

Introduction

Archaeomorphology as Landscape Archaeology: New Approaches and Perspectives

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Abstract

Archaeomorphology, the study of human-made landscape forms such as roads, field systems, terraces, water channels, etc. is an important part of landscape studies. The archaeological features studied through archaeomorphological approaches display a long-term chronology and play an important role in the configuration of human habitat, movement and sustenance. In many cases, this role can still be appreciated in today's cultural landscapes. However, during the last decades the archaeomorphological study of centuriations and other field systems has been considered a marginal and unscientific discipline. This is largely due to the multiplication of unreliable archaeomorphological studies on centuriations developed from the 70s to the 90s, some of which have been proved wrong by large-scale archaeological excavations. Nonetheless, the last decade has seen a revival of centuriation and other archaeomorphology-based studies. Events such as the 2009 international conference *The application of centuriation systems and methods of agrarian organisation from the Roman period to the early Middle Ages* or the publication of *Agri Centuriati, an International Journal of Landscape Archaeology* beginning in 2004 have helped to put this discipline "back on the map".

Keywords, Archaeomorphology, Landscape Archaeology, Road Networks, Centuriation, Cultural Landscapes.

Archaeomorphology is focused on the study of human-made landscape forms and traces of territorial planning, such as roads, field systems, terraces or water channels. It aims at analysing the historical development of landscape structures over time and it has been an important part of landscape research in the last decades. Territorial structures display a long-term chronology and play an important role in the configuration of human settlement, movement and sustenance. In many cases, this role can still be appreciated in today's cultural landscapes (Chouquer & Favory, 1991).

Archaeomorphological analyses embrace the idea of landscapes as cultural palimpsests. These can be considered as systems within which previously existing forms play a key role in determining and shaping later landscape structures. However, this is obviously not always the case and we must assess in which situations there is or there is not a correlation between ancient and contemporary alignments and features. It is therefore essential to characterise successive phases in the human shaping of cultural landscapes. It is for this reason that diachronic studies provide the necessary perspective for contextualising a distinct morphology as a result of specific historic territorial dynamics and establishing its relationship with the elements that defined previous or subsequent phases (Chouquer & Favory 1991: 209-25; Chouquer, 1996-1997; Chouquer 2003: 13-32; Leveau 2000; Palet 1997: 27-41; Robert 2004).

In relation to the structuring of the territory, road networks have often been recognised as of primary interest, reflecting specific historical spatial dynamics (Vion, 1989). In addition, certain roads act as fixed, long-term structures; axes that can recreate a specific morphology in the landscape beyond the point at which they were constructed. Thus, a dominant territorial orientation tends to spread from an existing axe and to extend far beyond the original moment of its creation. It has been pointed out that this could be the case for certain orthogonal plots of land from medieval or modern times articulated around pre-existing roads and field morphologies. Roads have been considered as landscape alignments that can recreate certain historical morphologies (Chouquer, 2000; 2008).

The archaeomorphological study of road networks focuses on the definition of the general structure in order to subsequently analyse the parts, the routes and the tracks from which it is formed (Vion, 1989: 69). The variable nature of tracks within these routes is indicative of the age and internal evolution of the structure, while movement between routes, determined by the location of settlements and other activity areas, reflects the dynamic of change affecting the whole of the road network. It is by analysing these relationships, the imbrications and the shifts between axes and tracks in conjunction with settlement patterns that relative sequences are established indicating the successive transformation of the road network.

One of the major problems that this type of study presents is that it does not allow the absolute dating of the structures under study but instead provides a relative chronological sequence (Palet, 1997: 28-29). Absolute dates need to be obtained from the examination of structures in the field and from the excavation of well contextualised material. However, the excavation of paths, at least those simple ones that are little more than a packed surface, could only provide a *post quem* date of their last use. The excavation of roads, possible in alluvial plains, is much more difficult in piedmont surfaces which are normally subjected to more intense erosion processes. In these

areas, roads present particular difficulties as their surfaces are subject to constant erosion and they appear as negative elements (pits, trenches, and/or hollow ways) usually without much sedimentary accumulation. As a result they are difficult to date archaeologically (Ariño, Gurt & Palet, 2004; Favory, 1997). In this regard, it has been suggested that the regressive study of traces of territorial planning (from the most modern element to the oldest) in the historical documentation (texts and old maps) is an essential source of information for this type of work. Archival records and historic cartography can provide *ante quem / post quem* dating for those located structures (Jung, 2000; Palet, 1997; Vion, 1989).

This research has greatly contributed to the advance of agrarian landscape studies. In regard to the Roman period, archaeomorphology has focused particularly on the phenomenon of centuriation, the most characteristic (although not the only) way of structuring, dividing and squaring rural areas in the *ager* of the ancient city.

As it is well known, the study of centuriations gained significant momentum during the 1980s thanks to the efforts of what was then called the Besançon Group (Clavel-Lévêque 1983; Chouquer & Favory 1991; Chouquer et al, 1987). This group developed a series of techniques aimed at identifying centuriated grid systems by their orientation and by the proportions of *centuriae* with modules based on multiples of the Roman *actus*, a length normally in the range 35.0 m to 35.6 m. These centuriations were identified in the modern landscape by carto- and photo-interpretation in order to link routes visible in the modern landscape to ancient agricultural structures based on criteria of orientation and equidistance. A large number of studies and proposals emerged, causing an optimism that was translated into an explosion of centuriation hypotheses put forward, sometimes within the same geographical area, yet with no consensus among specialists concerning the veracity of the system and its historical interpretation (Favory, 1997).

Although this approach helped in identifying several centuriations in France and other Med-

iterranean regions, some of these hypotheses have been proven by archaeological evidence to be false (Leveau, 2000: 555-82). This failure to identify centuriated systems with certainty has sometimes resulted in the dismissal of photo interpretation approaches and lack of confidence in the methodological approaches originally developed by the Besançon Group (Leveau, 2010). This is the main reason for which these studies have been considered a marginal and unscientific discipline.

By the 1990s, these studies were opening up to a “new” archaeomorphology, fostering a diachronic approach through the study of textual and documentary sources and fieldwork. Work on historical morphology began to incorporate survey and excavation and the integration of palaeoenvironmental data (Ariño, Gurt & Palet, 2004; Leveau, 2000). At present, interest is focused on the dynamics of landscape forms over time. The inclusion of archaeomorphological studies in the wider field of landscape archaeology has become essential in the study of field systems and related archaeomorphological topics, providing a much needed interdisciplinary and diachronic approach. Current research has adopted multidisciplinary approaches which include geoarchaeology, geophysics, survey, ancient document analysis or palaeoenvironmental analysis. The incorporation of historical and environmental data has been extremely useful to improve the identification and proposed chronology of traces. Environmental sources can offer important insights on the effects a *deductio* had on the landscape. The few cases in which environmental data have been applied to centuriation analysis show a complex relationship between Roman fields systems, settlement and landscape change (Dall’Aglia & Franceschelli 2007; Franceschelli & Marabini 2007; Palet & Orengo 2011; Palet, Orengo & Riera 2011).

In this context, the so called “archéogéographical” approach must also be taken into account. In Orange B centuriation, in Pierrelatte, as part of the works on the high speed train the excavation of a succession of drainage trenches at 2.5 metres deep showed the continuity of a centuriated axe from antiquity to modern times (Berger &

Jung, 1996). This study was the origin of a new “archéogéographical” approach, not only focused on the conservation of ancient landscape arrangements in present day landscapes, but in their possible reconstruction over the centuries (Chouquer 2000; 2004; 2008; Marchand 2004).

In this way, chronological interpretations based on modular distances and orientations of the system’s axes are not longer considered reliable. Also, orthogonal field systems with distances between axes that are equivalent to multipliers of the Roman *actus* do not necessarily need to be of Roman origin. From its origins as a centuriation-oriented technique, archaeomorphology is now employed to analyse very different types of landscapes and periods. In addition, the use of verification procedures such as fieldwalking, excavation or statistical analysis has provided a much needed way to assess the reliability of the hypothesis.

In the same way, interpretation has moved from economic, punitive or materialistic approaches to more social and cultural focussed explanations following, perhaps, the transition undergone by landscape archaeology from processual and economic interpretations to new socio-cultural and symbolic approaches (Palet & Orengo 2011).

Moreover, it is important to emphasise the incorporation of new digital methods, particularly Geographic Information Systems (GIS). One of the most immediate advantages of these is that they represent a major qualitative leap forward in terms of the planimetric accuracy of the restitution of field systems (Orengo & Palet 2008; Orengo & Palet 2010). These new methodologies also allow the incorporation of a large number of geographical sources referenced in the same working environment, which enables a far more intensive, faster and accurate exploration of cartographic and photographic material. They have meant a dramatic improvement of the quality and reliability of archaeomorphological analyses. The development and increased availability of digital carto-photographic materials and RS and GIS-based techniques has been an important landmark in this regard.

Therefore the last decade has seen a revival of centuriation and other archaeomorphology-based studies. Events such as the 2009 international conference *The application of centurial systems and methods of agrarian organisation from the Roman period to the early Middle Ages* or the publication beginning in 2004 of *Agri Centuriati, an International Journal of Landscape Archaeology* have helped to put this discipline “back on the map”. This session aims to prove the potential of the “new archaeomorphology” for the understanding of past landscape configurations and the explanation of historical processes.

The papers presented in this session show the use of multidisciplinary, long-term approaches to archaeomorphological analysis regardless of the period or type of landscape structure under study. The selection of papers include new approaches to centuriated landscapes such as that presented by Terribile & De Vita with a focus on multidisciplinary and a clear adoption of a diachronic approach plus a welcome attention to environmental change. A long-term approach can also be found in Matteazzi’s study of the Venetian plain and the work of Ortega et al. on the plain Valencia, where remote sensing, field survey and cartographic analysis are employed. Both Donati and Seguin use histograms derived from the orientation of present day field systems to analyse the permanence of ancient landscape arrangements in different extremes of the Mediterranean. The work of Garcia et al. shows how Roman landscapes were organised outside the *ager* of urban centres extending the application of archaeomorphological approaches beyond the study of centuriations. Roselaar’s text combines the study of the writings of the Agrimensores with evidence from Roman literary, legal sources and from archaeological evidence to achieve a deeper and more realistic understanding of Roman land measurement. The works presented by Stagno, Carfora & Di Luzio, Paolini & Piccari and Strózyk show how archaeomorphological approaches can be applied to different time periods and to many more topics than that of the study of field or road systems. Stagno proposes a multidisciplinary approach to the study

of mountainous common lands while Carfora & Di Luzio focus on an exploitation system of rock quarries along a tract of the ancient Appian Way. Paolini & Piccari concentrate their research in the historical hydrography of the Caffarella valley. Finally, Strózyk develops new methods for the study of Bronze Age funerary barrows.

The archaeomorphologist is no longer a lonely researcher secluded in an office with stacks of aerial photographs and maps and a grid on a transparent sheet but a valuable member of a multidisciplinary team studying long-term human interactions with their environment. Archaeomorphology is much more complex than it used to be but it is also a much more valuable discipline, which can provide enormous cultural assets with its capacity to interpret the long-term shaping of cultural landscapes.

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