

LANDSCAPE PLANNING IN THE INFORMATION AGE - ANGUS PARKER, FREELANCE LANDSCAPE PLANNER AND LECTURER

The draft programme of this event had entitled this section “*the Challenge of GIS*”. I’d like to re-christen it “*the Inevitability of GIS - the challenge of landscape planning*”. I hope to stir up some realization amongst the landscape planning world that, like it or not, we are in the Information Age, and that this means more than using GIS to store and print maps. I propose that in five years time it will be standard practice that all landscape planning will be GIS-based. Paper maps (including GIS printouts) will be as relevant to landscape planning as a road atlas is now, and landscape planning will have changed - for the better.

CULTURAL SHIFT

I will propose that a cultural shift in the way that we manage and think about spatial management is happening. This is not an onerous inevitability. It is to be welcomed. It promotes the understanding and demystification of the landscape. It also promotes an inclusive, integrated model of landscape planning. It means that anyone can explore the meanings and values that constitute the landscape from within an rigorous and consistent framework.

GIS is ideally suited to landscape planning in that it can be used as much to plan the relationships between thematic layers as it can to plan the relationships between elements of the same layer. Landscape planning is not only about what can be put next to what, it is crucially about relationships between different values operating on the same landscape element. This was recognised by Ian McHarg’s Design with Nature approach in 1969, but it is only now that we are getting to grips with the technology that allows us to explore these inter-relationships efficiently and effectively. With GIS, landscape planning is a more complete article.

I applaud the Countryside Agency as they develop their own GI capabilities. Especially so in the light of their project which seeks to develop agri-environment targeting from the FRCA’s data, structured within a rigorous character-based framework. This project is currently building a regional-level character framework which is not only being used to structure agri-environment targeting, but also to undertake rigorous analysis of *significance, distinctiveness, condition* as well as developing a landscape capital arm of the Agency’s Environmental Capital programme. We are only taking the first steps of the landscape information march - more information, means more questions - but this results in more defensible, scientific answers.

I hope that the Countryside Agency will take a lead by developing an accessible, fully integrated national countryside database built on an open data partnership. Such a partnership might be built with other agencies such as the Environment Agency, English Heritage, the new Regional Development Agencies, Scottish Natural Heritage, and many others. By involving local and regional authorities, such a database could act as a framework for environmental decision-making from national to local levels. Data should be accessible to everyone whether they be local/ visitor, professional/layman, developer/conservationist.

However, the new medium not only alters the method of communication, it also has fundamental implications for the methodologies of landscape

character assessment, and landscape planning as a whole. To use the digital medium with a paper-based methodology is counter-productive. The most recent advice falls a long way short of offering appropriate guidance for GIS-based characterisation. Such guidance *must* be prescriptive. It must set out in unambiguous terms the standards and conditions that must be achieved to construct a rigorous character-based decision-support database. Only within a rigorous and consistent framework can rigorous and consistent decisions be made.

This cultural shift may also signal the demise of dedicated GIS departments. Such a shift means that GIS must be fully integrated into any organisation that currently uses maps. It should no more be a specialism than having word-processing specialists in your organisation. Each and every map user must be a proficient GIS user.

IMPLICATIONS FOR LANDSCAPE CHARACTER ASSESSMENT

The product of a modern character assessment is not a dusty document (although this is likely to be a secondary product for some time to come).

- ◆ It is a scaleable dataset which underpins national/regional/local decision-making.
- ◆ It is multi-disciplinary in that it reflects the various aspects at large in landscape decision-making, and involves professionals from other disciplines besides landscape planning.
- ◆ It is constructed in partnership with many groups and interests and links to parallel data in partner organisations.
- ◆ It is published, complete with data, on the Internet.
- ◆ It is organic in that it grows and develops over time.
- ◆ It is based on justifiable and reliable data.
- ◆ It forms a framework for all environmental decision-making.

The following proposals are all designed to get the most from the culture shift as we move toward the most potent use of GIS in landscape planning.

SPECIFIC GUIDANCE

Current guidance does not accept that characterisation is fundamentally a GIS exercise. It should take the commitment to declare characterisation to be GIS-based. Once this happens the guidance must be prescriptive enough to ensure rigour and consistency within the resultant database.

PARTNERSHIP

Data partnerships must be established between national, regional and local, private and public, urban and rural, development and conservation organisations. This will spread the burden of the cost of data-capture and it also encourages co-operation in decision-making if we are using the same point of reference. This probably needs to be led by the national agencies, in terms of providing a rigorous data framework, and the data-capture to be done by the local authorities.

An example of good practice: the Welsh Landscape Partnership Group. What about an English Landscape Partnership Group convened by the Countryside Agency?

INTEGRATION WITH OTHER DIGITAL MEDIA

It is becoming increasingly easy to integrate GIS with other digital technology such as:

3D CAD models can be inserted on 3D terrain models within a GIS framework.

Virtual Reality (VR) models are low-memory and easily web-based.

Photo, sound and video can augment graphical information.

Links to any other documents and databases, including those on the Web.

Such integration allows super-informed landscape models in five dimensions (the fifth being thematic information). These have potential in the dissemination of landscape information to the public and decision-makers. Those who wish to benefit from the new technologies must invest in their development. Synergistic partnerships could be established with University departments to spread the burden and to increase the level of debate.

THE INTERNET

There are 2 different approaches:

Publish the final report on the web. This is better, not much better than a dusty document on a shelf. It denies the visitor the ability to be able to explore the data themselves, and it denies the data owner the expertise of visitors.

Make the whole database (including the results) accessible on the Web, perhaps complete with video and sound recordings, and links to other related datasets and websites. This enables all data partners to explore the data themselves.

We should proactively explore the possibilities to achieve the latter.

A PLEA FOR SUPPORT

I finish with a plea for national agencies to support Living Landscapes Project (LLP). There is a need to follow the lead of English Nature who have committed themselves to the LLP for 3 years. The LLP, in partnership with 7 local authorities, is delivering a national landscape character database on a shoestring which could serve the national agencies with an integrated, landscape character-based framework for rural decision-making *at a local level*, but only as long as core-funding is found.

Angus Parker DipLA(hons), MSc is currently lead consultant on the Countryside Council for Wales' LANDMAP project. He is also working with Steven Warnock, Mark Diacono and the University of Reading on the Living Landscapes Project, as well as with the same on the Living Landscapes Partnership - which is an association of independent consultants working on many of the issues discussed above. He is also working on the Countryside Agency's project to derive agri-environmental targeting from the FRCA's data, based on a landscape character framework. He is also working with local authorities in Sefton and Medway on linking urban and rural character assessments. Angus is also a part-time lecturer at the University of Greenwich

AN EMERGING COUNTRYSIDE CHARACTER DATABASE, STEVEN WARNOCK, FREELANCE LANDSCAPE PLANNER

Landscape assessment has come a long way since the 1970s and early 1980s and it is now poised to become a powerful decision support tool for policy makers, planners and land managers. This has been made possible through the development of a more structured and systematic approach to landscape assessment, which clearly separates the process of characterisation from evaluation and which gives equal weight to the natural, cultural and visual dimensions of the landscape. Of equal importance, however, has been the concurrent development of geographical information system (GIS) technology, which is now widely available on standard desktop computers. This technology greatly facilitates the storage, analysis and presentation of map-based data and it is a key component of the character based approach to rural decision making that is emerging in the Midlands.

THE LIVING LANDSCAPES PROJECT

The work in the Midlands, originating from the Warwickshire Landscapes Project in the early 1990s, now involves a partnership of 7 local authorities, together with academic institutions and national countryside agencies, all of which have been brought together under the heading of the *Living Landscapes Project*. The purpose of this Project, which is based at the University of Reading, is to develop a GIS-based landscape character framework for rural decision making, that is capable of linking national/regional policy objectives with county/district wide planning and land management activities.

RESOLUTION

It was clear from the outset of the project that if GIS was to be used effectively as a decision support tool it would have to be built on a structured, map based framework for describing and evaluating the countryside. This had to be capable of operating at different levels of spatial resolution, ranging from the regional (1:250,000), through the county/district (1:50,000), down to the individual farm/site (1:10,000). It was equally important that any such framework should be related to distinct and relatively homogenous units of land, each with a similar pattern of physical, ecological and historical attributes. These units - termed *land description units* (LDUs) - are the fundamental building blocks of the landscape and they are the key to character-based decision-making.

LDUs are defined by a series of *definitive* attributes (topography, geology, soils, landcover and settlement pattern) derived from a process of map analysis (Figure 1) using simplified map overlays. This process has traditionally been achieved by physically overlaying a number of acetate sheets one on top of the other. Carrying out the same process on GIS not only overcomes the problems associated with enlarging/ reducing source maps at different scales, but it also allows far greater scope in the actual analysis of the data. The disproportionate cost associated with acquiring a number of key digital datasets, however, is proving to be a major constraint on the use of GIS in this area.

A STRUCTURED FRAMEWORK

The definition of discrete LDUs provides a structured framework for gathering additional *descriptive* information about the landscape. Descriptive attributes include both character-based information gathered in the field (eg species associations, building styles, etc), as well as qualitative information relating to the significance of particular attributes, their condition and their vulnerability to change. All of this information is held on a GIS database linked to the LDU polygons (Figure 2).

With the first phase to build a GIS-based landscape character framework across the Midlands now well underway, the Living Landscapes Project will shortly be in a position to generate a provisional landscape classification for the entire region. This will then be tested and refined by each of the local authority partners at the county/district level. Some of the partners, such as Derbyshire (see next article) are already well advanced with this next phase of the Project, and are poised to start using the framework as a basis for evaluation and decision-making.

***Steven Warnock** is a self employed landscape planning consultant who has, over the last twelve years, played a major role in the development of current landscape assessment practice within the U.K. Steven became involved in this field through the Warwickshire Landscapes project (1988-1991) and since then he has built up considerable expertise in the use of landscape assessment as a decision making tool. Although actively involved in project implementation, as well as in an advisory/training role, he has a special interest in research based work, and in 1999 he set up the Living Landscapes Project as a focus for this work. The Project, which is based at the University of Reading, is built on a partnership between local authorities, academic institutions, the Environment Agency and English Nature. The aim of the Project is to develop a GIS based landscape character framework for rural decision making, that is capable of linking national / regional policy objectives with county / district wide planning and land management activities.*

THE RELEVANCE OF CS 2000 TO CHARACTER ASSESSMENT, ROY HAINES-YOUNG, CENTRE FOR ECOLOGY AND HYDROLOGY

Countryside Survey 2000 (CS2000) will soon report on the condition of broad habitats, landscape features, vegetation and fresh waters in the wider countryside. The survey will enable us to take stock a range of important elements of our natural capital base and understand the way they are changing. Although designed as a national, survey it will provide us with important contextual information for tackling issues at more local scales.

This presentation will consider how we can use a range of GIS tools to unlock the potential of CS2000 data and to link the information with other data in order to explore some of the key drivers of countryside change.

Roy Haines-Young is a reader in Environmental Management at the University of Nottingham and head of the Environmental Science and Policy Research Group at CEH (Centre for Ecology and Hydrology). His research interests cover landscape ecology and GIS, and has in recent years undertaken projects for DETR, English Nature, and the Forestry Commission. He is currently working with colleagues in CEH on Countryside Survey 2000 and the analysis of these data in relation to the drivers of countryside change. His work at Nottingham presently concerns the use of GIS as a decision support tool for landscape management.

WORK OF THE FRCA GEOGRAPHIC INFORMATION UNIT, DAVID ASKEW, FARMING AND RURAL CONSERVATION AGENCY

The FRCA Geographical Information Unit (GIU) is based at Leeds and has a national remit. We work primarily for MAFF but are also involved in projects with a number of other agencies and departments with a rural interest, including the Countryside Agency.

The GIU has access to a number of GIS platforms. The unit manages a very broad digital environmental database comprising over 200 individual national datasets. Information includes, for example, Agricultural Census data, physical environmental data such as soils and climate, species and habitat data, schemes and designations, and rural socio-economic data. The unit manages information on all the MAFF agri-environment schemes. This involves bringing the data on individual farm agreements together to create accurate national averages of land being managed under these schemes.

The information and systems held by the unit are used for a wide variety of purposes, from answering simple ad hoc queries to producing more substantial reports concerned with the spatial analysis of data. As an example of the latter uptake reports are produced for MAFF based on analysis of the spatial distribution of scheme agreements. In this context the Countryside Character framework has been found to be a useful tool for summarising and describing national distributions. The framework has also been used for specific statistical analysis of the relationship between uptake and the distribution of resources or features targeted by schemes.

As well as providing an analytical service the GUI is also involved in developing and setting up desktop systems for use in FRCA regional offices. More recently we have been particularly involved in evaluating and implementing intranet base GIS application. To date this has been an in-house activity, but we are now looking to extend this approach both to other partner organisations and more to other partner organisations and more widely. We have recently secured 'Invest to Save' funding to develop some of these ideas further.

I have worked for FRCA since 1985 following an MA in Geography from Cambridge University and an MSc in Land Resource Management from Silsoe. I started initially as a botanical fieldworker and soil surveyor. I later specialised in ecological analysis of environmental monitoring data from ESAs and other schemes. I became increasingly involved in GIS in FRCA from the early 1990's and I became manager of the GIU when it was set up in 1998.

GIS AND LANDSCAPE CHARACTERISATION IN IRELAND - JULIE MARTIN, ENVIRONMENTAL RESOURCES MANAGEMENT; AND DR MARTIN CRITCHLEY, ERA-MAPTEC LIMITED

The Heritage Council of Ireland is the statutory adviser to government on heritage issues, with an integrated remit to identify, protect, preserve and enhance all aspects of the national heritage, including archaeology, built and cultural heritage, habitats and landscapes. Its functions are policy formulation and promoting enjoyment of the national heritage. It has a duty to co-operate with and co-ordinate the activities of others in relation to the national heritage.

In late 1999, the Heritage Council commissioned Environmental Resources Management (ERM) and ERA-Maptec Ltd to prepare a pilot study on landscape characterisation in County Clare. The aims were to develop the framework for a definitive landscape character assessment as a benchmark for Ireland's landscapes, and to assist the Heritage Council in formulating landscape policy for Ireland.

The brief for the study specified the development of an ArcView-based Geographical Information System (GIS) as the basic tool for landscape characterisation and emphasised the value of underpinning the assessment of landscape character with robust, empirical data. The GIS system was to be accompanied by a proposed methodology for landscape characterisation. If successful, the completed pilot was to be developed further and extended, with *landscape character types* being used to inform the future planning and management of Ireland's landscapes.

The outputs from the pilot study were to be:

- a researched ***set of national data-sets*** co-ordinating existing information on national and cultural aspects of the landscape in a single, digital format;
- an ***ArcView-based Geographical Information System (GIS)*** designed to produce a generic classification into landscape character types;
- a ***pilot landscape characterisation*** of County Clare with mapped landscape character types and an explanation of the rationale for the proposed typology;
- a cost-effective ***methodology for landscape characterisation*** in Ireland, addressing the requirements of all potential users.

The study began by reviewing the development of the landscape character assessment methodology to date in other European countries, and the extent to which GIS has been used to inform and develop the process. Consultations were held with experts on landscape characterisation at Scottish Natural Heritage, the Countryside Agency, Environment & Heritage Service NI, and the Countryside Council for Wales.

Research was undertaken into data sources for landscape characterisation in Ireland. Key issues at this stage were the scale at which data were available, their content, accessibility and cost; emphasis was placed on data which would contribute directly to landscape characterisation. Once obtained, the selected data was carefully prepared for use in the GIS. A detailed historic landscape characterisation was undertaken as a linked study to provide adequate data on historic landscape patterns.

Traditionally, landscape characterisation has been undertaken intuitively using paper and computer based overlays. However, GIS can facilitate rapid data integration, query, overlay and the preparation of derived products. In addition, the modelling capabilities of GIS give the opportunity to automate and replicate a generic classification into landscape character types. The pilot study used a combination of manual techniques and GIS analysis to define a series of preliminary landscape character types in County Clare. Various methods of GIS analysis were tested; the most useful was found to be expert classification using ERDAS IMAGINE. This 'knowledge-based' approach models expert judgements. The results are reliable, repeatable and justifiable in that the exact path taken in arriving at the classification for a given area can be clearly seen.

The characterisation process was complemented by consultation with key partner organisations (the Department of the Environment, Duchas, Teagasc, the Forest Service *etc*) and local stakeholders (Clare County Council, Landscape Alliance, Irish Farmers' Association, local Development Associations *etc.*). The consultations explored how the landscape characterisation might be used within County Clare and Ireland as a whole.

Drawing on the findings of the pilot, the inputs made by consultees and local stakeholders, and experience of landscape character assessment systems elsewhere, the consultants outlined a possible system for landscape character assessment in Ireland. The key components of this system would be:

- A consistent ***National Landscape Characterisation*** co-ordinated by the Heritage Council but shared with central government. This would be GIS-based and would include a national landscape typology. It could be used for a very wide range of strategic applications, such as strategic environmental assessment of the *National Development Plan*.
- ***County Landscape Character Assessments*** prepared by County Councils in partnership with other public authorities and agencies, with advice from the Heritage Council. These would provide an agreed objective landscape reference source for each county; and would build understanding and awareness of landscape issues.
- ***Specific tailored assessments*** for use in local strategy initiatives. These more detailed assessments by members of the county landscape partnerships would look in more detail and specific forms of landscape change and offer advice on issues such as landscape capacity for housing development, and the spatial distribution of woodland expansion.

Julie Martin is a Technical Director of ERM and heads the company's Landscape Team, which is well known for its pioneering work on landscape character assessment methodologies. Dr Martin Critchley is Director of GIS and Remote Sensing at the Dublin-based consultancy ERA-Maptec Ltd.

***GIS AND CHARACTER ASSESSMENT IN DERBYSHIRE, GARY ELLIS,
DERBYSHIRE COUNTY COUNCIL***

INTRODUCTION

Until the Derbyshire project commenced, the Conservation and Design Group as a whole had very little knowledge of or experience with the use of GIS. Since then it has been utilised for a whole range of projects.

My brief for today is:-

- To try and explain about the GIS employed by DCC concentrating on its particular features
- To show how the data is held, viewed and interrogated with some of the outputs to date
- To demonstrate the advantages of using a GIS and its benefits relative to a manual system
- To give an insight in to some of the problems encountered or some of the points to consider if you are currently looking to use a GIS for your own particular circumstances

BACKGROUND TO THE PROJECT

Derbyshire County Council began a county wide Landscape Character Assessment in March 1997. The aim of the project was to build on the National Character Map produced by the Countryside Agency and English Nature, to identify the range of Landscape Character Types for Derbyshire outside the Peak Park.

At the outset the methodology was essentially a paper based exercise which proved to be time consuming. However, it was still essentially the desk study that divided the county into discrete units of land (termed Land Description Units (LDU's)), each distinguished by a different pattern of physical, ecological and historical attributes. These units were further sub-divided into Land Cover Parcels (LCP's) which reflected the very slightest variation that might be detectable in the field e.g. Small fields as opposed to large fields.

The LDU's and the LCP's then provided a structured framework for undertaking the field survey work allowing for the collection of data on the visual character and condition of the landscape.

WINGS GIS

The WINGS GIS has a windows based operating system, has most of the functionality for most of the users wishing to use the system, will link to an external database and is relatively user friendly.

WINGS allows data to be mapped in one of the following ways:

- a) Point Feature - where data is attached to a specific point displayed on the screen as a symbol.
- b) Link Feature - where data is attached to a line feature either shown as a single line or closed to make a polygon.
- c) Area Feature - where data is attached to an area which may or may not be defined by a polygon.

The Derbyshire Landscape Character Assessment has utilised the link and area features.

DATA INPUTTING AND DIGITISING

To meet with deadlines the digitising and the data inputting was undertaken by consultants after a tendering process. This proved to be a costly exercise with a breakdown of the costs as follows:

- OS Copyright Licence - £1260.00
- Scanning - £1406.00
- Digitising/Data Capture - £2420.00

DATA MANIPULATION AND OUTPUTS

Once the information becomes operational in the GIS then interrogating the data is relatively easy, and simple or complex queries can be generated which can be saved as overlays. By creating a number of report forms from A4 to A0 size, high quality plans can be printed out at any scale.

Furthermore, a GIS can be linked to an external database (like Microsoft Access), either directly by an ODBC (Open DataBase Connectivity) link, or indirectly by using export and import files. This is useful for certain queries which are better dealt with by a dedicated database e.g. update queries.

SUMMARY

In summary GIS can be a wonderful tool in speeding up the analysis of spatial data and presenting the results in a mapped format. However, as with any database the results are only as good as the data that has been input. From experience we have encountered many advantages to using GIS and a few problems, mostly relating to the differences between systems.

I am a Landscape Architect working within the Conservation and Design Group, which encompasses the disciplines of ecology, archaeology and urban design. I have been employed by Derbyshire County Council since 1991, and my main responsibilities relate to strategic landscape planning issues, development control and providing specialist landscape advice to the County, Districts and other organisations.

THE LANDMAP ASSESSMENT OF CARDIFF, MATTHEW LEWIS, CARDIFF COUNTY COUNCIL

SCOPE AND CONTENT OF THE CARDIFF LANDSCAPE STUDY

The initial phase of the Cardiff Landscape Study was undertaken over a period of 9 months, from September 1998 to help inform both the Cardiff Unitary Development Plan and future countryside strategy and management priorities. The Study was supported by the Welsh Development Agency and the Countryside Council for Wales, and undertaken by a team led by Clare Harpur and Bernie Foulkes of Atlantic Consultants (and now of Landscape Design Associates). As part of the study the Welsh Institute of Rural Studies also undertook a public perception study.

The study utilised the LANDMAP methodology developed by the Wales Landscape Partnership and promoted by the Countryside Council for Wales. This technique brings together the many facets of landscape into a single multi purpose assessment, and has involved the evaluation of the following landscape aspects:

- Earth Sciences (Geology, Geomorphology etc.);
- Visual and Sensory;
- Biodiversity (Vegetation and Habitats);
- History and Cultural Associations;

and consideration of two further informative aspects (not evaluated):

- Land use, and;
- Settlement pattern

The LANDMAP methodology has developed in Wales since 1997, it was initially piloted by 4 authorities, only some involving GIS. The Cardiff study follows a full scale application in the adjoining Vale of Glamorgan, which did not utilise GIS and has proceeded in parallel with a similar study being undertaken by another neighbouring authority, Newport County Borough Council. LANDMAP remains a developing methodology. During the period of the consultancy element of the study the draft handbook was published and these and other changes were incorporated into the study as the opportunity arose.

USE IN PLANNING AND LAND MANAGEMENT

The results of the assessment are strongly focused on usable outputs to aid land use planning and countryside management. As with all studies a compromise had to be struck between cost, time and the level of detail of the outputs. Available resources and the need to bring forward input into the UDP process dictated a broad assessment of the entire County, supported by GIS, and a detailed assessment of an area of specific development pressure. In addition to the LANDMAP study the consultants also brought forward recommendations on the designation of Special Landscape Areas.

After production of the draft report a considerable amount of time was spent testing and considering the usefulness of broad area strategies – this was eventually rejected as insufficiently robust (particularly in areas of great

uncertainty and development pressures). Instead the final report contains an evaluation and identifies key attributes:

- Positive attributes that contribute (that we will seek to maintain and strengthen through management, enhancement or development activity);
- Negative attributes that detract (that we will seek to mitigate or remove, rather than compound).

The technical appendices and their associated GIS layers and data, held in MapInfo, are intended to provide an informative base to aid this process.

A Local Steering Group, comprising relevant agencies, interest groups, farming and landowners interests and development interests, has met at regular intervals to help inform and guide the study. It is planned that this group will continue to meet to advise on implementation and the management of the data and information arising from the study.

LESSONS AND ISSUES FOR OTHER AUTHORITIES

- Integration of the use of GIS into the assessment methodology, particularly issues of timing, expertise and pre-planning of data collection and mapping;
- Integration of the results of the assessment into existing GIS systems, particularly issues relating to information derived at differing scales and differing GIS systems and standards;
- Data sharing and updating, including protocols and responding to landowners concerns;
- Utilising data as a public and educational resource, including OS copyright issues, the internet and linking to the results of the public perception study.

I am a Chartered Town Planner with a background that includes urban regeneration, economic development and policy planning. Since Local Government Reorganisation in 1996 I have been group leader of a multidisciplinary group whose responsibilities include nature conservation, biodiversity and countryside in general. I also have responsibility for a joint countryside management service, run with adjoining authorities, and the management of an island in the Bristol Channel. My intention is to outline our progress on the Cardiff Landscape Study and bring a Welsh dimension to today's discussion.

***GIS AS A PLANNING TOOL IN THE SUSSEX DOWNS CHARACTER AREA,
ROY HAINES-YOUNG, UNIVERSITY OF NOTTINGHAM***

Geographical Information Systems (GIS) have become both more affordable and easy to use. The range of digital information about the countryside has also grown rapidly. The challenge we now face is to show that the technology can make a difference in the way we plan and manage our landscape resources.

This presentation will describe the results of an on-going study of the Sussex Downs AONB. The work is part of a larger EU-funded programme (PRIMAVERA) that is exploring how GIS and remote sensing can be used in the management of protected areas. For the Sussex Downs the key issues we have considered are public access, development pressure and landscape change. The paper will describe the issue that need to be addressed when integrating data from a range of sources and what kind of modelling tools can be developed to used these data in a planning context. The paper will conclude by considering the different approaches that might be required when we build a GIS to address the needs of a single user compared to those situations when we need to include the views of a much wider range of stakeholders.

MOVING FORWARD IN COUNTRYSIDE CHARACTER AND GIS, TONY PETTITT, COUNTRYSIDE MANAGEMENT GIS AND DATABASE CONSULTANT

In 1998 Tony worked with Angus Parker to outline a technical way forward for the Wales Landmap project:

In order to gain the maximum benefit from the Countryside Character methodology it is necessary to develop a suitable technical platform. Countryside Character, despite its successful development from the early, paper-based methodology, is still technically cumbersome - a little like early word-processing in comparison to contemporary, desk-top publishing package.

By investing in software development, based around a PC based Geographic Information System, Countryside Character will become an efficient tool for entering, managing, and accessing data relating to all aspects of the landscape. With appropriate technical development it is possible to develop a model which will...

- *increase rigour, consistency and transparency of the Countryside Character methodology*
- *decrease the amount of expensive specialist time to input data (one of the major concerns about Countryside Character amongst potential users)*
- *decrease the amount of expensive consultancy time to produce recommendations.*
- *allow the data to be automatically held at a central server, thus decreasing the cost of data control and management.*
- *be accessible via the internet for both submission of Aspect data and access to monitored Countryside Character data.*
- *be a commercially viable landscape data management system.*

Angus Parker 1998

Since this was written technology has moved on, with rapidly improving Web technologies making the internet solution the clear direction to follow.

Systems for Countryside Character assessment data management can be in two main forms:

- PC based GIS located at the local authority offices
- Web based GIS located in the ether

The Web based data set is essential to provide the easily accessible 'decision making' tool. The locally based GIS is suited to existing GIS enabled authorities, but is not necessary, provided the Web solution incorporates not only analysis but also data input/uploading.

There are many challenges posed by the use of the technology, which include:

- The range of GIS platforms in use by organisations
 - The range of technical skills of specialist officers
 - Coordinating data capture and collection
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- Data conversion issues

But the technologies and costs are now at such a level that the Web based approach cannot be ignored.

Tony Pettitt has been working in the countryside GIS and database field for 15 years. Tony has moved through the various aspects of GIS from: field data capture for the pilot English Nature GIS, to designing and programming the McDonnell Douglas GDS GIS product, to lecturing in Land Information Systems and GIS, establishing the first UK National Park organisation wide GIS at the Brecon Beacons National Park to finally founding exeGesIS SDM which specialises in Countryside and Coastal Zone GIS and Database solutions.

DISCUSSION

How Useful is GIS?

- There is a danger that everybody will think GIS is the answer, but it should be viewed with some scepticism. It is just one view of the world and a GIS is only as good as the information it contains.
- We need to be clear about the boundaries between the process of characterisation and that of making judgements about landscape character.
- In some of the examples presented there was merit in putting all of the information into the public domain, so that the whole process is robust and decisions are fully transparent.
- Most of the presentations concentrated on map-based information - yet GIS should also take account of the view from the ground. Sharing information is key - information can be used for different purposes by different user groups.
- GIS based methods must be consistent and replicable. The process is superior to paper-based methods as the decisions and the assumptions behind them to be traced and potentially challenged.
- Different user groups, such as Friends of the Earth and the House Builders' Federation, should all be able to agree on the basic data collation process, although they may hold different views on judgements might be made relating to landscape character. For instance, LANDMAP is designed to support the process of decision-making, although it does not make the decisions.

Are there initiatives designed to assist the flow of information from the public to local authorities in relation to LANDMAP?

- Local communities can define their own information in map form and feed this into the process - so it works as a 'bottom-up' as well as a 'top down' process. It is necessary for people to draw lines on maps before the information can be used. For instance a public perception study in Wales demonstrated how local communities respond to colour in the landscape. There is scope for the public to comment on information and update or add to data-sets on an ongoing basis.

How feasible is a standard landscape typology?

- The 'Living Landscapes' project marks the beginning of a process to develop a landscape character typology and this should be positive for all. However, there is a need to define the terms first and there is a constant process of evolution. Some parts of the experiment work and some do not. There is much scope to learn from each other. The process developed for the Midlands is not perfect, but it has progressed well.
 - There is a need for more funding for the research and development aspects of the work and the results/lessons have therefore not yet been published.
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What about the availability and cost of data-sets?

- FRCA data used for targeting agri-environment funding is available within the logistical constraints of supply and demand. There is no cost, although there may be some confidentiality issues in relation to data for individual farm parcels.
- The DETR is keen that the data from the Countryside Information Survey is used as widely as possible. The 1km summaries will be available free of charge. The cost of the full resolution land cover data is not yet known, although the cost is expected to be considerably less than that of the 1990 data.
- The DETR is looking carefully at the internet as a means for delivering the product. Again there are confidentiality issues and there may be a need to do some generalisation at field parcel scale before data can be released - there would be a cost attached to this.
- The Countryside Agency is keen to ensure that all internet information is available in a user-friendly form - it should be in the public domain and all charges will be kept to a minimum.

CHAIRMAN'S SUMMING UP

The conclusion from the day's discussion is that GIS is a valuable tool, although it does have some limitations. The customers who will use the data need to be forward-looking and data must be presented in ways that are meaningful and persuasive. Similarly it is essential that all outputs from GIS are appropriate and designed to be easily understood by a wide range of different users.
