Bjäre and Bowland: Computer Applications in *European Pathways to Cultural Landscapes,* a Culture 2000 programme

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Abstract: The European Pathways to Cultural Landscapes project is funded by the European Union as part of the Culture 2000 initiative. It is a network of twelve projects in ten countries working to expand understanding, and appreciation of the European cultural landscape, and public access to it using new methods and new technology. The project is still in the first of its three years, and this paper therefore sets out intentions more than achievements. It describes two of the projects that concern very different landscapes: Bjäre in Sweden and Bowland England, where the focus is on web-based virtual pathways and historic landscape characterisation using GIS and related applications to capture subjective perceptions as well as 'objective' facts.

Key words: Cultural landscape, Historic Landscape Character, European Pathways to Cultural Landscapes, Culture 2000, GIS, QTVR

Background to the EPCL

European Pathways tothe Cultural Landscapes is a 3-year multi-national programme with EU funding through the Culture 2000 Programme. It is designed to study, understand and promote the cultural landscape of ten countries in keeping with the aims of the European Landscape Convention. Two cities in Germany are the leader partner (Albersdorf) and the administrative co-ordinator (Aschaffenburg). There are 12 separate national projects, representing most parts – but unfortunately not the far south – of Europe, from Ireland to Estonia and from Sweden to Italy (fig 1).

The background of the EPCL programme is to be found in several parallel developments. First of all the programme grew out of an earlier EU-funded project entitled European Cultural Pathways (ECL),(ECP), to which EPCL is a follow-up. ECLECP was a project with the aim to create trails and paths through archaeological areas. There were five partners. This earlier project made contacts that opened up the possibility for another European project. When ECP ended in 1999 all partners felt that a continuation and also an expansion of the co-operation were desirable. Additional partners were found, and in February 2000, the 12 partners of the new project gathered at Kilkenny in Ireland to found a permanent network that would concentrate on research and communication of cultural landscapes in order to achieve sustainable management for the future.

Another parallel development can be found in the common frus-

tration that appeared in different organisations all through Europe that Cultural Landscapes have few workable management tools or little protection in law. The recently-published European Landscape Convention is a step forward, and a timely development that might lead us to a positive management for landscapes in the future.

The network established at the meeting in Kilkenny successfully applied for funding within the EU culture 2000 program and the EPCL programme began in December 2000. We sought Culture 2000 funding for 918,000 euros, which with matching funds was at the 1.5m ceiling for Culture 2000 Action 2 programmes. In January 2001 formal notification was received of a grant of 858,427 euros, which will be supported by c600,000 euros from national contributions raised separately by the twelve national projects.

The programme has three-fold objectives: the understanding, communication and sustainable management of cultural landscape as part of the cultural diversity of Europe, taking into account the European Landscape Convention, even though it is not yet in force. It will focus on new methods and new technology, notably GIS and internet communication. It will find common solutions across the range of projects, but part of the objective is to recognise and work within the diversity that is characteristic of Europe and that is fully represented by the 12 national projects. Their study areas include a typical range of landscape types, from coastal to high alpine regions, from

dry lands to wet lands, from lowlands to highlands, from rural to urban areas.

The programme is primarily concerned with the understanding and assessment of the cultural landscape throughout Europe, and the requirements of the European Landscape Convention. It is designed to explore how to increase democratic access – intellectual, virtual and physical – to the European cultural landscape, which is the major emphasis of the Convention. It will foster exchange of information and expertise between the partners, identify best-practice in methodological terms, and explore new technologies. It will have a particular focus on the management and conservation of the cultural landscape and its contributions to local and regional diversity and identity within Europe.

The project has two levels. The European-wide core of the project, co-ordinated from Aschaffenburg, provides for seminars, staff exchanges, web-sites, and the publication of a book, leaflets and educational material. Within this there are twelve separate national projects, each with distinctive agendas, differing methods and diverse approaches but all sharing common goals and fully complementing each other (fig 1).

The 12 projects are:

Prachensko, Czech Republic
Funen, Denmark
Bowland and the Lune Valley, England
Kaali, Estonia
Untamala, Finland
Albersdorf, North Germany
Spessart, South Germany
Irish Midlands, Eire
Paneveggio, Italy
Bjare,Bjäre, Sweden
Halland, Sweden
Arfon, Wales

A common internet-site, *www.pcl-eu.de*, is currently under construction. More information about the common project as well as links to the national projects will be found there.

The national projects chose as their study areas places that are recognised cultural landscapes but that are also vulnerable, faced with further change and threats to their identity that need to be managed sustainably and carefully, and that are remote in different senses, particularly in terms of being little visited and under-funded.

This paper describes the EPCL project through two of the national projects: one of the two Swedish Projectsprojects and the English project. Because work has only recently started, and will not be completed until 2004, these sections of this paper are necessarily accounts of intentions rather than reports of achievement. They outline what is planned, and future papers at CAA will be able to report on outcomes.

The Swedish project – the Bjäre Peninsula – is located in the north-west of Skåne, the southernmost part of Sweden. The area was also participating in the former ECP project. In

Sweden the concept of Historic Landscape Characterisation (see below) is still rather new, therefore the national project will try to adapt the English methodology into a Swedish context. The partners are universities, museums and associations concerned with archaeology and heritage management.

The English project – Bowland and Lune Valley – is located in Lancashire in NW England. Here it is partly a follow-up to a recently completed Historic Landscape Characterisation county-wide project (see below). As well as meeting ECPL objectives, it will therefore additionally take forward a national agenda for improving the understanding and conservation of the landscape, notably into stakeholder issues. With English Heritage and Lancashire County Council, the partners are scientific institutes and academies, universities, museums and local associations concerned with archaeology and heritage management.

Goals and frameworks

Through gaining a better knowledge of cultural landscapes and their development through time the EPCL project wishes to achieve a sustainable future management where the prehistoric and historic dimensions will be able to exist together with modern developments, and where cultural tourism could be developed. A wider understanding and appreciation of the cultural heritage may also contribute to a sense of community value and local pride - as well as a wish to care for it alongside the modern developments that are expected to increase in different senses in the near future.

One important theme that EPCL will work with is *Historic Landscape Characterisation* (HLC). The main objectives of HLC cover the following areas:
- understanding: summarising current knowledge about the historic dimension of the present-day landscape,
- public awareness: new ways of involving the public
- archaeology: helping to direct future research
- land-use planning: providing information for controlling developments and managing landscape change
- agricultural and land management: providing advice on priorities for conservation and archaeological expenditure to achieve sustainable land-use.

The EPCL programme adopts the European Landscape Convention definition of landscape, which is; "*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*". The Convention applies this definition to all parts of a country's territory, to urban as well as rural areas, to everyday as well as outstanding landscapes, to degraded as well as well-preserved places.

All the different projects in the EPCL will use a similar philosophy of landscape; some projects will explore historic landscape character, partly based on the English approach to HLC (Fairclough this volume). Much of its precise methodology and definitions might have to be modified and adapted, however, to be useful in their new national contexts. GIS (*Geographical Information System*) will also be used in a variety of different

ways by all projects conducting the HLC work, as well as those carrying more conventional archaeological techniques of data collection and analysis - some of the 12 projects will be principally concerned with studying past environments and landscapes.

For the purpose of characterising the present day cultural landscape (as opposed to other types of landscape-based archaeological work) the EPCL national projects are likely to follow these principles:

i) A focus on present-day not past landscape

ii) An emphasis on time rather than space as the principal attribute of cultural landscape, and on ways of capturing this within spatial computer systems

iii) An approach, facilitated by GIS, that aims to be comprehensive not selective, describing landscape as the sum of all its parts not just areas with especially high levels of archaeological site survival

iv) Reflecting the dynamic rather than static character of the landscape: the 'living landscape' concept, a recognition and acceptance (/celebration) of change;

v) Interest in pattern and process more than merely sites or monuments

vi) Using area not point data, patterning not places, landscape not sites

vii) Employing generalisation not detailed recording; thus establishing a general description of an area to highlight its own character and (more importantly for EPCL) commonality as well as diversity at European level.

viii) Recording perception (leaning on the Convention's phrase "... as perceived by people ...") and recognising that interpretation not record, ideas not facts comprise landscape, which is seen as an idea not a thing. Even though it consists of physical objects, landscape is constructed by our minds and emotions from a combination of interpretation, perception and association. An important EPCL goal is to discover methods of collecting public perceptions and of capturing and understanding them through computer applications.

ix) Working in desk-based ways, with limited new field work, bringing information that already exists into new perceptions at landscape scale.

x) Treating the work as a process, with provisional rather than definitive results, provoking as many questions as answers: all historic landscape characterisation is provisional.

Some of these principles fit straightforwardly into GIS and computer applications – (v) and (vi) for example. Others will require innovation in GIS (eg the emphasis on time and change – (ii) and (iv)); others again present real challenges, such as how to capture perception under (viii) and the uncertainty inherent in (x).

The Bronze Age Landscape of the Bjäre Peninsula

The Bjäre peninsula is situated in the north-west of Skåne, the southernmost county of Sweden, and has a well preserved prehistoric heritage, mainly consisting of Bronze Age graves and places with cup-marks. Bjäre is a rather small area, the peninsula measures about 10 x 10 km, and here more than 500 mounds from the Bronze Age are known and almost as many stone-settings from the late Bronze Age and early Iron Age, as well as about 300 places with cup-marks. Peculiarly enough there are almost no visible traces from other prehistoric periods and most of the known settlement sites consist of undated scatters of flint in the surface.

The landscape of today in the area consists of a rather open landscape with fields for grazing as well as arable fields. The predominant boundary features in this landscape are the stonewalls that were made in connection with the agricultural shifts according to the Land Reform law of 1807. The overall picture of the landscape of today is much affected by the shifts, since they implied a comprehensive redistribution of farmland. The principle behind them were that small patches of land should be put together to form larger and more efficient fields. The old common grazing land was also divided and put under the plough. The layers of visible remains of human activity in the landscape may then be summarised as a well-preserved funeral landscape from the Bronze Age period around which the farming landscape of later periods has developed.

In 1997, through the non-profit association Bronstid, the area became the leading partner in ECP, *European Cultural Paths*. The objectives in this project was to make the cultural heritage in the landscape more accessible as well as to gain more knowledge about it. This was the starting point of a great deal of work that still is going on in the area. The partners in the new EPCL project of the Bjäre peninsula are the University of Lund, the agricultural University of Alnarp, the Regional Museum in Kristianstad and the association Bronstid, organisations that also represent the structure of the whole project : Research, Understanding, Communication and Management.

Understanding

Historic Landscape Characterisation will be a considerable part of the research in the Bjäre project. The above mentioned principles will be borne in mind but also some effort will be made to be able to reconstruct the cultural landscape of the Bronze Age period which stands out so predominantly in the cultural heritage of the area. The creation of HLC maps within a GIS system that will take into account landscape change, time of change, sort of change, and of course a characterisation of the present day landscape. The HLC of Bjäre will be conducted as a pilot project (together with the slightly different Halland project) and a big effort will be put in to modify the English HLC method so that it could work in a Swedish context.

One of the national themes for the Bjäre project is to take account of present day vegetation. We will take a look at places where vegetation from a well managed grazing land typical from the time before the shifts is still preserved. The mounds still have this kind of vegetation and one check with a pollen analyses from the filling of a mound and its former ground level below it shows that the vegetation today is not very different from the past vegetation. In the project another five pollen analysis in mounds are planned to confirm this. This means that the vegetation is considered not only as rare species but in fact also as a common cultural heritage which gives the landscape a vivid history.

In the work to gather the known information about the landscape we will use several computer applications. For theThe HLC and the connected database ArcView and Access will be used. Into the database allwill be created in *ArcView* and *Access*. All available information will be put into the database in different tables that will be connected to different layers in ArcView (see table 1). In this system all available information shouldabout the area will be put; for example prehistoric heritage, vegetation, HLC and historical maps and amaps. Table II shows the first outline of the HLC table. One main goal is that the municipalitywill use it for planning as well as developersearly in their planning work, andalso the agricultural authorities of course. And will be able to use this material early in their planning work. The database will of course also be very useful for education and research the material will be very research. One of many important tasks is to explore the possibilities in the GIS-based HLC for useful.

The database outlinepredicting models of archaeological site distribution, location and survival in relation to later landscape history.

Communication

Communication is an important as well as very difficult within the EPCL. When the database is ready to be used, it is expected to be available through different modes.mediums. Through public computers at the library for example as well as on a CDRomCD-Roms and on the Internet, - but then maybe in a slightly lighter version. Communication also means a two-way dialogue,it is not only for the project to give information from gatheringwill not only be a provider of information in different archives and sources as well as from the research made,- we also need the public to giveus information to the project about their cultural landscape. In the landscape convention, as mentioned above, the definition of "landscape" is; *an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*, this means that we need to take into account the local appreciation of the landscape and an increased democratic process as well as access is definitely needed. To be able to achieve this the Internet as well as public computers will be used, also seminars, meetings and local projects are being planned.

One of the outputs in the project is a Virtualvirtual pathway. In the former ECP project two physical trails were created in the area, which is why in EPCL we would like to concentrate on virtual pathways. The work with this pathway has started already and will be in the form of a photographic tour through the landscape by the means of *Quick Time Virtual Reality* (QTVR). By using a program called VR Worx we can make 360 degrees panoramas which can be connected to one another as well as to maps and still photos through hotspots. The QTVR is a very vivid way to show a landscape both through the internet and CD-Roms. It is also very useful as a documentary piece, as well as it is a way to bring the landscape into the office when dealing with for example landscape archaeology.

The local non-profit association Bronstid have made a reconstruction of a Bronze Age house, called *Bovigården*

(the Bovi farm), around this a Bronze Age centre is being built-up and it is already used as a place where schoolchildren are having their pre-historic education in a very vivid way. Bovigården will play an important part in the local communication.

Management

To achieve a sustainable future management of the cultural landscape, you need above all interest, knowledge and communication. Throughthe EPCL programme we believe that we can achieve a better situation in the future when it comes to these things.

In all the EPCL´s goals for the Bjäre project are as follows. Through gaining a better knowledge of the cultural landscape and its development through time the EPCL project wishes to achieve a sustainable future management where the prehistoric and historic dimensions will be able to exist together with modern developments,developments. Already today, because of the former ECP project as well as the new-started EPCL project, we can notice that the communication with the local planning authorities has improved which is very promising for the future. For this purpose the GIS based material will be and where cultural tourism could be developed. A wider understanding and appreciation of the cultural heritage may also contribute to a sense of community value and local pride, -as well as a wish to care for it alongside the modern developments that are expected to increase in different senses in the near future.
vital.

Products

Beside the GIS based material and the Virtual Pathway the Bjäre project will also make contributions to the Overall Programmes Book, produce local leaflets and a book about the local cultural landscape and its development. The outcome of the HLC methodology in a Swedish context will be evaluated in a method report.

The Cultural Landscape of the Forest of Bowland and the Lune Valley

The Bowland/Lune Valley project covers an area of North Lancashire (NW England) of nearly 1000 sq km. It unites two very different but historically closely connected areas. The Lower Lune is a wide-floored valley with evidence for long occupation and successive land-use from pre-Roman Iron Age to the modern day; Roman forts, medieval villages, and several layers of field systems are the most visible remains. The Bowland Forest is essentially an un-enclosed upland mass of grit-stone moor-land, with medieval and later dispersed upland settlements, still occupied, focussed around deep valleys containing small market centres. There is a long history of successive intake and enclosure at the moor's edge. A rich prehistoric resource lies largely hidden and unknown beneath blanket peat; in the medieval period, the area supported large vaccaries – ranch-like estates – but the post-medieval landscape is one of small farms punctuated by large high status houses and estates. Everywhere, however, place-names of pre-Roman, anglo-saxon and Scandinavian types signpost earlier phases of landscape history, and there

is industry: stone quarries, lime kilns and textiles mills exploiting the fast flowing streams.

One of the interesting aspects of the project is that there are large urban populations very close to this remote rural area on its west and south margins. Their use of Bowland as a weekend recreational area is therefore a significant aspect of its cultural significance, and one which the EPCL project hopes to consider and map.

The whole area is included within one of the county-wide historic landscape characterisation (HLC) projects that since 1994 have been promoted by English Heritage, the national agency concerned with the management of the historic environment (Fairclough, this volume, notably fig 1 and table 3). HLC is a GIS map-based technique designed to produce a generalised understanding of the historic and archaeological dimension of the present-day landscape, and one major aim of the Bowland and Lune project is to explore the existing Lancashire HLC in more detail at a local level, examining the flexibility of GIS to absorb more and more local and diverse perceptions. The area has traditionally been under-studied by archaeologists, especially in relation to landscape, and its cultural landscape is under-appreciated both publicly and amongst archaeologists. It is an area under threat of change that requires better-informed and more effective approaches to management.

HLC serves a variety of uses, such as education, research, land-management and CAP-linked agricultural environmental incentive schemes, spatial planning and environmental impact assessment. All these have a place in the ECPL project. In particular, the new project will look at better ways of making GIS information easily available and accessible to a wide range of different users.

The principal outputs of the Bowland /Lune project will be:
- intellectual access to the landscape through a virtual trail using new technology similar to that described above in relation to Bjäre, and detailed GIS mapping of the landscape, developed from the existing HLC and drawing in many other data sets, and to be made available through libraries, the web and CDRoms;
- two physical trails through the cultural landscape, with sign-posting, information boards and guide leaflets; and
- conservation and management guidance for use by local government spatial planners, land managers and the general public; this will be underpinned by the GIS data and the results of public opinion surveys and interviews with farmers; school contacts participation and liaison; in particular the project will look for ways to draw public perceptions into the GIS database.

There are three main stages in the project, corresponding to EPCL's main strands:

Stage 1: Understanding
Collecting together known information and extending knowledge about historic landscape, by
a) Data collection (through consultation with experts, trawling data sets such as the SMR and defining and mapping sites, historic landscape character and place-names; sub-dividing / reworking HLC Types, detailed mapping of sample areas on GIS)
b) Fieldwork (including rapid assessment, validating HL Types, public opinion and participation surveys)
c) Analysis and evaluation (including measurement against criteria such as visibility, potential, sensitivity, opportunity)

Stage 2: Communication
Transmitting information and ideas in various forms to public audiences, by
a) creating two physical pathways through the landscape
b) creating at least one web-based virtual pathway / portal into the landscape
c) other publicity (leaflets etc)
d) participation in public meetings

Stage 3: Management
Using the results of GIS analysis and public participation to produce
a) landscape management guidelines
b) Site and setting management prescriptions
c) Integration other targets (eg agri-environmental grants)
d) Supplementary Planning Guidance
e) Sites and Monuments Record enhancement

The project will produce reports of several types :
i) contributions to the Overall Programmes Book
ii) local leaflets and book
iii) a method report, and technical guide to the GIS databases produced
iv) an academic journal paper on methodology etc

The project will address many broad themes that have relevance at a local, national and international level:
- the accuracy and applicability of HLC methodology, and its relationship to other, mainly site-based, types of data; it will explore ways of using GIS to convert point data and distributions into generalised area data. A major aspect will be the relationship between broad historic landscape character on HLC and individual sites and monuments, and in particular how to use GIS-based HLC for predictive modelling of archaeological site distribution, location and survival in relation to later landscape history.
- the character of historic dispersed settlement, and the relationship between settlement pattern, historic land use, natural resources and historic landscape character; again this will necessitate novel applications of GIS data capture and handling to extend HLC methodology.
- the assessment of time-depth and evidence for change (and continuity) in the landscape), and using HLC and the SMR to define visibility, sensitivity and perception in today's landscape
- defining the rarity and vulnerability of historic assets, and historic components within the landscape, leading to the establishment of management priorities and their integration with other programmes of work. It should be possible to find new ways of using GIS to deliver

management plans in interactive form, with feedback mechanisms to allow the results of action, and the effect of development, to update strategies.

- promoting access to cultural landscape through GIS and Internet applications, and engaging local communities, including seeking reactions and changes to expert-led assessments and characterisations. In the long term, if it is successful, this will probably be the most significant outcome of EPCL.

Conclusion

This paper has discussed only two of the twelve national projects within the Culture 2000 European Pathways to Cultural Landscapes programme, but it has emphasised both their commonality and their differences. EPCL's main concern is to understand, to communicate and to find ways of managing the very different cultural landscapes that are represented in the 12 national projects within the whole programme that are spread across ten countries. Work has only just started this year and will continue until 2004, and further similarities and differences will doubtless emerge from the national and regional cultural

differences across the EPCL network. In this work, GIS-based Historic Landscape Characterisation (HLC) as used in England but modified to suit different landscape types, will play an important part, but each of the slightly different national projects will also have their own special themes and questions to be answered.

Bjäre and Bowland, the two national projects presented in this paper, are very dissimilar areas, with distinctive archaeologies and histories, and quite different landscapes. Yet (like all twelve areas that will be studied during ECPL) the two areas share a 'European-ness' that is defined by overall similarity as well as by national and regional differences. Both the people who modified their environments in the past, thus bequeathing to us our landscapes, and the people today who 'create' landscape by understanding, perceiving and recognising it, all shared a common European culture heritage and common human responses. So much of these considerations are intangible and subjective, however, even when they are based on the material remains of the past, and it is how to use computer applications for such areas of understanding and perception that is one of ECPL's biggest interests.

Tables

Access tables	ArcView layers
1. HLC	1. HLC (polygon)
2. Vegetation inventory	2. Vegetation (polygon)
3. Site and Monuments record (pol)	3. Site and Monuments record (pol)
4. Site and Monuments record (dots)	4. Site and Monuments record (dots)
5. Site and Monuments record (lines)	5. Site and Monuments record (lines)
6. Inventory of flora	6. Inventory of flora (dots)
7. Rare and threatened species	7. Rare and threatened species (dots)
8. Areas with protection	8. Areas with protection (polygon)

Table 1. The first database outline

Polygon	Code	Area	Dating	Interpretation	Validity	Comment	Date	Signature
Unique number	Change	Place	Time of change	Type of landscape	...of the characterisation	Metadata		

Table 2. A first trial edition of the HLC table

Figures

Figure 1. Map showing location of Bjäre and Bowland and the other ten EPCL projects.