New Approaches to the Study of Archaeological Landscapes
Session Introduction

Martijn van Leusen

The pages of successive CAA conference proceedings have recorded the rise, since about 1990, of the use of Geographical Information Systems (GIS). In the same period, there has been renewed interest among archaeologists in the study of the structure and dynamics of past societies in the context of their physical surroundings – 'landscape archaeology'. However, GIS studies of specific regions have always suffered from limitations in the type of data that are, or can be made, available digitally. Digital cartography is usually limited to the DEM, topography, and small-scale maps of soils, geology and the like; archaeological input in these studies almost invariably comes in the forms of lists of 'sites' – dimensionless points that have few properties, such as 'type' and 'period'. More-over, GIS studies of such data have highlighted the fact that available regional archaeological data sets are not representative of 'the' archaeology of that region – geological processes, land use and land cover, and the processes steering archaeological research and discovery have biased such data in various significant ways.

Whilst a certain amount of useful analysis can be carried out on these data, its limitations have become increasingly clear in recent years, and researchers have started looking to improve the situation in several imaginative ways. Two major themes may be distinguished: new approaches to the modeling of ancient landscapes using GIS, and new approaches to the collection and analysis of field walking data. Four papers in this session bring together a cross-section of ongoing GIS work in the modeling of geological processes (Clevis et al.), the modeling of cognitive-processual landscapes (Trifkovic), land evaluation using new sources of information (Monti), and cost-surfaces and viewsheds (Llobera et al.). Four other papers describe how survey methods themselves can be studied (Banning et al.), how fuzzy logic can be used to better classify finds and sites (Farinetti et al.), and how the ordinarily ignored poorly dated site and offsite data can be put to good use (Bertoncello and Nuninger; Cattani et al.). The reader will find that there are large areas of overlap between these two themes, e.g. geological models are used to assess the chances of survival and detection of archaeological deposits, and the study of survey methodology allows us to improve the archaeological input into our GIS models. Rather than introducing and discussing each paper in turn, I will here present a number of themes of general interest that may be picked up from one or more papers.

To begin with, I strongly support the idea that the recent interest in landscape archaeological studies must be grounded in a better understanding of the biases present in typical regional archaeological data sets, and more specifically in a better understanding of the results of modern intensive systematic surveys, with their emphasis on the detection of low-density and often undiagnostic materials. Landscape archaeologists can no longer content themselves by referring (if at all) to the limited research done in this area in the late 1970s and early 1980s. More effort should therefore go into the study of research and visibility biases and field methodology, the development of site classifications that are rooted in experimentally confirmed data, and dealing with the recognition that uncertainty and fuzziness are inherent properties of landscape archaeological data. This latter point needs emphasizing: archaeologists – both academic researchers and heritage managers – need to learn how to reason with uncertainty rather than attempt to avoid it or sweep it under the carpet. The papers by Banning et al., Bertoncello and Nuninger, Cattani et al., and Farinetti et al. all provide pointers to the new approaches that are being developed in this area. Secondly, I want to stress a point of theory that has been surfacing in relation to GIS studies of archaeological landscapes, namely that, despite criticism from archaeologists of a post-modernist persuasion, most of us believe that the mapping and exploration of spatio-temporal patterns in archaeological landscapes is potentially useful and interesting. GIS techniques increasingly help us to model not just the physical landscape but the social landscape as well, whilst sticking to the rule-based approach. A very clear example of this is the work by Llobera et al. and Trifkovic, which attempts to identify what is believed to be the inherent visual or task-related structure of the landscape. Monti, in combining placename evidence, land evaluation and cost-distance techniques effectively provides another example of Renfrew's cognitive-processual approach to the landscape. In combination with the modeling approaches outlined by Whitley (refs) the potential for progress in this area seems considerable. Thirdly, archaeologists have a fine tradition of employing the latest advances in computer and information technology and of borrowing techniques from neighboring (or even far away) disciplines. The modelling of geological processes in three dimensions is an example of a technique borrowed from Geology that can help archaeologists understand and map Quaternary, especially Holocene, geological strata and their related archaeology for purposes of preservation (Clevis et al.). It can also help landscape archaeologists plan their fieldwork and interpret fieldwork results by predicting the location and impact of erosion and

deposition on the visibility of surface remains, and area which I intend to develop in my own future work. It is to be hoped that these new tools and techniques will continue to be incorporated in existing GIS, so that archaeologists can put them to good use.

Fourth and finally, advances in the use of computer applications and quantitative methods in landscape archaeology can only be made, if enough of us are prepared to study the methods and methodology rather than blithely apply the tools and methods that we happen to have at our disposal. Whereas CAA has over the years provided a welcoming environment for researchers and students of archaeological methodology, we must remember that universities and national funding bodies have not been so understanding (at least not since the heyday of the New Archaeology in the late 1970s). The authors in this session are therefore to be recommended for their efforts!