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Landscape in a Changing World

Bridging Divides, Integrating Disciplines, Serving Society

Contents

Foreword

We all live not only in an environment, not only in a physical reality but also in our perception of it – in a landscape. Landscape includes the physical and the mental, the natural and the cultural. For our wellbeing both the environment and the landscape are equally important.

The major grand challenges facing our society are embedded in landscape: climate change, energy needs, health and safety, food security, urbanisation and migration. This Science Policy Briefing focuses on how research on landscape can inform responses to these grand challenges of our century. It aims to analyse the current position of landscape research in European culture and in European economic, environmental and spatial policy following guiding concepts for integrating landscape research, policy and practice. There is timeliness to this report because these challenges coincide with this new opportunity to create knowledge that cannot be created in other ways. It indicates that landscape research can now holistically address major issues in the social and physical transformation of land, space and environment, and in past, present and future, relevant for addressing the challenges.

Observing that landscape research is currently dispersed across many domains and its proponents are often divided by disciplinary barriers, the authors indicate the need to enhance integrative approaches between human, social and natural and physical sciences. The integrative nature of landscape research has been greatly strengthened in recent decades by landscape becoming a subject of disciplines as diverse as archaeology, cultural geography, ecology, environmental studies, historical studies, landscape architecture, planning, psychology and sociology. The report indicates that new structures are needed to achieve more integration through shared research programmes, and to identify a pathway towards fulfilling landscape's potential as a unifying concept for European research.

This Science Policy Briefing is the outcome of the ESF-COST Synergy Initiative *A European Network of Networks: 'New Perspectives on Landscapes'* set up by the ESF Standing Committee for the Humanities (SCH) and the COST Domain Committee Individuals, Societies, Cultures and Health (ISCH) and developed in consultation with the ESF Standing Committee for Life, Earth and Environmental Sciences (LESC). The project integrated relevant COST Actions and ESF-funded activities, as well as national programmes and activities, spanning several scientific domains. The policy context for the project was set by, among other things, the adoption of the European Landscape Convention by the Council of Europe in 2000 as well as by the evolution of the Common Agricultural Policy of the European Union. In the period 2008-2009 the Steering Committee of the Synergy Initiative organised a series of workshops bringing together research communities working on landscape studies from different perspectives. Discussions at these events contributed to the development of this report.

The Science Policy Briefing brings to the attention of the research community and society at large an opportunity to establish landscape research as an integrated research field both in terms of its interdisciplinary character and its potential to produce substantial social, economic and environmental benefits. In this sense it contributes to major aims of three ESF standing committees related to landscape research (Standing Committee for the Humanities, SCH; Standing Committee for Life, Earth and Environmental Sciences, LESC; and Standing Committee for Social Sciences, SCSS) as expressed in their policy documents.

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Introduction

Many of the social, economic and environmental decisions facing Europe and the wider world concern the cultural uses and meanings of land. Their spatial dimensions can be addressed through the idea of landscape, which comes into being wherever land and people come together.

Landscape can be a difficult idea to grasp. There are as many perspectives on it as there are disciplines using it. In particular, it is a concept in which object and subject overlap and interact. For the sake of an initial common ground, therefore, this briefing shares with the European Landscape Convention the view of landscape as being not simply the environment, but the world 'as perceived by people'[1], or the environment's human element[2].

This now widely-accepted understanding allows the concept of landscape to be used to make connections between people, between people and places, and between society and its environment. In conjunction with participatory governance it can help with many of the challenges facing 21st century society. These challenges include urban and rural transformation, post-industrial revitalisation, increasing mobility, demographic and lifestyle changes and the human contributions and responses to climate change, including the aim of carbon neutrality and the new 'low-energy' landscapes that will emerge. They call for the development of new forms of governance, and they connect with concerns over food security, heritage, habitat fragmentation or biodiversity; landscape perspectives can contribute a human focus to all these.

Recent years have brought significant developments in all corners of landscape research, whether in the humanities, the social sciences or the physical sciences. Landscape research is evolving into a set of interlinked and symbiotic disciplines that transcends traditional academic distinctions. Thus enriched, landscape research can offer itself as a fundamental, integrated research field for studying perceptions as well as materiality, culture as well as nature and long-term historic transformations as well as present states. With the carefully targeted additional steps suggested in the briefing, it can become a key contributor to the European Research Area.

1. European Landscape Convention (Florence, 2000), article 1a.
2. ESF Standing Committee for the Humanities Position Paper (2007), p. 5.

Summary

Landscape matters in very many ways. Landscape is the 'human element' of our environment; it is a common good that visibly and invisibly frames everyday lives, helps to shape the world within us as well as around us, and contributes to meeting significant economic and environmental challenges.

It is clear that landscape research should be a key element in the European Research Area; it is an important arena for integrating the Sciences and the Humanities and a major factor in policy formulation. But its full potential is not being realised. It is divided by disciplinary barriers and scattered across several research domains. To challenge this fragmentation, a Network of Networks was established by ESF and COST, working in line with more general trends towards inter-domain integration, to produce this briefing. The Network was initiated within the humanities, but sought to take account of all domains and disciplines working with landscape conceptually and materially.

Six main requirements have been identified for linking research and action through integrated landscape research over the next two decades:

- Better ways to connect integrated landscape research with policy and practice;
- Effective mechanisms for equal collaboration between the physical sciences, humanities and social sciences;
- Formal structures to create and maintain interdisciplinary understandings of landscape;
- Widely agreed research aims, theory and methods founded on the integrative paradigm;
- Adequately funded research programmes for both applied and curiosity-driven integrative research;
- Structures, funding and training to produce the next generations of scholars for whom interdisciplinary and action-related research will be the norm.

The briefing concludes with recommendations for establishing a more detailed vision, a Forum and a European Research Programme to take forward these suggestions.

The briefing was written in the light of five workshops organised by Steering Committee members during 2008 and attended by a representative sample of the landscape research sector (120 landscape researchers and specialists from across Europe):

- Landscapes: Perception, Values and Meanings [Nottingham, UK]
- Social Relations and Environmental Resources [Stockholm, SE]
- Imagining the Future [Madrid, ES]
- Exploring New Territories in Landscape Studies [Krakow, PL]
- Landscape Research and Policy: What's New? What's Relevant? [Brussels, BE]

Landscape in Culture, Society and Policy

This Science Policy Briefing reflects the activity of a Network of Networks convened by the Standing Committee for the Humanities of the ESF and the COST Domain Committee for Individuals, Societies, Cultures and Health. The aim was to identify "... new platforms for research… trajectories for new basic research such as trans-cultural studies of landscape imageries or the history of biodiversity, to more applied studies in the field of cultural heritage… stronger and more diverse alliances"[3]. ESF[4] and COST are already fully committed to promoting interdisciplinary research, and this briefing proposes a major step in that direction.

The briefing's key proposal is to integrate the human(ities) perspective fully and in its own right into landscape research as the starting place for reaching out to all other landscape research areas. The aim is to create a collaborative interdisciplinary field with new paradigms and principles that will be capable for the first time of making landscape research as a whole truly useful in policy and social terms. If its results are to have an impact on high-level policy and action, landscape research must create relevant knowledge that serves social and economic as well as environmental and ecological purposes. To do this, it needs to have a fully-balanced combination of the humanities, social sciences and natural sciences.

Landscape is a powerful, diverse and dynamic cultural resource for people in Europe. In many ways it sits at the heart of European culture as a key genre of literature, art, design and mass media. Whereas the environment is the inescapable physical setting for human existence, landscape, both urban and rural, offers more. It provides a concept of 'place' linked to community, an ability to transform perceptions of the world across physical and psychological borders, a frame for people's lifestyles and identities (which in the past shaped nationhood but now contribute to emerging sub- and supra-national identities), and an interface (through concepts such as biodiversity) between people and nature.

European citizens are aware of how their landscape and cultural diversity has developed not merely over a few centuries but over many thousands, even tens or hundreds of thousands, of years. But the inheritance of landscape can become limiting if fixed ideas such as 'tradition' or 'timelessness' become dominant. The importance of regional diversity (and of European landscape in its global context) is often under-appreciated. A vigorous landscape research is needed to ensure that landscape's fluidity and mutability can help formulate positive, resilient environmental, social and governance policies.

3.ibid, p. 19.

4.ESF Standing Committee for Life, Earth and Environmental Sciences (LESC) Position Paper (2009) *Strategic Science Position: The View Ahead*, p. 14.
ESF Standing Committee for the Social Sciences (SCSS) Position Paper (2009) *Vital Questions: the Contribution of European Social Science*.

COST A27 LANDMARKS

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The Roman gold mining landscape, Las Médulas (León, Spain).

A27 'LANDMARKS' (2004-2008) was a transnational COST Action uniting 21 European countries. Researchers from many disciplines including history, archaeology, literature, environmental studies, geology, biology, geo-information, geography and mathematics were successfully brought together around a common theme, the effect on rural and mining landscapes of the cessation of traditional activities. On the one hand, these areas are understood as inherited landscapes, they form a synthesis of historical processes; on the other, they offer possibilities for future change and development, with 'landscape as heritage' facilitating their integration into 21st century social and economic realities.

LANDMARKS was structured around interdisciplinary subjects and objectives. These included the analysis of the integration of past landscape elements in present-day landscapes, historical techniques and technologies related to past landscape use, diachronic use of legal and administrative practices, past landscape perception by the communities that inhabited and exploited them, and mechanisms for public presentation of landscape cultural heritage.

The most important breakthrough was the establishment of a network of cultural landscape researchers focused on a proactive agenda directed towards synthesis and practice. This transnational and interdisciplinary network continues to exist for further collaboration. It has been instrumental in helping to elaborate this Science Policy Briefing, but also in preparing the ground for wider networks and communities of practice for future research.

Selected A27 publications:

- Bartels, C., M. Ruiz del Árbol, H. van Londen and A. Orejas (eds) (2008) *Landmarks. Profiling Europe's Landscapes*, Bochum.
- Bender, O., N. Evelpidou, A. Krek and A. Vassilopoulos (eds) (2008) *Geoinformation Technologies for Geo-Cultural Landscapes: European perspectives*, London.
- Fairclough, G.J. and P. Grau Møller (eds) (2008) *Landscape as Heritage – The Management and Protection of Landscape in Europe, a summary by the Action COST A27 LANDMARKS*, Bern (Geographica Bernensia 299).
- Orejas, A., D.J. Mattingly and M. Clavel-Lévêque (eds) (2009) *From present to past through landscape*, Madrid.

The place of landscape in culture and society can be represented for this briefing by the position that landscape holds in Council of Europe thinking and by its place in European Union policy. The Council of Europe's European Landscape Convention (2000) recognises the concept of landscape as a major force for social and environmental change or continuity, and its definition of landscape as people's perception encourages participatory and socially-focused action. The Council's Faro Convention, on the Value of Cultural Heritage for Society (2005), is also relevant, raising policy questions that resonate with landscape such as individual rights, collective responsibilities and the balances between public and private realms. Within European Union policy, in contrast, landscape is not a well-articulated issue, but it is implicit across the full range of its economic, environmental and social competencies. A great many European Union policies have strong spatial components, notably in the spheres of agricultural policies, infrastructure creation, Environmental Assessment and Habitat Directives, social cohesion programming, and regional and spatial planning.

A Common Frame for Research, Policy and Practice

The many dimensions of landscape in perception and in physical reality make it a primary arena for synergies between research, policy and action. To provide a context, the Network identified a small number of topical concepts that can frame the further evolution of landscape research over the next twenty years.

1. Complexity, multiplicity and connections

The diversity of landscape research arises from complex and far-reaching interconnections between culture and landscape on the one hand and physical environments and ecological systems on the other. Landscape research embraces a multiplicity of topics: history as well as ecology, mentality and action as well as the physical environment. It uses new representational, analytical and

Lahemaa: nature, culture, action

© A. Printsmann, Tallin University

The tavern of the 'traditional' Altja village, a tourist hotspot.

The ecosystems approach is weakly developed in its understanding of cultural inputs and services (Wascher and Pedroli 2008, 8-10). Landscape research offers ways to redress this by meaningfully linking nature, culture and action through landscape governance.

The Lahemaa National Park (LNP) in Estonia exemplifies this. The LNP covers over 725 km^2, of which 251 km^2 is the sea. It was designated for its biological and landscape diversity as expressed by habitats for spawning salmon and trout, comparatively rich bird life and the presence of brown bears and lynx. Its character underlined nature's inseparability from culture, however, and when created in the early 1970s it was an object of both national and socialist pride, its rural built heritage seen as part of Estonian ethnic and national identity. The LNP thus poses an intriguing problem. Higher-level national identities have overshadowed regional distinctiveness, and the local understanding of the park is vague.

Part of the reason for the Park's contested character disappeared with the USSR, and its identity as resistance needs review. Lahemaa today faces a growing demand for new houses and guidelines are needed to maintain a 'traditional' look. Recent research recommends searching for a new regional identity by a democratic process aiming for a new vision that combines nature conservation with cultural heritage in a form of management in accordance with the wishes of the local population.

A 'landscape governance' concept promoting a bottom-up approach and recognising the plurality of landscape perceptions and interests is being used as a way to form new Park strategies and policies. A research project in the framework of preparing a Park Management Plan is measuring the capacity for adding new buildings without losing the traditional character of the landscape. It identifies local architectural characteristics that could be employed, and in-depth interviews alongside expert inventory show the basic tension between the perception of a new regional identity by the local inhabitants and the views of 'outsiders', possibly a serious obstacle for ecosystem services.

- Kõivupuu, M., A. Printsmann and H. Palang (2010) From inventory to identity? Constructing the Lahemaa national park's (Estonia) regional cultural heritage. In: T. Bloemers, H. Kars, A. van der Valk and M. Wijnen (eds), *The Cultural Landscape and Heritage Paradox. Protection and Development of the Dutch Archaeological-Historical Landscape and its European Dimension*, Amsterdam, 115-131.
- Wascher, D. and B. Pedroli (2008) *Blueprint for EUROSCAPE 2020. Reframing the Future of the European landscape. Policy Visions and Research Support*, Wageningen.

Flanders: lessons from history

Source: E. Thoen, University of Ghent

Near Aardenburg: 'Medieval' field patterns (in red) and 17th century embankment (blue).

The former county of Flanders (today shared by Belgium, France and the Netherlands) has two very different faces. The peat and clay coastal zone supports a landscape of large parcels and holdings; the sandy soils of the interior a landscape of small, sometimes micro-sized, fields. The difference is important to modern social identity and economic activity, but is commonly ascribed to the environment and soils, as if the distinction is inevitable and naturally-ordained.

A different picture emerges from interdisciplinary research using history-based approaches and science-based geo-bio-techniques and regional comparisons. Long-term cultural explanations and responses to the natural world make it clear that the major landscape divide in Flanders is caused by social and economic factors as well.

Medieval coastal Flanders was more similar to modern inland Flanders than it is today. The majority of peasants farmed small plots of land, supplementing their subsistence strategies with proto-industrial activities such as peat digging. This changed in the course of the 13th-16th centuries. Over-exploitation of the land and environmental stress necessitated the creation of expensive sea defences and embankments and of collective social organisations (*wateringues*) to maintain them. These social changes stimulated a decline in proto-industrial activities, the bankruptcy of many small landholdings and changes in property structures. Most land came to be leased to ever-larger semi-capitalistic estates specialised in dairy and grain, which have bequeathed to us the present-day landscape of large land parcels and big farmsteads.

The opposite evolution took place in inland Flanders. The response to environmental stress and overpopulation was clearance of woodlands, colonised by smallholders who took property rights over the cleared land. Loss of fuel resources was mitigated by reserving the perimeters of plots for woodland. The size range of landholdings was much smaller than in the coastal area, even before further fragmentation of holdings between the 13th and the 19th centuries, with proto-industrialisation contributing an increasing share of peasant income. The hedges typical of this landscape began to disappear in the late 19th century as the peasant economy made way for more modern economic commercial systems, but the fragmented peasant landscape could still be found until quite recently.

This new evidence increases our understanding of the landscape's evolution and the historic processes and functions that have shaped it. This will facilitate the identification of sustainable and beneficial strategies for future management and planning.

- Thoen, E. (2004) 'Social agrosystems' as an economic concept to explain regional differences. In: B. van Bavel and P. Hoppenbrouwers (eds), *Landholding and land transfer in the North Sea Area (late Middle Ages-19th century)*, Turnhout (CORN series 5), 47-66.
- Vanslembrouck, N., A. Lehouck and E. Thoen (2005) Past landscapes and present-day techniques. Reconstructing submerged medieval landscapes in the western part of Sealand Flanders, *Landscape History*, 27, 5-18.

design technologies, and overlaps with the construction of 'virtual' worlds within which people create identities and social interactions. Many disciplines need to join forces if research is to be able to harness the power of landscape to assist in managing inherited landscape and planning and designing sustainable future landscapes.

2. A framework for change

Landscape is fluent and unfixed, a living, changing resource to be used in a sustainable way, not only something to be preserved. The construction and consumption of landscape is a social process, but it is also the product of long-term natural and human processes in the past; it is subject to continued change through physical processes but also through cultural (re)interpretations. The interactions of all these factors require greater understanding so that fully-integrated landscape research 'upstream' at the source of research and 'downstream' in its application will be a strong tool for policy makers and planners, for developers and designers, and for civil society as a whole.

3. Human perspectives

Properly integrated landscape research will focus on the plural human meanings inherent to landscape as well as on its ecological and environmental importance. Landscape research based on equal partnership between humanities, social sciences and natural sciences would enrich environmental and landscape policy in relation to democratically-structured social needs. Driven equally by cultural curiosity, social concerns and environmental knowledge, it would open new practical and relevant perspectives on social and environmental change and on cultural and social responses from 'heritage' to planning and design.

4. Mentality and materiality

A mature and integrated landscape research field will simultaneously explain landscape as both cultural perception and physical reality. It will be able to relate its results to a wide range of current problems such as climate change, energy needs, social cohesion, food security, plurality and difference, equitable governance and quality of life. It will illuminate how human values are expressed in landscape and how people live in and remake their world. It will enrich with cultural insights the emerging 'ecosystems' approaches that seek to make explicit the instrumental and functional values for society of biodiversity and environmental resources.

5. Past and future entwined

A long-term view in both directions – past and future – is vital to policy. Taking account of time depth in landscape produces better decisions and actions. Landscape is always best viewed retrospectively and prospectively, juxtaposing knowledge about the past with ambitions for the future, for example, through charting the natural or cultural causes of past environmental change and modelling future scenarios. Integrated landscape research can explain some of the historical processes that made today's environment and can help understand how landscape is used both to remember the past and envisage the future; it can do this at local and present-day scales and at European (and wider) and long-term scales.

An Analysis of Landscape Research Today

This briefing is timely. The emergence of new social, economic and environmental challenges is coinciding with the evolution of new modes of interdisciplinary landscape research capable of contributing to solutions through new understanding. Landscape research has been strengthened in recent decades by more sophisticated recognition of landscape's value as a mode of analysis in disciplines as diverse (to name a few) as archaeology, anthropology, cultural and human geography, physical geography, ecology, environmental history and other types of environmental studies, historical studies, landscape architecture, planning, psychology and sociology. This evolution has stimulated the development of healthy communities of practice which in some spheres already cross significant disciplinary boundaries. Other areas of the humanities, including design and media, history and philosophy, have contributed further to the development of landscape as a research framework for understanding the mediations of culture and nature, as have literary, filmic and artistic representations and the new virtual spaces of digitally generated landscapes.

A SWOT analysis of landscape research

The established strengths of landscape research, alongside its growing interdisciplinary experience, include the result of work over many decades. This can only be summarised here:

- A basic understanding in many nations and regions of environmental history (very deep time as well as more recent) and long-term historical processes and transformations underlying present-day perceptions of the environment;
- Dynamic and innovative landscape research in disciplines such as archaeology, geography, ecology, environmental studies, the social sciences and artistic fields;
- Tried and tested methodologies, updated with new technologies, for example, in participatory study, archive- and field-work, surveying, mapping, as part of a long tradition of studying landscape as personal and collective cultural constructions;
- Solid groundwork on mapping national and regional landscape character, often using advanced digital and remote-sensing techniques;
- A long tradition, including through trans-national networks, of landscape-based heritage and nature management, planning and design, giving a basis for future stronger links between research and practice.

Despite its strength, weaknesses and obstacles remain to harnessing fully the power of the landscape concept to provide solid social and environmental benefit. The main limits to the ambition of this briefing are that the many disciplines that use landscape as a perspective, a conceptual frame, an analytical tool or an object of study still need to develop a common ground of objectives, approaches and terminology. Weaknesses (to which solutions can be offered) take several forms, for example:

- Fragmentation of research activity, limited communication between research domains and policy sectors, high boundaries between disciplines: all can lead to significant misunderstandings of other disciplinary viewpoints;
- A reciprocal 'blindness' to other perspectives on landscape, for example, between those in environmentally-led landscape research and those arising in humanities research such as art, anthropology, philosophy, literature, film, performance;
- Under-developed theory and methods shared between disciplines, preventing integration;
- Under-developed pan-European perspectives, separating local from European scales;
- Inadequate funding frameworks for European-level collaborations;
- Insufficient understanding of national cultural difference and persistence with respect to landscape and its meanings, converting the potential strength of cultural diversity into a weakness;
- Research targets not accurately representing the range of landscape types experienced by the mass of civil society; cities, peri-urban areas, coastal zones and sites of mobility are often neglected compared to rural landscape.

The opportunities offered by strengthened integration within landscape research include a scientific framework better suited for practical action on social and environmental fronts. This framework would operate in the

political context of the European Landscape and cultural heritage conventions, including recognition of emergent attitudes to landscape, heritage and culture. Stronger reciprocal public engagement with landscape will emerge from broader-based recognition of landscape as a common and universal good. The ecosystems approach, for instance, is gaining ground within environmental policy but it needs further development before it will offer useful understanding of the cultural inputs, outputs and services of the ecosystem, particularly in the heavily-humanised environments typical of much of Europe.

The key specific opportunities for building on the strengths of landscape research include:

- Integrating with social and environmental policy the innovative and experimental theory and methodology of humanities-inspired landscape research;
- Informing present situations and future prospects through long-term historical research, including a socially-engaging perspective on current environmental challenges;
- Complementing place- and terroir-based versions of landscape with new concepts of regionalism that can enrich understanding with perspectives based on movements and flows;
- Introducing new connections between research, policy and practice through the idea of landscape as a cultural construction;
- Making the 'ecosystems approach' culturally as well as environmentally reflective by the injection of more historically- and socially-aware perspectives on landscape;
- Using landscape (through modes of writing and representing such as narrative, biography, performance, virtual visualisations) to understand human livelihood and personal as well as collective processes of identity.

There are, however, threats to the further interdisciplinary development of landscape research. Foremost amongst these are obstacles to promoting social and cultural issues to the centre of landscape policy formulation alongside 'traditional' environmental or ecological perspectives and interpretations which have dominated past thinking. Achieving this will contribute greatly to finding policy solutions that are supported by wide democratic agreement and which deliver social equity. Issues that need addressing to re-focus policy making include:

- Insufficient communication and integration between research fields and academic approaches, and continued poor alignment between landscape sub-disciplines;
- A lack of presence of social and cultural perspectives on landscape in policy making, which threatens to re-awaken the old distinction between nature and culture and to create obstacles to dealing with major environmental transformations including climate change;
- Research confined to individual nations or regions without wider geographical focus, leading among other problems to an absence of common goals;
- Failure to capitalise on the different national perspectives on where landscape 'fits' within research and on distinctive national interpretations of landscape; if not harnessed constructively these may militate against landscape research addressing more global issues;
- An absence of dialogue between research and planning or design, combined with limited awareness within the landscape policy sectors of the practical applications of landscape research.

Future Research Directions

The Network identified four key areas to coordinate future integrated research with respect to current social-economic and environmental challenges. These are offered as the basis for a future European-scale landscape research programme.

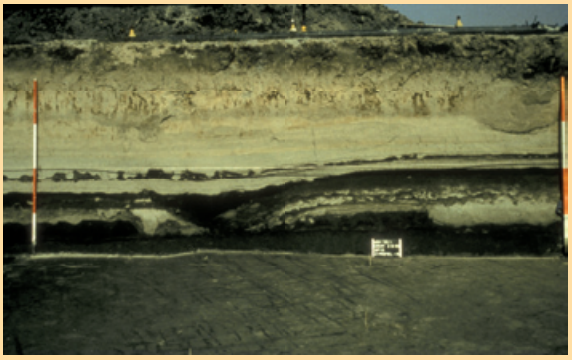
Theme 1: Universal commons: securing landscape as a common good

Landscape is a common good. It is a key component of the infrastructure of civil society in urban public space, accessible rural areas, nature reserves for the enjoyment of biodiversity, common land, seascapes and the coast, and sites of collective memory and identity. Many aspirations key to the political agenda, including neighbourliness, quality of life, cultural, economic and environmental sustainability and heritage grow from the universality of landscape as a human value and a social good as well as from its environmental context. The rise in public appetite for 'land(scape) art', (from, to take only British examples, Richard Long via Andy Goldsworthy to Anthony Gormley) illustrates the power that landscape has on the human spirit. Equal access to this universal common resource does not exist everywhere, however. The relationship between public amenity and private goods needs frequent re-balancing, and new forms of common ground await definition, in a convergence of policy goals and public aspirations.

The big issue is to understand better how landscape is constituted as a common good, and to enhance and safeguard its key value to society. Relevant research topics are expected to include:

- How landscape perceptions and meanings are formed at individual and community levels and on local, regional, national and supra-national scales, including the use of common land and customary practice;
- How landscape as a concept expresses the ways in which places matter to people culturally and materially in everyday experience, and how it symbolises the power and complexity of social formation and cultural identity;
- The value and meaning of collective memories as well as official narratives exploiting landscape's ability (as a simultaneously contested terrain and common ground) to act as a framework for addressing differing and competing social rights and responsibilities;
- Trans-national studies exploiting the rich linguistic diversity of Europe and examining the many languages, images, narratives and toponymics dealing with landscape that exist in popular and elite culture across Europe;

The Netherlands: cultural history inspiring landscape planning and design



Velserbroek: a 2.5 meters high section of the hidden landscapes dating from 2000 BC into modern time.

The 'Netherlands' of course means low land; it is flat and wet too and the sense of living between land and water is an important aspect of Dutch identity. People see opportunities in this landscape for living, farming, trading, transport and defence; they also see threats, from flooding, drowning and eroding. They have lived for millennia with the dynamics and cycles of change that shape life and landscape; faced in the 21st century with new challenges and change they respond by further innovation.

In 1999 a national landscape policy promoted by four government ministries was approved by the Dutch Parliament. The 'Belvedere Policy' identified the cultural historical landscape as a source of inspiration for planning and designing future landscape and as a value to be 'preserved through development'. It was supported by a new national research programme funded by the Netherlands Organisation for Scientific Research and the four ministries. The innovative power of this research programme lay in its integrative drive, its focus on the synergy of basic and applied research, and the intensive cooperation of disciplines that had never met before: on one side, humanities- and science-based archaeology and historic geography; on the other, social sciences like planning, public administration, cognitive studies and landscape architecture. Two unifying concepts were adopted to connect these different disciplines and to link policy, practice and research – the 'biography of landscape' and 'action research'.

An example of their application is the 'Agenda Oer-IJ' project, a study in the wetlands northwest of Amsterdam. It analysed 5,000 years of landscape evolution and assessed the successes and failures of recent planning and design. Its conclusions recommended that the 'principles of past long-term landscape development and land use' should guide future planning and design, and that the structuring influence of the three zones in this landscape (high dunes, low former estuary, shrinking areas of peat) should be recognised. The biography written for this wetland is a region-specific narrative of identity reflecting the interaction between land, water and man. Visible landscape relics from the last millennium point further back to the hidden landscapes of the previous three to four millennia, thus opening windows on long-term sea level rise and environmental change. Visible and invisible landscapes together materialise the physical and mental transformations that wetland communities living here have experienced; they exemplify the continuity and sustainability of life and environment even within highly dynamic contexts.

This national research and planning policy is the most recent expression of a long-lasting tradition of community-based landscape management and research. It has united knowledge of the past with aspirations for present-day development and the need for sustainable decision making.

- Bloemers, T. and A. van der Valk (2007) The Oer-IJ: a metropolitan wetland on Amsterdam's doorstep. The archaeological-historical landscape as inspiration for spatial planning. In: B. Pedroli, A. van Doorn, G. de Blust, M.L. Paracchini, D. Wascher and F. Bunce (eds), *Europe's living landscapes. Essays exploring our identity in the countryside*, Zeist, 160-176.
- Feddes, F. (ed.) (1999) *The Belvedere Memorandum. A policy document examining the relationship between cultural history and spatial planning*, The Hague.

- How social and cultural values are taken into account in ethically-justified ways when creating and managing further landscape change in the context of predominantly economic valuations;
- Regional or thematic studies illuminating the claims and effects of contrasting or conflicting values, along with social histories of current environmental concerns like biodiversity and climate change, and expressed at various scales by communities, whether settled or migrant, established or marginal, professional or amateur, academic or practical;
- The creation of new European-wide syntheses in a global context of landscape character and change.

Theme 2: Roots and routes: coming to terms with mobility and evolving lifestyles

European society has been extremely mobile since earliest prehistory, but a sense of landscape-belonging is for many people still tied to feelings of permanence and stability. It has generally been connected with home places where they have grown up or where they live or work. This is changing as the growing mobility of inhabitants, migrants, visitors and travellers creates new forms of living and attachment. Transported, imported and remembered perceptions of landscape are becoming more common as larger numbers of people routinely migrate or commute across large areas or live in more than one place. There are tensions, sometimes constructive, between 'natives'

and 'incomers', and there can be a sense of loss as well as of gain. Landscape offers a way for people to rethink questions of locality and region, and understanding these changes and their effects on both landscape and the physical environment will require research at global and regional as well as the more common local scale.

The overall research goal is to analyse changes in landscape perception brought about by changing patterns of mobility and lifestyle in order to help policy makers respond to these changes and build wider public participation in landscape-related planning. The mundane, physical effect of mobility on landscape in its environmental dimension through road and other infrastructure construction needs study, as do the resultant changes in settlement pattern, and equally the connections between landscape and lifestyle and aspirations.

Relevant research topics are expected to include:

- Landscapes seen as mundane, marginal, fragile or blighted but nevertheless revelatory of deep significance and meaning;
- Landscapes subject to change, from major rapid transformations to small but incremental changes over long periods;
- Landscapes diverse in type, from post-industrial, littoral and peri-urban landscapes to abandoned farmland, community gardens, migrant encampments or roadside developments;
- Landscapes seen through 'imported' perspectives brought to an area by population movements, including migrants, second homers and tourists;
- Landscapes beyond Europe, as part of Europe's past and present global movements of people, capital and information;
- Landscapes overlooked by recent research, which may require new research methods if their study challenges conventional ways of understanding.

Theme 3: Reactions and resilience: long-term landscape transformations

Whilst landscape is recognised as being reciprocally constituted, relatively little is actually known about the precise mechanics of how people use their mental construction of landscape to adapt to environmental transformation. Accounts of environmental change, for example, can be short-sighted in both retrospective and prospective gaze and landscape narratives can be narrowly ideological and inflexible. Yet at a time when the lives and landscapes of European citizens are seen to be changing in a myriad of ways, small and large, landscape's mediating power is likely to be as crucial as it was in the past. People's 'construction' of landscape is a vital resource for arresting, directing or coping with transformations, for example, through

Mapping history: historic global agriculture and climate change

Early human land use still has implications for the global climatic system. Reconstruction of past land use has become important in the rapidly growing field of climate and global change studies. Ruddiman (2003) proposed that agricultural expansion 6-8,000 years before the industrial revolution (the so-called 'Neolithic revolution') impacted on the emissions of greenhouse gases. Rammankutty and Foley (1999) and Klein Goldewijk (1999) provided data for the period 1700 to 1992, Pongratz et al. (2009) proposed a reconstruction for the last millennium that is already being widely cited in the political climate change debate.

These reconstructions differ slightly in method, but can all be broadly categorised as back projections using historical population estimates. This method tends to over-emphasise European and colonial agriculture and to reflect Eurocentric assumptions. Pongratz's reconstruction, for example, shows no agriculture before Columbus in North America or the Amazon, and very little in West Africa.

Climate modelling of this sort presents a real challenge for interdisciplinary cooperation. Landscape archaeologists, historians and historical geographers were slow to respond to it but a small international cooperation between geographers and historians in Sweden and the USA – *Mapping global agricultural history* – is examining these questions on a global scale. It aims at global reconstructions of agricultural systems for AD 1000, 1500 and 1800 through maps comparable in scale and detail to the often quoted map by Whittlesey (1936) on the major agricultural regions of the world in the early 20th century.

Early work already highlights important differences between simple back-casting with limited knowledge of landscape history and a truly historical approach to landscape. As well as underestimating the extent of pre-Columbian croplands in North America and the Amazon, the back-casting method leads to overestimation of croplands, for example, for early periods in the South African Cape, where agriculture only expanded from the late 18th century, and in North-East China. The new historically-informed overview is also demonstrating that the expansion of South-East Asian rice deltas came later than often assumed, in most cases reaching its full extent only in the 19th century. Given that global overviews are beginning to influence high level policy, it seems important to strive for historical accuracy.

- Klein Goldewijk, K. (1999) Estimating global land use change over the past 300 years: the HYDE database, *Global Biogeochemical Cycles*, 15, 417-434.
- Pongratz, J., C. Reick, T. Raddatz and M. Claussen (2009) A reconstruction of global agricultural areas and land cover for the last millennium, *Global Biogeochemical Cycles, 22(3), CiteID GB3018*.
- Ramankutty, N. and J.A. Foley (1999) Estimating historical changes in global land cover: croplands from 1700 to 1992, *Global Biogeochemical Cycles*, 13, 997-1027.
- Ruddiman, W.F. (2003) The anthropogenic greenhouse era began thousands of years ago, *Climatic Change*, 61, 261-293.
- Whittlesey, D. (1936) Major agricultural regions of the world, *Annals of the Association of American Geographers*, 26, 199-240.

'change and creation' strategies focused on managing transformations and designing better future landscapes as well as on protecting inherited landscape.

The powerful and unavoidable fact that life must be lived amidst what has been made before challenges us to understand precisely how over many millennia people created, lived with and managed physical change, how they interacted with ecological processes, and how they re-imagined life after major transformations. Landscape research offers a way to start understanding human processes and physical environmental changes in the context of people's responses. It can set individual and community views alongside the large-scale strategic policies and investments of national and supra-national institutions. The knowledge it produces can be used to help people respond to threatened and imminent physical change. Sustainability, stability and resilience are all topics that can be analysed from long-term historical and wide-ranging landscape research.

Relevant research topics are expected to include:

- Obtaining reliable long-term information on past transformations to landscape (understanding 'landscape' in both material, e.g., physical or ecological terms and cultural or perceptual terms);
- Investigating the chronological origins of current perceptions and manifestations of 'nature' and place-changing in the context of human/nature interactions;
- Creating regional and supra-national narratives and descriptions of the major strands of landscape change and its shifting patterns of settlement or biodiversity over the past 10,000 years and the even deeper human past when relevant;
- Studying human responses in periods and places which have faced extreme events, including critical factors determining successes or failures;
- Focusing on the socio-cultural dimension of new approaches such as governance and participatory politics as means of strengthening and harnessing social resilience;
- Illuminating the role of the virtual landscapes (latter-day versions of the traditional pictorial representations which for centuries framed landscape) that are becoming increasingly commonplace, transcending traditional cultural boundaries and influencing future landscape perception and expectations.

Theme 4: Road maps: landscape as baseline and context for future change

Environmental monitoring and modelling of current knowledge is advancing rapidly, but there is too little knowledge of the present state and past trajectories of landscape in human, cultural and social terms or of how landscape reached its present state through long-term human-environment interaction. Well-founded decision making for future transformations will require better understanding of how current human society sits within long-term historical-environmental processes in the light of long-term human modifications to the ecological processes that sustain life, and of the active role that society always plays in initiating and surviving change in the light of how it valued landscape.

Recent and current examples of Integrative Research Projects and Networks

Trans-national European

- COST A27 LANDMARKS (21 countries): www.soc.staffs.ac.uk/jdw1/costa27home.html
- Lancewad (DK, DE, NL, UK): www.lancewadplan.org
- Planarch (UK, NL, BE, NL): www.planarch.org
- European Pathways to the Cultural Landscape (DE, IE, UK, DK, SE, FI, EE, CZ, IT): www.pcl-eu.de
- Protecting Historical Cultural Landscapes to Strengthen Regional Identities and Local Economies (Poland / Central Europe countries): www.cadses.ar.krakow.pl
- REGALP (Regional Development and Cultural Landscape Change in the Alps) (Alpine region): www.regalp.at

National

- Cultural Landscape Research (Austria): www.klf.at
- Changing Landscapes (Denmark): www1.sdu.dk/Hum/ForandLand/index.html
- Protecting and Developing the Dutch Archaeological-Historical Landscape (Netherlands): www.nwo.nl/bbo
- Research Programme on Social Structure and Territory. Landscape Archaeology (Spain): www.ih.csic.es/grupos/estruc_territorio.html
- Landscape and Environment (UK Arts & Humanities Research Council): www.landscape.ac.uk

Emerging

- JPI Cultural Heritage: www.era.gv.at/attach/JPI_CulturalHeritage

Little research attention has so far been paid from a cultural perspective to backward- and forward-looking scenario studies for landscape development. Changes cannot be forecast with guaranteed precision, but long-term historical trajectories, current trends and future scenarios will help to develop and select strategies for research and policy. Informative baselines drawn from systematic research in environmental history and landscape archaeology are needed, to guide change and maintenance processes in landscape.

Relevant research topics, working at regional and higher spatial scales through synthesis of long-term landscape history, are expected to include:

- The impact of the past on present and future landscapes;
- The influence of the variability of spatial and temporal scales on landscape and on the physical and social changes and transformations affecting it;
- The results of the diversity of human behaviour, particularly with regard to cultural difference, and its power for creativity;
- The role of historically-informed understanding of the present-day landscape in shaping scenarios for future landscape evolution;
- New methods of characterisation, strategic assessment, sensitivity analysis, social cost-benefit evaluation and public value surveys as promising ways of integrating research with democratic decision making;

- The action-research connections between research and planning, design and other creative or performative actions;
- Establishing a spatial context for the socially-contingent as well as environmentally-dictated construction through history of abstract human desires for biodiversity and ecological cohesion;
- Past trajectories influencing current trends in the consumption and the reproduction of landscape;
- Development of socially-sustainable past-informed indicators to choose between forward trajectories.

'Contested Commons' and interdisciplinary research

The UK's Arts and Humanities Council's 'Landscape and Environment' programme (2005-2010) was a well-funded (£6 million) interdisciplinary landscape programme working in Britain and beyond. A model for integrated landscape studies, its 37 projects used arts and humanities understandings to perceive, imagine and experience landscape, connected disciplines as far-ranging as music, film making, law, literature, archaeology, geography, anthropology, cultural history, art history and architecture, and pioneered performance as a new approach to landscape study.

One project for example – 'Contested Common Land' – involved historians, environmental lawyers and informatics researchers working together to examine the past and future values and use of common land in England and Wales. An interdisciplinary, historical and contemporary perspective underpinned the project; archival research was combined with oral history; 'commoners' and policy makers participated in project events; and virtual reality imaging software was developed to display a complex landscape of common rights to aid management decisions. The project had wide public impact.

With all its projects, the Programme broke new ground in the number of participating disciplines. Many of this Briefing's main themes were explored, notably access and authority, mobility and dwelling or the interactions between mentality and materiality in the making and meaning of landscape, and cross-cultural notions of landscape. Younger researchers were supported through PhD studentships and assistantships and collaboration between academic and non-academic stakeholders was organised. Research was linked to practice by involving organisations such as English Heritage and the National Trust, and the UK's physical-environmental and social science research councils (ESRC, NERC) were important collaborators, preparing the ground for the new research programme, 'Living with Environmental Change' (2010-2020).

- Winchester, A.J.L. in press: Property rights, 'good neighbourhood' and sustainability: the management of common land in England and Wales, 1235-c1800, in B. van Bavel/E. Thoen (eds.), *Property Rights to Land, Social Structures and Fragile Environments.*

Next Steps

The overall message of this briefing, supported by the analysis just presented, is that landscape research is ready to 'come of age' but that some necessary external conditions do not exist. Only a limited number of clear actions are required, however, to enable landscape research to make its full contribution to a broad range of social, economic and environmental policy.

Alongside the need for better-integrated, better-directed funding, the main requirement for progress is the structural prerequisite of strong and durable institutional frameworks, the current absence of which can be identified as a major obstacle to progress. Much has been achieved through temporary networks and international collaborations but landscape research has reached a stage where more permanent structures are needed to provide stability and continuity and to begin to overcome embedded weaknesses such as the fragmentation of research between disciplines and separate, often nationally-based, funding and commissioning bodies.

At paradigm level, two interweaving pathways would lead to the emergence of stronger cross-disciplinary communities of practice that would dissolve obstacles to integration, develop shared objectives and establish common theoretical bases and comparable methodologies. A wider acceptance is also required of the need to unite specialist knowledge with the experience and expertise of policy makers and the understanding and aspirations of the public, and to engage the full range of actors in the landscape field, from political actors to the academic, educational, non-governmental and voluntary sectors, and from the creative arts and landscape design to industry, commerce and business, and commercial to professional actors in, e.g., spatial planning and heritage.

The first path is a continued strengthening of landscape research as an area of fundamental research by:

- Achieving greatly increased disciplinary and geographical integration;
- Streamlining academic and research structures, with better coordination and funding, to combat fragmentation;
- Supporting problem-oriented and participatory research approaches;
- Exploiting a human as well as an environmental perspective on landscape as a basic source of knowledge for the management of change.

The second path is to find better ways to contextualise and disseminate research and its results by:

- Engaging with the different structures of planning and design disciplines;
- Exchanging knowledge with professionals, policy makers, practitioners and above all (through a process of learning through landscape) the wider public;
- Creating a coordinated European research programme across the full spectrum of landscape-based activity.

Conclusions

This Science Policy Briefing offers an outline plan for unlocking the potential of landscape research when linked to action. It calls for integrative and cooperative ways of working and communicating across and beyond traditional disciplinary divides. For it to be successful, this integration will start from the premise that all three key domains (humanities, social sciences and natural sciences) must be fully involved by way of jointly-negotiated common or complementary theoretical formulations.

Seizing the opportunities, however, will require investment and planning. The next steps must be taken at European level. The scale and complexity of the socio-environmental challenges means that existing capacity and organisation cannot provide sufficiently fast and coordinated progress. This briefing concludes by offering three structural Recommendations which form a logical sequence of actions. They are addressed to higher-level European institutions and funding bodies in support of the aims of the European Research Area[5], the European Landscape Convention and European regional, spatial and social cohesion policies.

Recommendation I

European Landscape Research Vision and Strategy

This briefing already encapsulates a strong Vision built by the Network for interdisciplinary landscape research. This Vision so far reflects the ideas of a disciplinarily-selective group, however, whereas landscape should be seen by all scholars or policy makers as a shared research field in which collaboration adds value and understanding. Not all the necessary or potential partners in the three key domains have yet recognised landscape research as being a cross-domain issue, and sometimes one perspective or another is undervalued or overlooked. The Network's Vision that wholly-integrative research and practice is the proper and most promising way forward therefore needs further enlargement and strong promulgation through ever-widening dialogue between all landscape disciplines.

A balanced and clear Vision for the future development and application of landscape research requires a new paradigm that might be labelled 'post-disciplinary'. It would be fundamentally-integrative and could go beyond interdisciplinarity, supporting the meaning and value of mono- and multi-disciplinary positions and linking the knowledge creation process of basic and applied research to action-based policy and practice. A successful approach will be founded on recognising that the strong benefits of combining humanistic, cultural and social perspectives with physical and natural scientific perspectives in a new view of landscape will be mutual to both fields. This will be a big step towards drawing substantial social, economic and environmental benefits from landscape research. It will contribute to the major aims of three ESF Standing Committees as expressed in their Position Papers (SCH, LESC, SCSS[6]) and strengthen the integration of several COST Domains (ESSEM, FA, FPS, ISCH and TUD[7]).

Based on the Vision, a detailed 20-year dynamic Strategy needs to be urgently agreed amongst as wide a community of the landscape research as possible and certainly broader than the current Network. This community needs particularly to involve the social and life and earth sciences as well as the humanities and historical studies (and philosophy, art history and linguistics) that were most reflected in the Network's membership and that are in the foreground of the briefing.

The strategy will aim to:

- Unite local, regional, national and supra-national levels of European landscape research;
- Establish a constructive balance between physical sciences, social sciences and the humanities;
- Foster cooperation between researchers by increased international networking, reciprocal exchanges between academia and policy-making bodies, and efficient coordination of existing activities;
- Produce benchmarks for the quality of research, track the progress of integrative knowledge and practice, and define the need and opportunity for training and education, including common pan-European curricula;
- Raise political and public awareness, mediate between stakeholders;
- Combine the use of existing funding schemes with new sources of funding and cost-effective investment of resources to support durable integrative research.

Recommendation II

A European Forum on Landscape

The creation of a European Forum on Landscape to operate in the context of the Vision will be key to the establishment of a durable integrative landscape research programme. The Forum will promote and steer long-term landscape research, aiming particularly at the design, promotion and European-wide coordination of fundamental research programmes shaped by the needs of policy makers as well as by knowledge creation. It should lead to long-term collaboration and synergy between funding organisations, research organisations and policy end-users and practitioners.

A European Forum on Landscape will need to be formed on a cross-domain, interdisciplinary and trans-sectoral basis. Membership should not be limited to mainstream research and academic groups, but must extend to policy makers and practitioners from all land-

5. ESF-EUROHORCs Science Policy Briefing 29, November 2007, *EUROHORCs and ESF's comments on the European Commission's Green Paper 'The European Research Area: New Perspectives*; EUROHORCs-ESF Science Policy Briefing 33, June 2008. *The EUROHORCs and ESF Vision on a Globally Competitive ERA and their Road Map for Actions to Help Build It*

6. Standing Committee for the Humanities (SCH), Standing Committee for Life, Earth and Environmental Sciences (LESC) and Standing Committee for the Social Sciences (SCSS).

7. Individuals, Societies, Cultures and Health (ISCH), Earth System Science and Environmental Management (ESSEM), Food and Agriculture (FA), Forests, their Products and Services (FPS), Transport and Urban Development (TUD).

scape and landscape-influenced sectors. It will build on the Network assembled for this ESF/COST Synergy Initiative but also on the work of many other networks. These include European-funded networks such as COST Actions, projects within EC DG Education and culture programmes such as Culture 2000. It will also include more self-sustaining collaborations such as Landscape Europe, the Eucaland network and PESCRL; many of these organisations will wish to promote the message of this briefing. Other permanent European associations, networks or communities of interest, such as those that work with the Landscape Convention, will be relevant partners, as could be European organisations already using landscape-scale data such as the European Environmental Agency.

The initiative and energy for this Forum will come from such existing networks and from the coordinated targeting through collaborative actions of existing national resources. It will need to draw on the support of ESF and COST through their national and international partners. Additional support, sometimes from new sources, will be also required, for example, from the EC Framework Programmes under the leadership of EC DG Research with its Networks of Excellence, ERA-NETs and other instruments. Resources for cultural heritage and landscape research have grown incrementally during the 5th, 6th and latterly the 7th Framework Programmes, and this briefing provides a context for pursuing that trajectory.

The Forum's responsibilities will include:

- Providing a hub (on a central or dispersed model) for exchange of information and expertise to encourage interdisciplinary practice;
- Expanding and operationalising the vision (recommendation I);
- Promoting a Europe-wide landscape research programme (recommendation III);
- Overseeing the creation of structures for training leaders and researchers to guide the process of knowledge creation within and between research groups;
- Establishing strong communication between researchers, policy makers, practitioners and civil society and ensuring that the results of landscape research can reach appropriate audiences.

Recommendation III

An Integrated European Landscape Research Programme

A European-wide landscape research programme, substantially funded with a strongly integrative perspective, is required to create the conditions for the further development of landscape research. It will aim first and foremost to increase integration between the many fields of landscape research and to coordinate them at pan-European level.

Better use can be made of the scarce funds that exist beyond EC programmes by concentrating and coordinating existing national resources within a pan-European landscape research strategy, as Joint Programming Initiatives (JPIs) do.[8] Tapping into private sector funds, for example, by incorporating landscape issues into major infrastructure masterplanning, might also be feasible. Nevertheless, programmes such as the EC Framework Programme, ESF activities like EUROCORES, or COST networks will be asked to play a role, particularly bearing in mind the scale of the challenge facing landscape research with its current infrastructural needs for human resources, field work and laboratories, and communication networks.

The Programme's likely objectives are threefold:

A. To magnify landscape research's contribution to social, economic and environmental issues by:

- Strengthening landscape research's fundamental interdisciplinary character;
- Ensuring the interaction of fundamental and applied research, with continuous and innovative feedback;
- Creating interactions between applied research and dynamic practice and policy ('action research');
- Accelerating the emergence of integrative communities of practice and interdisciplinary networks;
- Supporting better cooperation between different fields, sectors, institutions and countries.

B. To address major questions in the relationship between socio-environmental policy and landscape in both its material and perceptual aspects, notably within the four research themes identified earlier in this briefing.

C. To establish new and widely-shared approaches (including theories, concepts and methods) that will support more integrated and socially-relevant landscape research and strengthen the management of the integrative knowledge creation process. Existing approaches have to be assessed for their relevance within the new research context, and new approaches will need to be developed.

Turning the briefing into action

The first requirement for action after publishing this briefing must be to maintain the momentum of the Network of Networks and to take immediate steps to start to promote the briefing's vision more widely across all landscape research disciplines. The first months (2010-2011) must see the start-up of the Forum, first steps towards mobilising commitment from funding agencies at national and European level, and at least the preliminary design of intended research structure.

Such work will provide a foundation for a long-term strategy to embed the vision into practice. This will be achieved by collaborative initiatives between ESF/COST (commissioners of the Network), other relevant national and European institutions, and the community of researchers, policy makers and practitioners.

8. In April 2010 the European Commission released a recommendation on research JPI Cultural Heritage and Global Change: a new challenge for Europe.

Examples of Potential Forum Members or Associates

- **EAA**
  The European Association of Archaeologists is an association of archaeologists and individuals from related fields relevant to landscape research and management.
  www.e-a-a.org
- **ECLAS**
  The European Council of Landscape Architecture Schools fosters and develops teaching and research in landscape architecture throughout Europe.
  It hosts Le:Notre, a Thematic Network Project in Landscape Architecture funded by the EC that involves university staff, students and stakeholders including municipalities and NGOs.
  www.eclas.org and *www.le-notre.org*
- **EFLA**
  The European Federation for Landscape Architecture, the European chapter of IFLA.
  www.europe.iflaonline.org
- **Eucaland Network – European Cultural and Agricultural Landscapes**
  The Eucaland-Network is an expert network that deals with the cultural and agricultural landscapes of Europe for promoting their consideration and use among their people for preserving their cultural heritage.
  www.eucalandnetwork.eu
- **European Heritage Network (HEREIN)**
  The European Heritage Network is a permanent information system under the umbrella of the Council of Europe. Set up in 1999, it is a comparative reference point for government bodies, professionals, researchers and NGOs active in the field.
  www.european-heritage.net/sdx/herein/
- **European Landscape Network**
  An umbrella organisation in support of the European Landscape Convention.
  www.eurolandscape.net
  It connects three sectoral organisations:
  – **Civilscape**, a platform for NGOs all over Europe, established in 2008,
    www.civilscape.org
  – **RECEP-ENELC**, an association of local and regional authorities established in 2006,
    www.recep-enelc.net
  – **Uniscape**, a network of universities working in the landscape field established in 2008,
    www.uniscape.eu
- **Europa Nostra**
  Europa Nostra is a network for dialogue, debate and lobbying committed to safeguarding Europe's cultural heritage and landscapes; it represents NGOs and 1,500 individual members from over 50 countries.
  www.europanostra.org
- **IALE**
  The International Association for Landscape Ecology, a worldwide organisation promoting cross-disciplinary, landscape-scale ecological research.
  www.landscape-ecology.org
- **ICOMOS**
  The International Council on Monuments and Sites offers a forum for professional dialogue and exchange for conservation specialists from all over the world on conservation principles, techniques and policies.
  www.international.icomos.org
- **IUCN**
  The International Union for Conservation of Nature aims to protect nature whilst finding pragmatic solutions to pressing environment and development challenges. It supports scientific research and brings together governments, NGOs, UN agencies, companies and local communities to develop and implement best practice.
  www.iucn.org
- **Landscape Europe**
  Landscape Europe is an interdisciplinary network of mainly ecologically-based national institutes and universities with expertise in landscape assessment, planning and management at the interface of policy and education.
  www.landscape-europe.net
- **Landscape Observatory of Catalonia**
  An advisory body of the Catalan government in matters of landscape and its protection, management and planning, aiming to increase knowledge and awareness of Catalan landscapes but also becoming a centre of landscape knowledge more widely in Europe.
  www.catpaisatge.net/eng/observatori.php
- **LRG**
  The Landscape Research Group is concerned with all types and aspects of landscape, from wilderness to cities. It is has a world-wide and increasingly interdisciplinary membership.
  www.landscaperesearch.org
- **NET-Heritage**
  The European Network on Research Programme Applied to the Protection of Tangible Cultural Heritage is the first significant initiative which has set out to coordinate national RTD programmes of European countries.
  www.netheritage.eu
- **PECSRL**
  The Permanent European Conference for the Study of the Rural Landscape is an international network, originally mainly of historical geographers but increasingly multi-disciplinary, focused on past, present and future European landscapes.
  www.pecsrl.org

A Final Word

This Science Policy Briefing shows a way forward to realise and exploit the potential of landscape research as a source of scientific innovation and as inspiration for sustainable and socially-relevant responses to 21st century challenges.

Above all, it demonstrates two main points: that landscape research is a complex cross-domain scientific endeavour that has already made big steps forward as an interdisciplinary area of research, but, second and conversely, that needs targeted support to mature to the point where it can make its full socio-economic and environmental contribution.

Landscape research and its policy application have reached a stage where further growth requires an injection of vision, resources and structural collaborations. The recommendations of this briefing present a challenging way forward for landscape research within the European Research Area.

Beyond 2010, a practical long-term strategic plan of action (2011-2025) might look like this:

- **Scoping and planning (Intended strategy[1])**
  2011-2012: further active promotion of the briefing's vision; organising funding, designing research frameworks and structures;
- **Research (Deliberate strategy)**
  2013-2016: 1st research cycle: knowledge creation;
- **Mid-point review (Emergent strategy)**
  2017: Evaluation and assessment of 1st research cycle, refinement of agenda, definition of 2nd cycle;
- **Research (Emergent strategy)**
  2018-2021: 2nd updated research cycle: knowledge creation, synthesis;
- **Final review and embedding in practice (Realised strategy)**
  2022: Final evaluation and assessment of results, definition of conclusions and lessons;
  2023-2025: Embedding research results in normal research, training, policy and strategy practice.

The use of two four-year periods of research separated by and each followed by distinct periods of review and reflection is a proven, effective method that allows progressive insights acquired during the first research cycle to improve and refine the organisers' original strategy, thus allowing further and stronger strategic insights to emerge from the wider community. In addition, the structure will enable stronger links to be created with the different and overlapping cycles of policy development, so that necessary and fruitful feedback and adaptation between research and policy domains can be more easily exploited.

Total funding needs over 15 years (2011-2025) are estimated as c. € 27.5 M (€ 12 M for each four-year research cycle (c. 15-20 projects), € 1 M for planning and two evaluation periods including reporting, and € 2.5 M for internal and external communication supporting knowledge creation and the start-up of the Forum.

To initiate these activities an interdisciplinary working party might be needed to organise a limited number of well-focused round tables or workshops in 2010-2012. The first can be the presentation of the briefing in Florence on 18 October 2010 during the events marking the 10th Anniversary of the European Landscape Convention.

1. Concepts are taken from H. Mintzberg and J. Quinn (1991) *The strategy process*.

Selected key texts in landscape research

This list, without seeking to be comprehensive, indicates something of the broad range of landscape research, theory and practice in most regions of Europe and beyond. The publications cover a wide range of disciplines, from geography to history, anthropology and archaeology to ecology, agronomy and land management to climate and environmental studies, and heritage management to ecosystems approaches.

- Bender, B. (1993) *Landscape, Politics and Perspectives*, Oxford.
- Berlan-Darque, M., D. Terrasson and Y. Luginbuhl (eds) (2007) *Paysage: de la connaissance à l'action*, Versailles (in English, as *Landscapes: from knowledge to action*).
- Bloemers T., H. Kars, A. van der Valk and M. Wijnen (eds) (2010) *The Cultural Landscape and Heritage Paradox – Protection and Development of the Dutch Archaeological-Historical Landscape and its European Dimension*, Amsterdam.
- Cosgrove, D. and S. Daniels (eds) (1988) *The Iconography of Landscape*, Cambridge.
- Doukellis, P. and L.G. Mendoni (eds) (2004) *Perception and Evaluation of Cultural Landscapes*, Athens.
- Fairclough, G. and P. Grau Møller (eds) (2008) *Landscape as Heritage*, Berne (Geographica Bernensia Series G 79).
- Fairclough, G.J. and S.J. Rippon (eds) (2002) *Europe's Cultural Landscape: archaeologists and the management of change*, Brussels/London.
- Forman, R.T.T. and M. Godron (1986) *Landscape Ecology*, New York.
- Hirsch, E. and M. O'Hanlon (1995) *The Anthropology of Landscape*, Oxford.
- Johnson, M. (2007) *Ideas of Landscape*, Oxford.
- Jones, M. and K. Olwig (eds) (2008) *Nordic Landscapes*, Minneapolis.
- Lambin, E. and H. J. Geist (eds) (2006) *Land-Use and Land-Cover Change, Local Processes and Global Impacts*, Berlin.
- M.E.A. (2005) *Ecosystems and Human Well-being: Synthesis. Millennium ecosystem assessment*, Washington DC. www.millenniumassessment.org/en/index.aspx
- McIntosh, R.J., J.A. Tainter and S.K. McIntosh (2000) *The Way the Wind Blows: Climate, History and Human Action*, New York.
- Meier, T. (ed.) (2006) *Landscape Ideologies*, Budapest.
- Palang, H. and G. Fry (eds) (2003) *Landscape Interfaces*, Dordrecht.
- Schama, S. (1995) *Landscape and Memory*, London.
- Ucko, P.J. and R. Layton (eds) (1999) *The Archaeology and Anthropology of Landscape: Shaping your landscape*, London.
- Wylie, J. (2007) *Landscape*, Abingdon/New York.

In addition, a number of journals are dedicated to landscape research, for example (not comprehensively):

- *Landscape Research* (journal of the LRG)
- Journal of Landscape Ecology
- *JOLA (Journal of Landscape Architecture*, of ECLAS)
- Landscape and Urban Planning
- Landscapes
- Landscape History
- The *'Landscape Series'* published by Springer

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