COMMUNITY ESSAY

What do we mean by sustainable landscape?

Paul Selman
Department of Landscape, University of Sheffield, Western Bank, Sheffield, S10 2TN UK (email: p.selman@shef.ac.uk)

Introduction

Landscape has become a major issue in spatial policy both as a sector in its own right, important to outdoor amenity and the leisure economy, and, increasingly, as a basis for framing and managing wider socioenvironmental systems. This trend reflects two broad “schools” in sustainable landscape development—one focused on the design and protection of scenic assets and the other emphasizing dynamic multifunctional links between ecosystem services and human well being. Given sustainability’s centrality to public policy and corporate social responsibility, it is not surprising that analysts are asking critical questions about the nature of “sustainable landscape” (Roe, 2007).

The definition of sustainable landscape is not straightforward, not least because of the differing contexts in which it is framed. In relation to large-scale exurban landscapes, an exaggerated, but not groundless, caricature is to contrast a “New World” view of something relatively pristine that sometimes needs ecosystem management with an “Old World” view of a palimpsest that requires the maintenance of traditional land-management practices to sustain subtle character distinctions. In relation to landscape architecture and planning, there is a professional subculture that designates and safeguards rural areas on the basis of “natural” aesthetic value (Brown et al. 2005). The discourses of these traditions are often quite distinct and lead to varied interpretations of sustainability. They also differ in the degree to which landscape sustainability is anthropocentrically defined (as a resource underpinning human well being) or ecocentrically defined (as a self-regenerative dynamic system). This essay analyzes what sustainable landscape might mean in practice, proposing some principles potentially relevant to a spectrum of traditions and geographical contexts. The author is grounded in the European context and acknowledges this bias; however, as Phillips (2002) has noted in relation to the International Union for the Conservation of Nature’s (IUCN) Protected Landscape Category V, such cultural landscapes/seascapes are by no means exclusive to Europe or, indeed, the “Old World.”

Dimensions of sustainable landscapes: environment, economics, society, governance, aesthetics

Sustainable development is generally considered to be at the intersection of environment, economy, and society, although these terms are now often expanded into phrases reflecting ecosystem services and limits, fair and durable prosperity, and health and social justice. Many authors also draw attention to a
fourth dimension of “political sustainability,” referring to governance mechanisms that continuously deliver sustainable development through the use of responsible science and economics. In the case of landscape, it is also uniquely important to consider what might be described as “aesthetic sustainability.” Much of the justification for landscape’s importance has been its visual appeal, coupled with intuitive (and perhaps demonstrable) associations between visual harmony, ecological integrity, human well being, and place identity. The remainder of this essay reflects on how these five dimensions might relate to sustainable landscape.

First, the environmental sustainability of landscapes has been strongly influenced by landscape ecology which is concerned with spatial patterns and processes (e.g., Farina, 2006). In the ecological perspective, a sustainable landscape would be one in which the green infrastructure—i.e., biodiverse network of habitat patches and corridors—is of sufficient size, quality, and connectedness to facilitate species’ life cycles, maintaining healthy and viable populations. The concept of sustainable landscape has developed largely in response to habitat fragmentation through land intensification; in places, it also reflects a reaction against wholesale land destruction through mining and industry where large seminatural areas are alleged to act as “stabilizers” (Hawkins & Selman, 2002). The relative importance of patch (habitat) size, the permeability of the fragmented landscape matrix, and the extent to which connected linear features improve connectivity for species movement have been much debated. In addition to the biotic realm, landscape sustainability has also been related to other natural environmental factors, notably the conservation of soil moisture and nutrient status, the integrity of water quality and quantity in surface and subsurface hydrological systems, and the influence of vegetation on the equability of micoclimate and atmospheric carbon levels.

Evidence for the environmental sustainability of landscapes is often related to their multifunctionality, services, and/or resilience. In the first of these factors, functions (e.g., biodiversity, soil filters) draw upon underlying structures (e.g., habitat mosaic) and in turn yield values to society (e.g., scenic-aesthetic). A landscape may thus afford regulation (e.g., energy balance), carrier (e.g., human settlement), production (e.g., raw materials), and information (e.g., educational) functions. Often, several functions can be found together, but their simultaneity and interactivity, rather than mere colocation, is the hallmark of multifunctionality, and this criterion has found particular application within Europe’s multilayered cultural landscapes (Antrop, 2004; Ling et al. 2007). The Millennium Ecosystem Assessment (2005) has popularized the notion of ecosystem services underpinning human well being, notably:

- Provisioning services such as food, water, timber, and fiber;
- Regulating services that affect climate, floods, disease, wastes, and water quality;
- Promoting cultural services that deliver recreational, aesthetic, and spiritual values; and
- Supporting services such as soil formation, photosynthesis, and nutrient cycling.

Landscape sustainability has been closely linked to these factors and to the associated accumulation of natural capital (Haines-Young et al. 2006). The perspective of ecosystem resilience has found particular popularity in North America, although its adherents are now widely spread (e.g., Walker et al. 2004; Matthews & Selman, 2006). This theory views a sustainable landscape as one able to achieve a state of relative stability through self-regulating feedback, albeit periodically destabilized when drawn to a different “attractor.” If the agent of instability is predominantly natural, a new self-regulating state may well be achieved. However, if the system is destabilized by high-impact human activity, feedback may prompt ever more frantic attempts to remediate to avoid transition to an undesirable state.

The economic sustainability of landscapes has often been expressed as the maintenance of attractive scenery to support tourism and recreation. However, this superficial view, though not without immediate practical merit, fails to query the desirability or possibility of retaining nostalgic spaces. Our finest cultural landscapes often exist where mainstream economic practices have serendipitously created iconic scenery and ecology as an inadvertent side effect, as with the Enclosure Acts across the English countryside during the eighteenth century. Also, the economic practices that produced them (perhaps during the eighteenth and nineteenth centuries) are increasingly obsolescent and their arcaic farming methods can now only be shored up with taxpayer subsidy. Europe has gone down this route through an elaborate scheme of agroenvironmental payments that, despite many successes, is still in tension with World Trade Organization (WTO) agreements and may be no more than a fiscally unsustainable expedient, temporarily slowing the rate of attrition. At the heart of economic landscape sustainability lies the notion of a “virtuous circle” in which mainstream endogenous, spontaneous production spins out landscape benefits that in turn make the local area attractive for producers to maintain and embed supportive environmental practices (Powell et al. 2002; Vollet et al. 2008). This synergy has been most fully articulated in relation to...
specialist food and timber products that achieve a premium based on distinctive local identity and in relation to the impact of urban greenspace on property values. However, many unexplored opportunities, both urban and rural, relate to drivers of landscape change such as housing, energy, and infrastructure.

Although it is simplest to think of economic landscape sustainability relying on market-based “change drivers” it is also necessary, in complex modern economies, to acknowledge the nonmarket mechanisms of public and voluntary patronage. The role of the wealthy patron has been prominent in garden and estate design over many centuries and there is little fundamental difference in the contemporary maintenance of landscape distinctiveness and ecological status through state intervention and the direct action of “conservation, amenity, and recreation trusts” (CARTs). Additionally, land use planning mechanisms can enforce landscape amelioration as part of the development process, and this further distorts the open market (or perhaps rectifies market failure). However, such interventions will inevitably be spatially uneven and, in a policy context where almost all landscapes are valuable to at least some “insider” groups, the character of ordinary/quotidian landscapes will generally rely on spin offs from mainstream market mechanisms or voluntary action.

Social sustainability in landscapes is often addressed in terms of participation and inclusivity in decision making and access (Moore-Colyer & Scott, 2005). While these practices are necessary, however, they are not sufficient. The phenomenological tradition affirms that landscapes have meanings to a spectrum of insiders and outsiders and may be integral to the construction of place and its genius loci (e.g., Scazzozzi, 2004). The legibility of a landscape’s narrative is critical to its perceived value, while an understanding of its rules—both codified and tacit—is pivotal to its navigability and use (Olwig, 2005). Places may be landscapes of security or fear to a range of residents or sojourners.

Several aspects are of current practical interest to the design of socially sustainable landscapes. First is the inclusion of public preferences through relatively well-developed methods of participatory design and landscape appraisal. Often, however, this remains at a relatively superficial level and lacks a clearly articulated model of client-centered design where users may be from diverse cultural and social (and even nonhuman) groups—the challenge of socially just landscape design is still poorly understood (Brown & Jennings, 2003). Second, landscapes provide a powerful setting for “social” (e.g., Collins et al. 2007) and “sustainability” (Tábara & Pahl-Wostl, 2007) learning. Especially in situations where people have become disconnected from daily contact with land and rivers, enjoyable rediscovery of the environment through the medium of landscape may facilitate re-engagement and an appreciation of aesthetic values that incorporate nature. Third, it is striking that people in community settings tend to describe landscape not in physical terms, but in associative terms related to friendship, kinship, and employment. Quotidian performances of walking and talking the landscape engender mental images of “peopled landscapes” so that both purposeful and aimless, solitary and accompanied, traverses of a place become integral to its recall. Such intimate perceptions are pivotal to social sustainability and yet have scarcely been explored. Finally, acknowledgement is rapidly expanding of landscape’s relationship to health, fitness, and well being. Several studies have attempted to relate vegetated space to mental and physical recovery and wellness, but even in this limited context the subtlety and complexity of linkages render research design intractable (e.g., Skårbäck, 2007). Yet the Millennium Ecosystem Assessment (2005) discusses far more elaborate connections between landscape and well being, ranging from national security to food supply, and most of these linkages remain matters of conjecture.

The political sustainability of landscape requires effective governance structures, including “commons,” for both the private and public domains. While some cultural landscapes have evolved endogenously from artisan practices, many have the imprint of privileged power and have thus always been “political.” In contemporary cultural landscapes, the roles of the state and the corporation are so intimately intertwined that it is difficult to imagine the production and reproduction of distinctive landscapes without government intervention. While one might question the state’s role in truly self-sustaining landscapes, it is no more of an artifice than the conscious creation of landscape (often with beneficial unanticipated ecological-visual consequences) by erstwhile gentry and potentates. A recurrent problem of landscape governance has been a widespread reliance on “projectism,” providing short-term funding for successive countryside management initiatives. While a few of these schemes have proved durable, future sustainability will rely on mechanisms to mainstream landscape considerations in designs, plans, policies, and programs related to key “drivers of change.”

A number of mechanisms signal the way toward sustained inclusion of landscape within public and private decisions. Europe is now witnessing the widespread implementation of the European Landscape Convention (Council of Europe, 2000) that is embedding the planning, protection, and management of landscapes by “strengthening institutional frame-
works” and “creating an inclusive, people-centered approach.” Similarly, local spatial planning increasingly embraces Landscape Character Assessment for systematic and consistent policy application (Swanwick, 2004). Spatial plans are also moving toward the retrofitting or phased incorporation of potentially lavish green infrastructure and sustainable urban drainage systems, thereby capitalizing on sustainable housing as a driver of future multifunctional landscapes and using statutory devices such as “developer contributions.” Such mainstreaming of landscape sustainability is, if actually practiced, a step change from the piecemeal and generally superficial development-plan policies that have existed to date (Punter & Carmona, 1997). Within the cultural landscapes of Europe, landscape measures have been widely incorporated into agricultural support mechanisms, not least as WTO agreements have forced governments to remove overt subsidies and instead pay farmers for their environmental services. The targeting of farm payments is now widely made on the basis of landscape-scale analysis, enabling strategies to reconnect habitat networks (Catchpole, 2007). The EU Water Framework Directive is also establishing catchment-scale governance, increasingly reflected in statutory documents such as River Basin Management Plans and more voluntary approaches such as river contracts. Significantly, in the United Kingdom these measures connect with a cross-departmental statutory Public Service Agreement to “secure a healthy natural environment for today and the future.” There is increasing evidence of the incorporation of landscape benefits into policy and practice in ways that assure sustained and central, rather than intermittent and precarious, consideration. While stopping short of the more fundamentalist interpretations of “bioregionalism,” numerous instances of governance are now being based on landscape units such as river catchments, thereby promoting environmental integrity and intactness (e.g., Hamilton & Selman, 2005).

As noted previously, the criterion of aesthetic sustainability is uniquely important to landscape, not only because visual amenity has been a longstanding mainstay of policy, but also because it is often assumed to indicate healthy functioning of underlying systems. There is a long tradition of valuing landscapes for their “natural beauty” (Brady, 2003). As a very sweeping generalization this tends to relate to intimate and harmonious scenery in the “Old World” and sublime and transcendent scenery in the “New World.” The arguments linking outstanding beauty to sustainability have often been emotive and essentialist, but recent interpretations suggest that these determinations are based on more than mere intuition. For example, some arguments link visual complexity and fractal dimension to ecological functionality, while numerous studies relate green and natural environments to wellness and recuperation. However, equating “natural beauty” with landscape sustainability is too limited, as it refers only to a “high culture” ontology. Many ordinary and even damaged landscapes give pleasure and security to some users, although their ambivalent qualities may mean they are contested (Jorgensen & Tylecote, 2007). Sustaining their visual qualities is a more complex issue than simply protecting them against change.

An intriguing aspect of aesthetic sustainability is that aesthetic tastes are socially dynamic and, while some perceptions of beauty may be cross cultural (Strang, 2005), often they vary according to time and place. The idea of an “acquired aesthetic” suggests that we may gradually develop an appreciation of objects that initially seem discordant or heretic—even mountains and wetlands have been the subject of a progressive revision of tastes since the eighteenth century. Landscapes possess varying degrees of legibility that betray underlying narratives, and the extent to which we appreciate or denigrate a landscape is closely related to the way we are conditioned to “read” it. It is quite plausible that, as we learn more of a landscape’s underlying story, the degree to which we endorse that story will influence the extent to which we favor the view. We could, for example, hypothesize that reactions to wind turbines—which are variously described as magnificent or monstrous—are influenced by the viewer’s belief in the importance of wind energy to sustainable development or self sufficiency. (Consider, for example, how the residents of the beautiful island of Gigha in Scotland have termed their community-owned turbines the “three dancing ladies.”) A low-impact development policy based on explicit sustainability criteria has recently embraced some “heretic” Welsh permaculture communities in the Pembrokeshire Coast National Park that had been subjected to a longstanding bureaucratic battle to demolish the buildings (Willis, 2008). The resultant structures may soon come be viewed appreciatively by tourists and planners. Such a possibility is of great significance, for the serious pursuit of sustainable development will have landscape implications that will inevitably attract protest. The extent to which society endorses a landscape’s narrative and acquires an aesthetic for its changed appearance may prove to be critical to the acceptance of “strong” sustainability practices.

**Conclusion**

The manifold dimensions of sustainable landscapes raise challenging questions over the nature of how to design, plan, and manage them. The matter is
further complicated by a variety of traditions and subcultures and by the different scales and concerns of urban and rural practitioners. However, some common themes emerge around the canons of sustainability. For example, there is a blurring of traditional urban-rural divides, characterized by strategic networks of multifunctional greenspaces, environmental service provisioning, and connective urban fringes. This confluence reflects a growing emphasis on blue-green infrastructure, not merely based on spurious leftover spaces, but systematically promoting settlements that “touch lightly on the earth” and integrate with wider landscape systems. In this MacHargian tradition, people and places reconnect with “nature” through imaginative thrift in the use of ecological-hydrological resources entailing strategic approaches to sustainable drainage, green roofs, multifunctional networks, and recuperative greenspace (see MacHarg, 1998). Further, there is a growing acknowledgment of the importance of all landscape, not only that deemed “outstanding” in terms of natural beauty. Thus, sustainable landscape planning may entail creation, reinforcement, and restoration just as much as protection; it also requires the embedding of political and economic mechanisms that possess the continuous potential to reproduce valued places. On occasion, it may involve recreation andrewilding to promote a “future nature” (Adams, 2003) across extensive areas and habitat networks, resulting in landscape systems sufficiently large and intact to be autopoietic, self-sustaining, and adaptable to climate change. Finally, there is an acknowledgment of the need to “people” landscapes, not only through participatory processes, but more generally through wider re-engagement between communities and place, and a deeper professional appreciation of the ways that local landscapes are walked and talked. Overall, addressing the sustainable landscape means moving away from “set pieces” towards systemic integrity based on wisdom and intelligent care (Iverson Nassauer, 1997) that draw upon both an anthropocentric and an ecocentric discourse. It is quite likely that such functionally sustainable landscapes will also, serendipitously, come to be seen as beautiful.

References

Adams, W. 2003. Future Nature: A Vision for Conservation, 2nd ed. London: Earthscan.
Antrop, M. 2004. Multifunctionality and values in rural and suburban landscapes. In J. Brandt & H. Vejre (Eds.), Multifunctional Landscapes Vol. 1: Theory, Values and History, pp. 165–180. Boston: WIT Press.
Brady, E. 2003. Aesthetics of the Natural Environment. Edinburgh: Edinburgh University Press.
Brown, J., N. Mitchell, & M. Beresford (Eds.). 2005. The Protected Landscape Approach: Linking, Nature, Culture and Community. Gland, Switzerland: International Union for the Conservation of Nature.
Brown, K. & Jennings, T. 2003. Social consciousness in landscape architecture education: toward a conceptual framework. Landscape Journal 22(2):99–112.
Catchpole, R. 2007. Habitat Networks in England. Urban Green Conference. June 4–5, University of Salford.
Collins, K., Blackmore, C., Morris, D., & Watson, D. 2007 A systematic approach to managing multiple perspectives and stakeholding in water catchments: some findings from three UK case studies. Environmental Science and Policy 10(6):564–574.
Council of Europe. 2000. The European Landscape Convention. http://www.coe.int/t/dg4/cultureheritage/Conventions/Landscape/default_en.asp. November 16, 2008.
Dunnett, N. & Clayden, A. 2007. Resources: the raw materials of landscape. In J. Benson & M. Roe (Eds.), Landscape and Sustainability, 2nd ed. pp. 196–221. London: Routledge.
Farina, A. 2006. Principles and Methods in Landscape Ecology: Towards a Science of the Landscape, 2nd ed. Dordrecht: Springer.
Haines-Young, R., Watkins, C., Wale, C., & Murdoch, A. 2006. Modelling natural capital: the case of landscape restoration on the South Downs, England. Landscape and Urban Planning 75(3–4):244–264.
Hamilton, K. & Selman, P. 2005. The “landscape scale” in planning: recent experience of biogeographic planning units in Britain. Landscape Research 30(4):549–558.
Hawkins, V. & Selman, P. 2002. Landscape scale planning: exploring alternative land use scenarios. Landscape and Urban Planning 60(4):211–224.
Iverson Nassauer, J. 1997. Cultural sustainability: aligning aesthetics and ecology. In J. Iverson Nassauer (Ed.), Placing Nature: Culture and Landscape Ecology. pp. 65–84. Washington, DC: Island Press.
Jorgensen, A. & Tylecote, M. 2007. Ambivalent landscapes: wilderness in the urban interstices Landscape Research 32(4):443–462.
Ling, C., Handley, J., & Rodwell, J. 2007. Restructuring the post-industrial landscape: a multifunctional approach. Landscape Research 32(3):285–309.
MacHarg, I. 1998. To Heal the Earth. Washington, DC: Island Press.
Matthews, R. & Selman, P. 2006. Landscape as a focus for integrating human and environmental processes. Journal of Agricultural Economics 57(2):199–212.
Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being: Health Synthesis. Washington, DC: Island Press.
Moore-Colyer, R. & Scott, A. 2005. What kind of landscape do we want? Past, present and future perspectives. Landscape Research 30(4):501–523.
Olwig, K. 2005. The landscape of “customary” law versus that of “natural” law. Landscape Research 30(3):299–320.
Phillips, A. 2002. Management Guidelines for IUCN Category V Areas: Protected Landscapes/Seascapes. Gland, Switzerland: International Union for the Conservation of Nature.
Powell, J., Selman, P., & Wragg, A. 2002. Protected areas: reinforcing the virtuous circle. Planning Practice and Research 17(3):279–295.
Punter, J. & Carmona, M. 1997. Cosmetics or critical constraints? The role of landscape in design policies in English development plans. Journal of Environmental Planning and Management 40(2):173–198.
Roe, M. 2007. Landscape and sustainability: an overview. In J. Benson & M. Roe (Eds.), Landscape and Sustainability, 2nd ed. pp. 1–15. London: Routledge.
Scanzoni, L. 2004. Reading and assessing the landscape as cultural and historical heritage. Landscape Research 29(4):335–355.
Skärbäck, E. 2007. Landscape planning to promote well being: studies and examples from Sweden. *Environmental Practice* 9(3):206–217.

Strang, V. 2005. Common senses: water, sensory experience and the generation of meaning. *Journal of Material Culture* 10(1):93–121.

Swanwick, C. 2004. The assessment of countryside and landscape character in England: an overview. In K. Bishop & A. Phillips (Eds.), *Countryside Planning: New Approaches to Management and Conservation*, pp. 109–124. London: Earthscan.

Tábara, J. & Pahl-Wostl, C. 2007. Sustainability learning in natural resource use and management. *Ecology and Society* 12(2):3 http://www.ecologyandsociety.org/vol12/iss2/art3/.

Vollet, D., Candau, J., Ginelli, L., Michelin, Y., Menadier, L., Rapey, H., & Dobrezez, L. 2008. Landscape elements: can they help in selling “Protected Designation of Origin” products? *Landscape Research* 33(3):365–384.

Walker, B., Holling, C., Carpenter, S., & Kinzig, A. 2004. Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society* 9(2):5 http://www.ecologyandsociety.org/vol9/iss2/art5.

Willis, B. 2008. Winning round. *Planning Magazine* November 14:19.