Predictive models and spatial analysis for the study of deserted medieval villages in Basilicata Region (Italy)

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The study is focused on villages that are abandoned throughout the Basilicata from the 13th to the 15th century (Masini 1998), which is an emblematic case of abandonment of settlements in Late Middle Ages, which was a very common phenomenon throughout the whole Europe, attracting the interest of several historians and archaeologists (Demians d'Archimbaud 2001)

The aim of the present study is to offer a contribution to knowledge of the medieval Basilicata's landscapes and settlement's dynamics with a multidisciplinary approach, derived from the rescue archeology: we have integrated the documentary sources with the use of spatial analysis and predictive models (Danese et al. 2009).

The preventive archeology was born to conciliate the protection of archeological heritage, in evidence and potential, with the needs of urban design and planning. It is of fundamental importance, for a reliable evaluation of archaeological potential (identifying invisible traces) to use innovative diagnostic technologies: geophysical prospections, remote sensing (Lasaponara & Masini 2010; Lasaponara et al. 2016) and spatial analysis for the creation of predictive models. The latter are used to accomplish operational purposes but also for the historical landscape reconstruction (Danese et al. 2013; 2014). They contribute to analyse settlements and their dynamics on the basis of definite method and parameters. Thanks to predictive models it is possible, in fact, to start off by information of well-known archeological sites and use this knowledge as an empiric test for understand which elements have influenced their localization in the space. The relationships among natural environment, social context and position site are analysed in order to make clear the rules of settlement. These rules are then used into the model (Podobnikar et al. 2001).

In this work the employed methodology is Spatial Analysis, in order to subdivide the territory based on its importance respect to a given function. The archeological dataset is made up of documentary sources and, in some cases, field survey. We have integrated the observation of Site Catchment Analysis of every site with the organizational principles of the economic space and with the principles of potential agricultural use of soil, which follow of the pointers proceeds from a series of important elements in the territorial evolution. The map algebra used methods are Viewshed Analysis, Cost Weighted Distance, Cost Weighted Allocation, Shortest Path. Furthermore, through the method of land evaluation, in order to understand the potential agricultural use of the soil has been defined the degree of adaptability of some agricultural species to the invariable characteristics of the territories examined, such as the pedology, orography and exposure to light solar. The result obtained with the present study propose an approach of integration of heterogeneous data through the use of techniques that make reference the same principles on which the strategies of localization of the sites of the man of the past were based that is distance, adjacency, interaction, neighborhood.

The in-depth study on a few sites and their archaeological excavations has the role of validate the model.

References

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