Section 1. Introduction to the GIS Guide#

1.3 Current Issues and Concerns

1.3.1 Theory

A recent consideration is that meaning is culturally embedded within a landscape (Tilley 1994) and simply identifying intervisibility between monuments and places does not constitute explanation. Meaning is a multi-faceted, qualitative, measure that cannot be reached with purely quantitative tools such as GIS. This argues for the application of the technology to be theory-driven rather than data-driven as is often the case, and as part of this ongoing debate there have been two quite different approaches. Llobera (1996) attempted to formalise various indices of landscape topography and perception by writing new routines within a raster environment, in effect introducing formal methods which are embedded within a social theory of being in the landscape and of the humanisation of space. The other work, while rooted in much of the same theory (Gillings and Goodrick 1996), proposes a more phenomenological approach integrating Virtual Reality modelling with GIS, thus emphasising the importance of engagement with a locale through experiential analysis.

1.3.2 Technology

Several themes worth mentioning are concerned with the technology of GIS, its application and functionality rather than application-specific case studies. Temporality and 3-dimensional GIS are areas that have seen relatively little work in archaeology although an early paper on archaeology, time and GIS by Castleford (1992) is still important and Harris and Lock (1996) demonstrate the potential of fully functional 3D GIS using a voxel data structure for spatio-temporal modelling of excavation data. Other topics of interest are alternative data structures (Ruggles 1992), the importance of perception surfaces, effort surfaces and time surfaces (Stead 1995), modelling ecological change (Verhagen 1996; Gillings 1995) and the potential of neural networks (Claxton 1995).

1.3.3 Intra-site studies

While there is considerable use of CAD for excavation recording and processing there is very little application of GIS. Powlesland has been a champion of integrated on-site digital recording and analysis for many years and has developed his own software (Lyall and Powlesland 1996), as has Arroyo-Bishop (Arroyo-Bishop and Lantada Zarzosa 1995). Conversely, though, Biswell et al. (1995) discuss the severe limitations of modern commercial archaeology in terms of integrating GIS into existing working practices while at the same time demonstrating its potential with a series of intra-site spatial analyses that highlight the difference between CAD and GIS.