

# Archaeology in the Age of the Internet



## CAA 97

### Computer Applications and Quantitative Methods in Archaeology

Proceedings of the 25th Anniversary Conference  
University of Birmingham, April 1997

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A Computerized Data Base for Lithic Use-Wear Analysis.

E.S. Lohse and D. Sammons

Mapping the Fourth Dimension: the TimeMap Project

Ian Johnson



## **Landscape Archaeology and GIS**

### **Abstracts of papers held on CD-ROM**

#### **Reconstructing Archaeology from the Landscape: GIS, CAD and The Roman Signal Station at Whitby** **Tyler Bell**

This paper is a concise presentation of the ACAD and GIS methodology by which the probable height and location of a Roman signal station at Whitby can be determined, and is intended to complement a separate paper which discusses in full the archaeological evidence for such a station (Bell forthcoming). Here a CAD-based schematic of the topography between Whitby and the neighbouring station at Ravenscar is used to determine a height for the signal stations to have been intervisible (50 metres). This finding is tested using a GIS viewshed function to determine the minimum height (45 metres) and probable location of the structure on the Whitby coast. Without aiming to prove conclusively that a Roman signal station existed at Whitby, this paper introduces a methodology by which further information about the missing signal station may be gleaned from the landscape in which these structures existed.

#### **A GIS Study on the Spatial Development of Coastal Catalunya** **Federica Massagrande**

GIS and multivariate statistical analysis were used to study the development of the Roman settlement pattern in the region of Tarragona and the Maresme in Spain. Though these two areas are geographically similar and almost neighbouring, the Roman settlement pattern varied considerably between the two throughout the time in which Spain was under Roman rule. The data clearly shows the effect the foundation of the town of Tarraco (Tarragona) had on the Roman rural settlement, while the lack of a strong centre in the Maresme caused the rural organisation of the area not to change significantly after the rural settlement was first established. The influence of the pre-existing Iberian settlement on the Roman settlement pattern was also investigated. Correspondence Analysis was also used to study the distribution of different pottery types in the two areas and assess which pottery types were associated with sites with certain characteristics and with the main communication routes. The GIS and CA study clearly shows that despite the geographical proximity of the two areas, the rural settlement pattern was shaped by different factors at play in the two territories.

#### **GIS in Palaeolithic Archaeology. A Case Study from the Southern Netherlands.** **Hans Kamermans and Eelco Rensink**

This paper examines locational features of Palaeolithic and Mesolithic findspots in the loess region of the southern Netherlands, using a Geographic Information System (GIS). GIS applications in hunter-gatherer archaeology have so far been rather rare, although (as is true for later periods) GIS could be a useful tool for the locational analysis of hunter-gatherer stone artefact distributions. This paper deals with the methodological problems encountered when trying to extract environmental variables from a GIS and using them for analysis. The accuracy of digital maps, the statistical tests to investigate the relationship between artefact distribution and environmental variables and the use of predictive modelling are discussed using the south of Dutch Limburg as the study area. It will be concluded that, in our study, GIS has proven to be a valuable tool as a first step of research, dealing with the representativeness and interpretation of Palaeolithic and Mesolithic lithic scatters documented from a geologically dynamic loess landscape. However, due to a number of methodological flaws, GIS is as yet not the analytical tool we can use to answer our research questions.

#### **An Analysis of the Structure and Function of Prehistoric Maori Pa Sites** **Claire Reeler**

Maori pa sites are fortified settlements built in the prehistoric period in New Zealand, usually situated on an elevated position. A sample of sites has been mapped using a total station theodolite in order to provide data for the 3D modelling of these sites. GIS analysis in ARC/INFO of the 3D models of pa is used to answer questions about the structure of these sites, their relationship with the landscape and aspects of their function within prehistoric society. The relationship between the internal organisation of these sites and the landform on which they are situated is particularly important. The use of GIS allows several types of analysis of these features, such as slope and aspect, area and arrangement of features, line of sight between parts of the site and immediate surroundings and movement of sunshine across different parts of the site at different times of the year. These types of analysis can add to our understanding of how and why pa sites were built where they were.