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Maps, Mental Maps and Sites: Interpreting Il Pizzo (Nepi, VT, Italy)

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Abstract. Il Pizzo (Nepi, VT) is a multi-period promontory site in central Italy near Rome. In this paper, I will discuss the importance of the basic GIS tools in archaeological interpretation and how the use of methods can be theoretically supported by a realistic philosophical frame of reference. I will show how the mapping of the highest point of the site, the systematic pick-up and the creation of a 3D model together with a series of computerised distribution maps have helped to understand this site. I will also present the results of the basic visibility analysis to discuss the motives behind the choice of the location.

Keywords. GIS, interpretation, philosophy, mapping, visibility

1 Introduction

Fig. 1. *The research area in central Italy.*

The aim of this paper is to combine archaeological theory and practice of archaeological computing in a way that incorporates both in the process of interpretation. I will use my fieldwork on Il Pizzo (Nepi, VT) in central Italy (see fig. 1) as an example of an integrated approach. Firstly, I will discuss the theoretical framework used in interpreting the significance of this past place. Then, I will give some examples of visualising important aspects from the life history of a site.

2 Theory and Practice in Computing

Archaeologists working with GIS have often expressed their concern in the lack of theory in GIS studies (cf. Gaffney and Van Leusen 1995; Gaffney *et al.* 1995). The main concern has been on environmental determinism. Some scholars (e.g. Wheatley 1993; 1995) have noticed that some aspects of GIS, especially visibility analysis, offer a perfect tool for interpretative landscape archaeology. Gaffney and Van Leusen (1995) already noticed that the methods are applied no matter what theoretical standing archaeologists have. Furthermore, although they, like others, have invited colleagues to formulate a theory for GIS, there has been little progress on this field. Instead, the archaeologists involved are trying to include cultural considerations to their studies to ease criticism.

We have long ago reached the point where the uncritical enthusiasm on GIS has disappeared. Archaeologists are beginning to understand that we need an overall integrated framework for all the archaeology we do, not just for the interpretative or technological or scientific aspects of our studies. I argue that these aspects are not exclusive. Philosophy of archaeology and archaeological epistemology allow us to include GIS to our methodological repertoire without endangering our theoretical integrity.

After post-processual and interpretative phases, archaeology has re-emerged as a reflexive and self-critical discipline. Nevertheless, many archaeologists working in archaeological science and quantitative methods have felt that neither theoretical archaeology nor interpretative archaeology have much to offer (cf. Jones 2002). This is partly due to lack of common interests and partly due to the general 'anti-scientific' attitude among interpretative archaeologists. However, Shanks and Tilley (1992:41-43) originally were not 'anti-science', but acknowledged that there are alternative views of science.

I want to argue that it is possible to combine scientific methods and interpretative research by applying Bhaskar's (1975; 1979) transcendental realism. Using its premises, one can conclude that archaeology, like sociology, is not pure science, but there exists a possibility of a critical research process using approved methodology and research procedure for human disciplines. Secondly, all research is viewed as theoretically and hermeneutically embedded. This means that progress in theory and method will introduce a new understanding of the integrity of research, which allows legitimate research. Finally, transcendental realism allows the conceptual separation between natural and social/cultural objects of study. This definition means that the same objects can be seen to have different natural and social attributes, which can be studied separately. Thus, landscape can be studied as a natural phenomenon but also as a social space. GIS can be seen in this context as a tool to be subjected to source criticism but also to be used for analysis and visualisation when the character of study has been identified. This framework allows integration of social phenomena and simplified modelling if they are defined as such.

3 Sites and Landscapes

I am arguing that the use of computer methods in landscape archaeology is inseparable from the definition of the theoretical concepts involved and the understanding of the history of a landscape and the history of single sites. Thus, one can view landscape as a setting that enabled enculturation through acquisition of practical knowledge of material and social realities (Bourdieu 1977:3-9). The main topographic features form the past long-term material setting can be analysed in order to study culture-specific significances. Social life both happens in a landscape and actively modifies it (cf. Giddens 1984:139-144; Gosden 1994:8). As a consequence, both cultures and social landscapes change by definition. The modifications and chronological changes can be studied only through archaeological research. Basic archaeological fieldwork is thus integral, but GIS can be used as a tool to find and visualise significant features.

Richard Bradley (2001:110-113) has suggested that sites can be seen as landscapes. Without understanding how they came into being in their current form, the interpretation of the significance of a wider landscape is impossible. To achieve this, one has to map morphological features, create distribution maps, document structures and interpret modification sequences. Archaeological computing helps on every step taken either through using different computer-aided mapping techniques in the field or presenting distribution in GIS. In this way computing is elementary to the theoretical dialogue and archaeological practice of interpretation.

The meanings of things are dependent on the production of these meanings in a specific cultural and historical context. This inevitably means that the same place means different things to different communities through its history. The changing histories of people are related to the changing histories of places and in this sense one can apply biographical metaphor (cf. Gilchrist 2000:325; Jones 2002:83-84, 86-89). Cornelius Holtorf's work (cf. http://www.arch.cam.ac.uk/~ch264/igraja/introduction.htm) can be seen as an example of the innovative use of computer visualisations in archaeological landscape theory. In this way, universal methods can be used to interpret unique biographies.

4 Practising Mapping

4.1 Mapping in the field

The fieldwork presented briefly here was done during Easter 2000 on Il Pizzo on the southern side of Nepi at the junction of two tributaries of the Treia river system north-west of Rome (see fig. 1). Il Pizzo is a multi-period site on a 400-metre long by 50-metre wide promontory at the height of 213 a.s.l. overlooking a canyon-like ravine. Structurally, the site lies on two levels: there is an upper promontory surface and a terraced level at a lower altitude (see fig. 2).

The highly modified surfaces were approached using four different research strategies: i) a systematic pickup was performed along a baseline at the upper level, ii) eroded material was gathered pragmatically from the north-western slope, iii) a traditional general map was drawn and later digitised and iv) a series of points were measured in the summit area with a Leica TC805 total station and LisCad software; the data was integrated with additional contour and spot height data from the Italian technical and regional tithe map series in order to create a larger 3D TIN model to visualise the current form of the most modified part of the site.

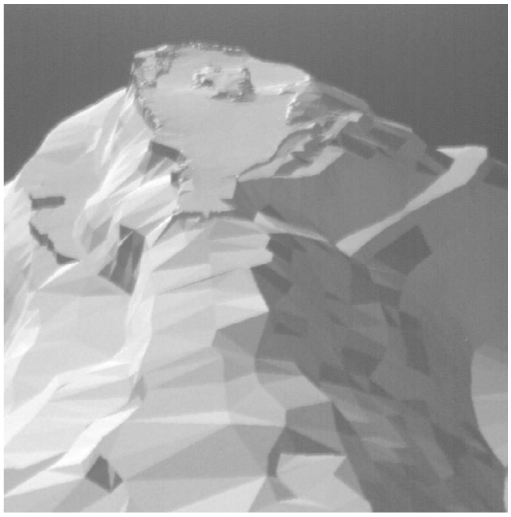

***Fig. 2**. The surface of Il Pizzo modelled (north at 315 degrees).*

The relief of the whole promontory rises slightly uphill towards northeast. The upper surface of the promontory is divided into two parts by walls and gateways. The summit area has been modified to a large extent during the history of the site by extracting tuff and terracing. There seem to have been at least two major operations some time in pre-Roman and Roman periods. A series of features, like foundations, basins and chambers, has been cut down to tuff.

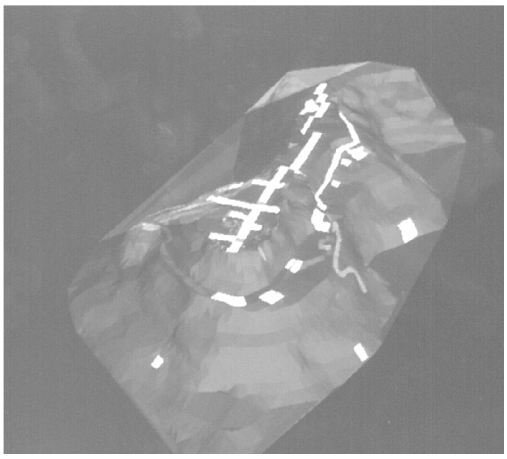

***Fig. 3**. An example of 3D distribution maps; the Roman finds (north at 130 degrees).*

The most important finds were a series of Bronze Age finds found in the north-western slope. Most of the finds on the upper surface were fairly recent, showing the intensity of the later use of the site. However, some earlier material were also found, among them few Faliscan and Roman pieces (see fig. 3).

4.2 Mapping on the computer screen

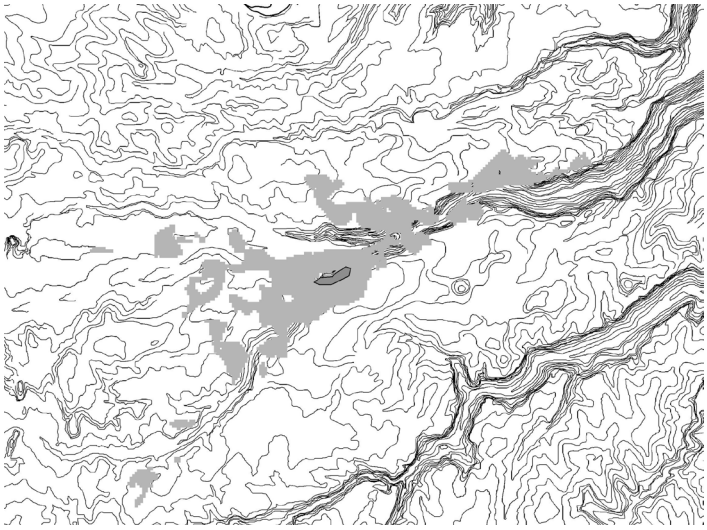

Fig. 4*. The visible area around Il Pizzo.*

All digitised data was put together in AutoCAD Map version 3 and transferred to ArcView version 3.2. A TIN in a 3D scene was considered the most practical way to present the data. This presentation was preferred over the possibilities that were offered by Virtual GIS of the Imagine package. In a highly dissected landscape, with partly generalised data, a TIN is a better model of the reality than a grid model. A high-resolution grid needed to represent the site requires also more disc space.

A series of computerised distribution maps (e.g. fig. 3) was prepared in the ArcView 3D scene environment. Combining distribution maps, information given by single artefacts and the results from the mapping has helped to interpret different phases in the trajectory of the use of the site. GIS also enabled a 3D visualisation of distributions.

In order to enable further analysis, basic GIS techniques were used to help with the interpretation of the significance of the immediate surroundings. Ancient perception has interested scholars for some time (see Attema 1992) and GIS has been recognised to be a relevant tool (e.g. Llobera 1996). I have approached the hypothetical territory of Pizzo and significant features in the past by using visibility analysis. I argue that the territory perceived is essentially the core of the territory. It is considered as meaningful and important in practical reality and the very basis of the differentiation between place and space (cf. Tuan 1977:12; Thomas 1996:31). The visible surroundings of a site were the physical setting that was directly perceived and experienced and its characteristics might have been one of the key factors affecting the choice of the place.

The visible area around Pizzo is relatively small (see fig. 4) and is dominated by the river valley. The rivers in the Faliscan area are exceptional, although not unique in central Italy: all main rivers are fed by perennial springs, which makes them a permanent source of water. It is well known that cults connected with water were important during the prehistory in the area (e.g. Bernabei and Cremonesi 1996). River valleys were also an important transport network during the prehistoric period since the local microclimate kept vegetation lighter in the valleys than in unsettled plain areas. This combination of connections and ritual importance can be interpreted as crucial in the location of the site. During the late Iron Age the site of the modern town was settled and the core of the visible territory changed. This seems to point to the changing needs of movement and control together with the growth of the community.

In addition, I analysed how the major landmark, Monte Soratte (Latin *Mons Soracte*) is visible in the area. This mountain, known to have had ritual importance (cf. Rellini 1920:111; Segre 1952; Di Gennaro 1995:97), is visible in most of the area: the only larger areas where it is not visible are the major river valleys. It is very significant that this landmark is not visible from Il Pizzo (see fig. 5). I have used ArcView 3D scenes in visualising this lack of intervisibility. However, this significant landmark is visible from Nepi (see fig. 5). This slight change in the central features sensed from these two places only few hundred metres apart can be interpreted as a sign of important changes in social landscape. In the centre of the territory were first only the river and the ravine, but later the river, the plains and the mountain. This is the mental map that can be presented with a computer.

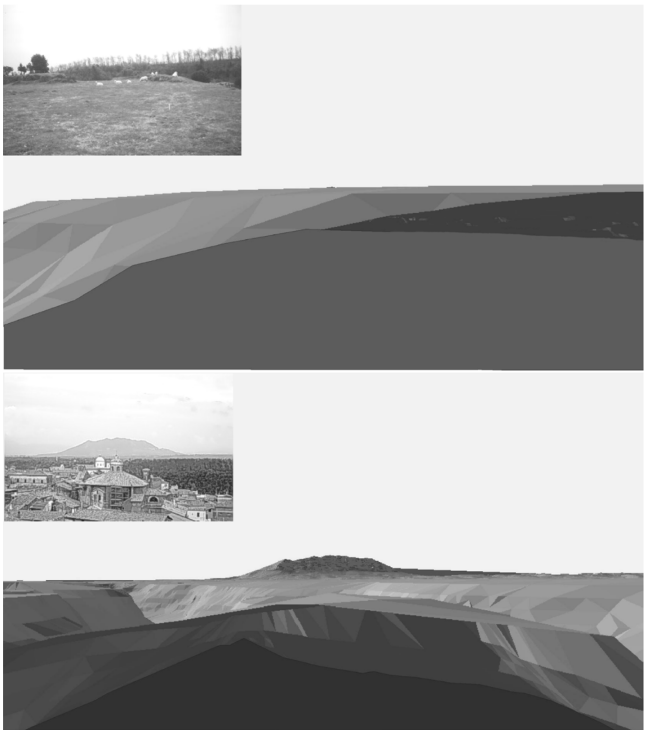

Fig. 5*. Views towards Monte Soratte. Upper view: from Il Pizzo. Lower view: from Nepi.*

5 Conclusions

Computerised methods are important in assisting the analysis and visualisation of the features important for archaeological interpretations. The main theoretical frame of reference is defined by the epistemological view governing the archaeology performed as a whole. A realistic epistemology allows integration of social theory, practical fieldwork and GIS methods. In the archaeological research, I see GIS as a tool for achieving my archaeological interpretations. Computer-generated distribution maps, 3D models and GIS analyses help me to create an integrated interpretation of a past reality as a part of the research process.

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