The impact of semi-automatic detection in archaeological knowledge. A study case and some reflections.

Enrique Cerrillo Cuenca

Researcher, Institute of History, Centre for Human and Social Sciences

Spanish Council for Scientific Research

[enrique.cerrillo@cchs.csic.es](mailto:enrique.cerrillo@cchs.csic.es)

The popularization of GIS represented for many archaeologists a powerful mechanism for accessing the most intricate aspects of past landscapes, in what can be considered a milestone in spatial and landscape Archaeology. Today, the novelties come from the field of remote sensing, where the development of semi-automatic detection of archaeological sites seems to be a groundbreaking approach. Through techniques from the field of computer vision and machine learning is possible to identify areas of archaeological interest among hundreds or even thousands of spatial datasets. This procedure has been named as “semi-automatic detection”, considering that the ultimate validation of detected areas is only possible through a careful revision by a specialist. A growing bibliography can show the interest of these approaches among archaeologists, but also their potential risks on the archaeological interpretation of landscape.

In the present paper, we discuss the impact of these technique on the archaeological knowledge of the Late Prehistory Iberia. An artificial neural network (ANN) has been trained to locate topographical features that match funerary mounds. The challenge is to understand if the current distribution of monuments -mainly build upon the data of the non-systematic archaeological activity from 20th century- can be balanced by an unsupervised detection. We will discuss: 1) the theoretical issues behind the design of the methodology, 2) the design and training of an ANN, 3) the preliminary and expected outcomes and 4) the risks of creating new biases in the data. We are also interested in the quality of these type of data and its possible impact on the creation of new knowledge, a problem that is common to other fields of Spatial Humanities.