roots of landscape stewardship are found in the work of forester and wildlife researcher Aldo Leopold (1887–1948) (Knight 1996). In *A Sand County Almanac* (1949), Leopold called for people's responsibility for land, introducing a seminal imperative of land stewardship: 'A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise' (Leopold 1949, p. 262). Highlighting the need for a personal relationship to nature based on individual perceptions and experiences, and framing people as integral parts of landscapes, Leopold laid the ground for engaging and inspiring people to take care of the land (Gundersen and Makinen 2009).

As with 'landscape', the concept of 'stewardship' has been used in multiple ways in natural resource management (Raymond et al. 2016a). One school defines stewardship as an essential aspect contributing to human preference for visual landscape character and quality (Ode Sang and Tveit 2013). In agriculture and forestry, stewardship refers to an ethic towards 'the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future generations and other species, as well as of private needs and accepts significant answerability to society' (Worrell and Appleby 2000, p. 263). In the social-ecological systems literature, stewardship is considered fundamental for the enhancement of ecological resilience and supports human wellbeing through the provision of ecosystem services (Chapin et al. 2009). Landscape stewardship may also refer to policies and incentive schemes for sustainable land management (e.g. agri-environmental schemes in the United Kingdom are termed Entry Level Stewardship and Higher Level Stewardship agreements) (Robinson 2008, Raymond et al. 2016b).

The worldwide attention given to the diverse forms of landscape stewardship is a consequence of the liaison of two overarching developments: (a) An increasing demand for high-quality amenity landscapes, in particular in industrialised countries and (b) a general trend towards decentralised landscape planning and policy (Termorshuizen and Opdam 2009). Landscape stewardship finds ground wherever people are attached to nature (Lokocz et al. 2011) in the countryside but in particular also in urban areas (Krasny and Tidball 2012, Krasny et al. 2014). Stewardship of landscapes, ecosystems and the planet requires a new agenda both for the science and practice of natural

resources management (Chapin et al. 2011); it depends strongly on real-world case studies and experimentation (Felson et al. 2013).

Stewardship and Land Management

Stewardship has a prominent role in land management, in particular in Europe (Southern et al. 2011), Australia (Curtis and De Lacy 1998), and North America (Plummer et al. 2007). It has been applied to a broad range of natural resources and accordingly, there is a variety of related notions such as land stewardship, countryside stewardship, agricultural stewardship, forest stewardship, pastoral stewardship, wildland stewardship or environmental stewardship (Worrell and Appleby 2000). Stewardship also comprises a diversity of dimensions and understandings referring either to a moral stance (Gill 2014), values (Szucs et al. 2009), practices (Pant et al. 2004), services (Penker et al. 2013), outcomes (Plummer et al. 2007) and/or potential markets (Hamblin 2009). To measure stewardship among land managers, indicator questions such as 'It is in the best interest of farmers to invest in soil conservation to ensure the long term success of their farms' or 'Profit and capital gain is only a small part of the satisfaction to be gained from being a farmer' have been used (Vanclay 1987). A firm stewardship ethic is generally found among most land managers (Curtis and De Lacy 1998, Lawrence et al. 2004). In agriculture, stewardship is important, not only towards the land but also towards humans (e.g. farm workers) and animals (Szucs et al. 2009).

Raymond et al. (2016a) identified four contrasting motivations for landscape stewardship among land managers: *Environmentally-minded landscape stewardship* looks after land in an environmentally responsible way. It manages environmental features, especially those important for wildlife and sustains these for future generations. *Production-oriented landscape stewardship* is about keeping land productive and to preserve traditional land management practices. A more *holistic understanding of landscape stewardship* emphasises the interactions and interdependencies between ecological and production systems and especially the role of landscape diversity. *Instrumental* forms of *landscape stewardship* are motivated by government policies or incentive schemes for landscape stewardship.

Stewardship and Landscape Values

A defining element of landscape stewardship is that the management of land must consider the individual and societal values of landscapes (Setten et al. 2012, Plieninger et al. 2015). These values, especially cultural ecosystem services, often do not lend themselves towards monetary valuation, but are based on a broad range of human-environment relationships (Raymond et al. 2013). Landscape values are the values that people attach to forms, practices and relationships in landscapes (Stephenson 2008). They reflect perceptions of the landscape under valuation, held values and associated preferences and the context of the valuation (Raymond et al. 2016a). Values in

landscapes are diversified and interconnected ranging, for example, from intangible features such as spiritual values and outdoor recreation through water and climate regulation to the provision of food (Termorshuizen and Opdam 2009). Landscape research into such services is typically focused on how different types of landscapes provide different services and how different parts of society value them, depending on the cultural context as well as the scarcity and accessibility of the services provided. Precise understanding of the complexity of assigning values to landscapes is important for decision making on the protection or development of cultural landscapes, in particular for evaluating trade-offs around alternative trajectories of landscape change.

Landscape stewardship constitutes a central link between nature and culture, expressing similar thinking to the biocultural approach to conservation (Gavin et al. 2015). The 'Charter of Rome', developed under the Italian Presidency of the Council of the European Union, has raised awareness for the interrelations and interactions between natural and cultural capital (Council of the European Union 2014). Natural capital refers to 'the natural resources, biodiversity and ecosystems that contribute to human wellbeing'. Cultural capital comprises 'the people, groups and local actors, with their diversity of knowledge, capacities and practices and human activities that are shaping landscapes' (Council of the European Union 2014). Landscape stewardship contributes in several ways to enhancing synergies between natural and cultural capital: Firstly, it generates knowledge (both scientific and experiential), capacities and practices that sustain natural capital. Secondly, landscape stewardship creates cultural capital by mobilising, renewing and/or reconfiguring social networks in landscapes (Olsson et al. 2004). Thirdly, landscape stewardship fosters the linkages between natural areas, human-shaped environments, green infrastructure and urban and rural areas. Finally, landscape stewardship also has a political dimension and can improve communication, mainstreaming and policy coherence in a wide societal and political context. For example, landscape stewardship strengthens nature conservation policies and protected area management and – in the context of the European Union – offers synergies between policies such as the Common Agricultural Policy, the Biodiversity Strategy, the Water Framework Directive, the European Green Infrastructure initiative and the Council of Europe's Landscape Convention (Sabaté et al. 2013).

Benefits of Landscape Stewardship

Landscape stewardship typically includes a multitude of stakeholders, divided into actors (those who manage landscapes on the ground, such as landowners, farmers, gardeners and foresters), enablers (e.g. administrations, researchers and funding bodies that provide supportive frameworks), facilitators (bridging organisations, such as land care groups) and civil society at large (Sabaté et al. 2013). Combinations of stakeholders in landscape stewardship are complex because individuals or groups often assume multiple roles. For example, farmers exert landscape stewardship in three different roles, as

Table 1.1 Examples of individual and societal benefits of landscape stewardship: Source: Sabaté et al. 2013.

Stewardship agreement	Individual benefits	Societal benefits
Maintaining set-back from a river	Water retention; reduced flood damage/ erosion; recreation area, land knowledge/wisdom, public recognition	Improved drought/flood control; increase in fish and wildlife, reduced water contamination and treatment costs
Mowing field after breeding season	Certification of best practices; financial incentive; birdlife appreciation, land knowledge/wisdom, public recognition	Increase in birdlife, recreational opportunity (birding)
Restoring ephemeral pond	Water retention; technical/financial assistance, ground water recharge, land knowledge/wisdom, public recognition	Improved drought/flood control; surface water filtration increase in wildlife
Selective forest harvesting	Greater long-term yields, technical assistance (harvesting plan), land knowledge/wisdom, public recognition	Forest habitat diversity, underground water quality, wildlife
Fishpond management	Certification of best practices; financial incentive; wildlife appreciation; tourism income, land knowledge/ wisdom, public recognition	Increase in wildlife, as fishponds can approximate the ecological role of lost natural wetlands

primary producers, as landowners and as citizens within a rural community (Primdahl et al. 2013).

Table 1.1 presents some examples of how models of landscape stewardship can enfold benefits both at the individual and societal level. Well-designed collaborative landscape-scale schemes were found to be more beneficial than farm-scale schemes for a small but significant number of key farmland species and ecosystem services, while unlikely to harm species operating at smaller scales (McKenzie et al. 2013). Landscape stewardship is also important for understanding rural cultures, landholder practices and the politics of land (Gill 2014). It has been revealed that landscape stewardship is closely related to place attachment, thus influencing people's attitudes towards conservation (Lokocz et al. 2011).

Aims and Structure of the Book

In sustainability research and practice, the landscape approach is undoubtedly one of the most vibrant perspectives today; however, a synthesis of the existing manifold concepts and experiences is missing. This book aims to provide an analytical and comparative

perspective on the scientific underpinning and practical implementation of landscape stewardship. It has the following objectives:

(1) To enhance the understanding of the foundations of landscape stewardship,
(2) To analyse how landscape stewardship works in different fields of application and
(3) To define ways to lever landscape stewardship.

Taking up the notion of transformative sustainability learning (Sipos et al. 2008), this book seeks to align analytical and applied perspectives to the understanding of landscape stewardship. Therefore, our aims of enhancing the understanding and fostering the implementation of landscape stewardship are closely interconnected. We explicitly acknowledge the normative (and sometimes contested) content of landscape stewardship, while keeping in mind that the assessment of desirable stewardship practices is strongly dependent on a given context, shaped for instance by diverging landscape preferences of different stakeholders (Ode Sang and Tveit 2013). Landscape stewardship is by definition place-based, but its spheres of influence are not necessarily limited to the scale of a local landscape. They can become internationally relevant (Ogden et al. 2013) and overarching principles of effective stewardship can be identified (Laven et al. 2012, Sayre et al. 2013). Therefore, both landscape-scale practices of landscape stewardship and a general perspective on its foundations, functioning and prospects will be addressed within this volume. The book is structured into three parts.

Part I is dedicated to the conceptual foundations of landscapes stewardship and provides four different perspectives.

To begin with, in Chapter 2 F. Stuart (Terry) Chapin III explores the ecological foundations of stewardship, understood as a framework that guides society to actively shape pathways of ecological and social change. In particular, he describes the ecological processes that link ecosystems within landscapes which must be understood and managed, if integrated social-ecological systems are to thrive. He concludes that landscape stewardship supports the twin goals of ecological integrity and human wellbeing, rather than privileging one goal over the other.

Chapter 3 (by Elizabeth Conrad) is dedicated to the human and social dimensions of landscape stewardship. A stewardship approach implies that we manage our landscapes and the resources contained therein not only assuming that we have rights (typical of owners) but also on a realisation that we have corresponding duties (typical of caretakers). Conrad provides thoughts for promoting landscape stewardship, based on environmental psychology and landscape planning and addresses issues of environmental education, emotional bonds to nature, exploiting the benefits of landscapes for human health and wellbeing and developing participative landscape governance.

Acknowledging the crucial role of collaborative approaches, Chapter 4 (by Louise E. Buck, Sara J. Scherr, Christopher M. Planicka and Krista Heiner) provides an overview on long-term multi-stakeholder partnerships among different groups of land managers and resource users at multiple scales, which are a defining feature of landscape stewardship. Agreeing on and sustaining landscape stewardship at scale calls for partnering between landscape stewardship platforms and new types of organisations operating beyond the landscape, such as financial institutions and national-level public agencies.