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Historical Landscape Assessment: A timely journey into the fourth dimension with the East of England Project

Lynn Dyson-Bruce, Essex County Council, Hertfordshire County Council

Introduction

The theme of this conference is Location, Location, Location, where the importance of place, with its accuracy of definition is now being emphasised even more. Advanced technologies including GPS, enable greater precision in mapping of this new world of spatial and point data. Precision and accuracy appear to be the all important current buzz words in locational matters. The telecommunications industry equip new, ever smaller hardware with the latest technological advances in software to enable people to access new forms of data on their location within the environment, including where they may wish to go, how to get there, how far, travel time, etc. Demographic and spatial studies enable retail companies model existing and to ascertain new markets to expand, in suitable locations. Transport industries to model traffic flows, future needs, and solutions to ensure smooth traffic flow from location to location. Developers look for new areas in which to build in response to the need for domestic and industrial development. Government has new requirements to initiate and maintain a wide variety of land and environmental management systems and gazetteers to ensure a sustainable future. All these events and activities happen within geographic space, they have 'location' – hence the burgeoning importance of GIS.

However it is also important to look at the nature of this geographic space in which these types of activities, events, records take place. The latest technology may well be very important, as is increased accuracy and precision of all this new data and the speed in which it is all retrieved, assessed and recorded – but maybe we should also be looking at the framework in which all these activities take place. We are so busy recording data, and moving through our geographic space from location to location, without actually realising the nature of this space, its history and, or its quality. There are currently increased demands for a better quality of life, for ourselves, families, co-workers and employees. People are now demanding a better lifestyle, with the quality of landscapes to not only be maintained but also improved in which to enjoy a greater range of activities. We should perhaps begin to look around at our 'location', to evaluate if these landscapes are indeed that which we wish, as a society? For example we all prize and fight to protect 'Green Belt' areas as 'green space', but these are often only represented as industrial farmland rather than diverse landscapes, representing a complex tapestry of events. Do we understand or appreciate these landscapes in which all these activities take place? Historic Landscape Assessment attempts to give an initial assessment as to the history of our rural landscape, to enable and inform a greater appreciation of our place within this space represented in this context, as the landscape.

This paper will not only give a brief introduction to the methodology, as applied within the East of England; but also its current and future uses, by amongst others archaeologists, historians, landscape architects, and planners, with future research and development within GIS. This paper augments the Case Study already on the AGI website (<http://www.agi.org.uk/pag-es/case-stu/esx-land.htm>).

Historic Landscape Assessment (HLA)

Traditionally archaeologists have used Sites Monuments and Records (SMRs), a 'site-based' approach in which archaeological sites and features are viewed as discrete entities within the landscape, represented as mostly point data. This has now been recognised as having severe limitations for broad landscape analysis, for it implies importance to the location, but not the space or landscape in which it is nested.

Historic Landscape Assessment (HLA), seeks to redress this balance by applying a simple methodology for assessing all of the landscape in terms of its historical development, to create a seamless map of the current landscape.

HLA attempts to capture this historic character and dimension of the landscape, in broad terms. It is meant to be a rapid form of landscape appraisal, to ascertain the historic time-depth of the current landscape. If possible, it assigns each part of the landscape to a particular date, to when the original decisions were made in land parcel form/shape or reform, either by individual consent or government policy. These landscape patterns which were formed are still visible. No attempt is being made, at this stage to recreate past landscapes. The prime focus is to ascertain the surviving components, within the current landscape, as to their probable historic origin. This will create not a traditional temporal GIS but an explicitly historical approach building up composite of surviving parts of earlier landscapes, which make up the whole of today's rich tapestry.

Each land parcel is judged by its various attributes and classified as to its source, indicative date and /or usage, wherever possible, for assessment and digitised. The polygons are defined, by using current land parcel shapes, with digitising based on the Ordnance Survey Landline data. The overall shape is determined by the history of the specific parcel e.g. date/period of enclosure for a field, woodland, industrial area, from specific maps creating specific historic time horizons. Land parcels reflecting historic events are grouped together e.g. area of Parliamentary Enclosure, to form larger polygons, representing cohesive landscape areas. Source maps (paper and digital) include the Ordnance Survey First Edition, 19th century county maps, and in specific instances Tithe, Enclosure and estate maps. Aerial photography also assists in this process. The methodology is fairly simple but at times, difficult to apply, due to the complex nature of the landscape. This is exacerbated by data being inconsistent between counties, in quality, availability, or being in some cases digital and paper based.

The East of England Project has been established by English Heritage to assess the counties of Suffolk, Hertfordshire, Essex, Cambridgeshire, Bedfordshire, and Norfolk. (See Figs: 1 & 2 below). It is part of a wider national initiative, which is being carried out on a county basis, funded by English Heritage, in partnership with each county council.

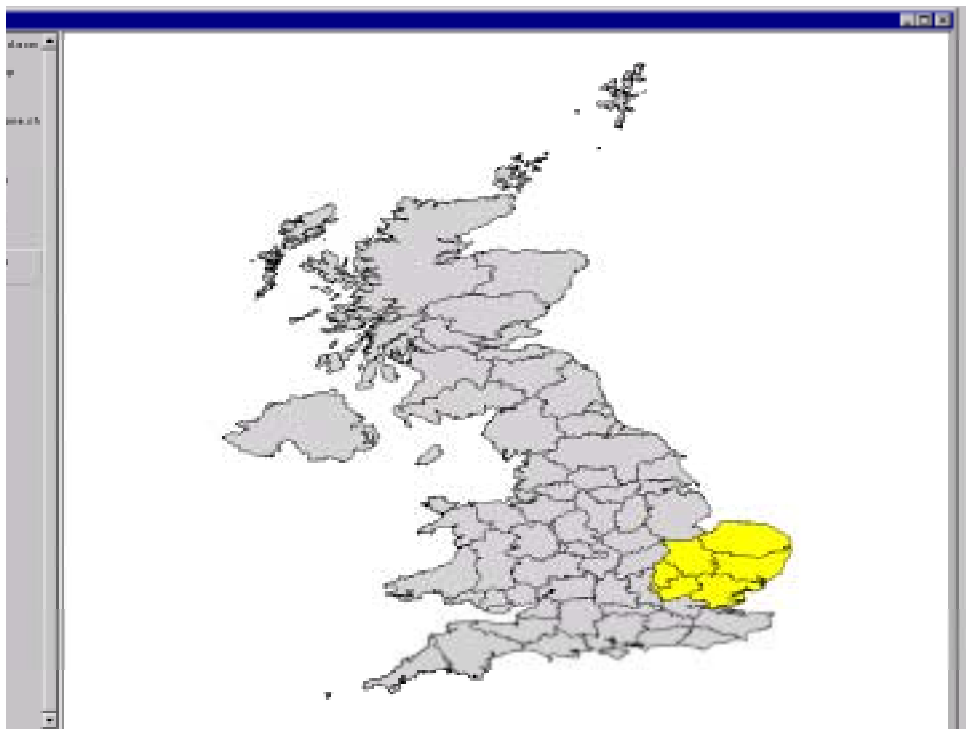


Fig: 1 East of England Project Area (In yellow)

COUNTY	COMPLETION	GIS SOFTWARE
Suffolk	1999	MapInfo
Hertfordshire	August 2001	ArcView
Essex	April 2002	ArcView
Cambridgeshire	April 2003	MapInfo
Bedfordshire	April 2003	MapInfo and Wings
Norfolk	? Date ?	? GIS ?

Fig: 2 Table of Counties within Project Area, expected completion dates and GIS software used

The partial results available demonstrate that each individual county has unique historic landscape patterns, with subtle or dramatic variations in type and historic origin. This reflects the rich diversity of our landscape and its history.

Methodology

HLA is a relatively new approach for assessing landscape history which would not of been possible without the advent and development of GIS. The project would not have been possible without GIS to handle the complex nature of the data, to enable the correlation of a variety of sources, (i.e. maps), their dates, types of landscape attribute, comments, etc. In addition the polygons are often spatio-temporal composites, each having a varied and recordable history, in other words ‘time-depth’ or recognised within the archaeological community as palimpsests. The results may be areas of landscape which are coherent, or others, which are fragmented, in time and space.

Therefore the nature of the data spans four dimensions, simply expressed as:

- Horizontal space: N/S & E/W
- Vertical depth – topography
- Time – palimpsests i.e. ‘time-depth’.

The methodology in simple terms creates a typology of historic landscape types or ‘attributes’ which may then be aggregated as required for different objectives. The typology is necessarily fluid, enabling expansion and development of types as and when required to be sufficiently sensitive and robust to reflect landscape diversity. This enables the methodology to be more rigorous and analytical.

Due to the regional scope of the project with tight time constraints, a desk-based, ‘broad-brush’ approach has been adopted, using a limited series of datasets (national and regional), with data capture at 1:25,000, and ‘heads-up’ digitising at 1:10,000. (Polygons are delimited in detail by the scale, the ‘minimum mapping unit’ being determined as 1 hectare, other minor units are subsumed within the adjacent polygon. Linear features are only retained if sufficiently wide, such as major motorways, railways with embankments and interchanges.)

Relevant GIS issues including metadata standards, and database design have been taken into account within the methodology, and applied throughout the project. The metadata has been incorporated directly within the database, with appropriate fields for each polygon e.g. historic landscape type, data source, data creator, scale data capture, date digitised. Linked databases are also created to correlate other data sources, including definitions, codes, glossary, and documents. Thus one can directly link back to the data sources that informed that polygon’s creation, therefore creating a clear audit trail. This helps render the whole process transparent and replicable by any practitioner.

Initial results

Results so far indicate a complex and diverse historical landscape even in these adjacent counties of the East of England, (See Fig: 3 below) which may be briefly described below:

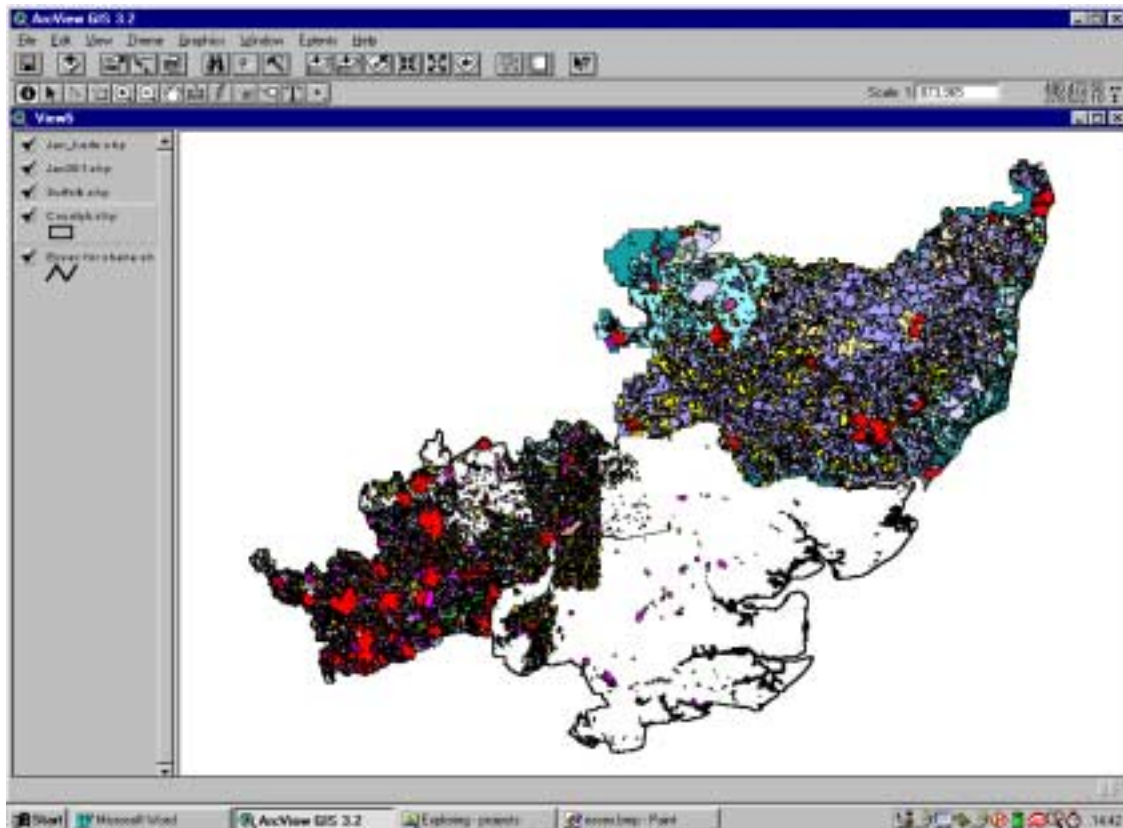


Fig: 3 Suffolk, Hertfordshire, Essex – Work in progress.

Suffolk

Suffolk, is a large rural county, with broad landscape patterns. It has a central band comprising both pre-18th century ‘anciently enclosed’ landscape, and later 19th century Parliamentary Enclosure flanked by forestry plantations on the former sandlings in the east and fen-lands in the west. Modern 20th century development and impacts include both limited areas of urban development, as well as field boundary loss.

Hertfordshire

Hertfordshire in comparison is a smaller more developed county, with intensive 20th century development. The landscape is more complex with ‘hybrids’ of pre-18th century ‘anciently enclosed’ and later enclosure of the 19th and 20th century. There are distinctive ‘ancient’ field types and distribution patterns, some being mutually exclusive. Some ‘ancient’ field types have now been dated to Bronze Age origins thus pushing back that part of the current landscape to a prehistoric origin. However other field types require further research to more adequately determine their historic origin and usage.

In addition the county has been intensively emparked over the past few centuries, of which many are being or have been converted to golf courses, educational establishments, and hospitals.

20th century impacts have been dramatic, including urban development, for example new towns, also mineral extraction, field boundary loss, and motorways. This has led to the fragmentation of the fabric of the landscape with at times a loss of earlier historic landscape components.

Essex

Essex exhibits a transition between Hertfordshire in the west and Suffolk in the north, with additional landscape variants.

In addition to the pre-18th century field patterns and hybrids, mineral extraction, etc. as described above, there are the ‘ancient forests’ of Hatfield and Epping, and numerous World War II airfields. There has been even more devastating 20th century field boundary loss than in Suffolk, or Hertfordshire, often within an ‘anciently enclosed’ landscape. This has led to an even greater fragmentation of the landscape.

Applications

Initial results show that HLA, despite being incomplete and ‘work in progress’, has proven to be a valuable management tool in the East of England region, by identifying and informing various issues which include:

- Local, regional, historic landscape patterns – some of which are distinctive and breaking accepted thought eg. unenclosed common arable
- Chronological patterns, through time and space – landscape ‘time depth’ and palimpsests, e.g. surviving Bronze Age field systems in Wormley Woods, Hertfordshire
- Landscape management and Landscape Character Assessment ; currently being used in Hertfordshire and Essex
- Management of the archaeological and historical resource;
- Archaeological survey; to direct limited resources
- Research objectives; in field development and history
- Development control in planning; currently applied by county archaeologist in Hertfordshire
- Public Inquiry e.g. Baldock By-pass
- Strategic and Local Planning issues and strategies; to be incorporated within future documents

This information has already proven of use to a wide audience e.g. landscape architects and managers, archaeologists, historians, geographers, planners, etc. In the case of the East of England Project the HLA has already provided landscape managers and planners with the necessary information to make informed assessments and decisions about the impact of large development proposals on the historic landscape. In addition HLA is being incorporated into strategic planning documents.

Conclusions

GIS and Methodology

The HLA methodology has necessitated a fluid and dynamic approach to respond and record the subtleties within the landscape in a suitably sensitive manner. In addition an analytical methodology has been required to take into account issues relating to data source/synthesis/entry/analysis i.e. metadata to ensure transparency. Experience is proving that appropriate GIS software and a robust methodology are essential for the success of any GIS project. It requires clear thinking and application, as a GIS map/theme/layer/coverage is only as intelligent as the database and metadata supporting it. Realistic objectives and time-scales with appropriate resources also need to be established to enable the successful completion of any project.

Historic Landscape Assessment

Initial results illustrate the diversity and dynamism of the history of landscape development and genesis. These have enabled us to recognise, chart and appreciate its complexity and rarity, for example ‘anciently enclosed’ fields of possibly Bronze Age date. Certain parts of the landscape exhibit contiguity and continuity whereas others areas are discontinuous in time and space. This information is now proving to be an effective and pragmatic management tool in a wide variety of arenas.

In the future it should be possible to assess various qualitative issues related to landscape, for example:

- Contemporaneity of spot sites within their landscape setting
- Survival of landscape types
- Condition and quality of landscapes
- Value i.e. rarity of landscape types locally, regionally and nationally

It can now be recognised that the landscape is extremely dynamic through time, something we have not until now fully appreciated or been able to systematically chart, prior to GIS. These ‘forces of change’, may be represented as various ‘engines of change’, moving at different ‘speeds’ throughout the region. Certain parts are changing at the speed of Formula 1 racing cars, whereas other areas are still in ‘horse and cart’ mode, however nothing is in neutral or in idle. In some areas these ‘engines’ are being reinvented, restored or replicated, but maybe with this approach it may be determined which areas of landscape to restore, to which time frame, in a coherent and informed manner.

Future development

This is an exciting project in which to be involved. It enables the richness and diversity of our landscape history, locally, regionally and nationally, to be recorded and assessed. The HLA methodology, now incorporating metadata directly within the database, facilitates all the complexity of our historic landscape to be recognised and charted for further management, analysis and academic evaluation.

The methodology of data capture will continue to evolve, to reflect new technological advances e.g. OS Digital National Framework (DNF), and object-oriented databases (geodata-databases) and advances in academic knowledge. DNF in particular facilitates consistent mapping techniques, because the linework of the HLA already exists in the OS sheets and should not be re-entered in slightly different form. In addition, the topographical identifiers (TOID’s) should facilitate linkage with future research and information, so individual fields could directly link, with among other things their complex history, source data, eg. past land owners, land uses, crops, aspect, designations, and management.

As counties are completed, spatial and 3D analysis will be used to identify and chart the subtleties of landscape change within and between counties. This will take HLA into the 4th dimension by modelling HLA data not only within landscape morphology and form and with other data-sets, but through time. This will hopefully enable time series modelling of our landscapes.

Therefore location, within our landscape will have additional meaning, apart from ‘x-y’ co-ordinates, or represent a means from getting from A to B, or locational analysis for demographic purposes, it will have an historic meaning not only in the ‘specific location’ of point data, but in the wider remit of ‘spatial location’ in the wider geographic sense. In the future it is hoped that as you navigate through space using your latest technological hardware and software you will be aware of the nature of that space, its history and meaning. Therefore it is hoped this additional information, in this information/technological age, will enrich peoples understanding of geographic location and bring a heightened spatial awareness to a new dimension, that of the fourth – TIME.

Acknowledgements

English Heritage has been the major funding body for the project.

I should like to thank Graham Fairclough (English Heritage), Stewart Bryant (Hertfordshire County Council), Paul Gilman (Essex County Council) and Prof. N. Chrisman (University of Washington) for their assistance and support in this project.

Lynn Dyson-Bruce,
(lynn.dyson-bruce@essexcc.gov.uk)
Essex County Council, Hertfordshire County Council