Call for Papers

Unlocking GIS Potential
Advanced Techniques and Foundational Theories

convenors
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9 - 10 June 2025
Faculty of Humanities
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How to participate

Interested parties are invited to submit a contribution proposal, which should include the following elements:

Title

Abstract (maximum 300 words)

Keywords (keywords related to the theme of the contribution)

Authors (indicating name, surname and role)

Affiliation (institute or university of origin of each author)

Proposals should be sent by email to federica.vacatello@uniroma1.it by **31 December** at the latest. They will be evaluated on the basis of relevance to the theme of the seminar, originality of the contribution and clarity of presentation.

Unlocking GIS Potential
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GIS modelling has significantly reshaped archaeological research, allowing for an in-depth examination of landscapes and the cultural dynamics that unfolded within them. The behaviours of ancient communities inhabiting these areas, as well as the modifications they imposed upon the landscape, gain a robust historical dimension through the application of Geographic Information Systems. By integrating and visualising geospatial data, researchers can explore the multifaceted interactions between humans and the environment across history. Moreover, the ability to digitally reconstruct large landscape segments has opened increasingly intriguing and complex lines of inquiry, ranging from classical questions concerning settlement patterns and resource exploitation to recent speculations into various '-scapes,' including urban spaces, soundscapes, mindscapes, and taskscapes.

Over time, GIS-based modelling has been applied to examine the distribution of archaeological sites, map out communication and trade networks, and reconstruct evolving cultural landscapes. Techniques such as spatial regression analysis, Kernel Density Estimation (KDE), and agent-based models represent just a few of the approaches that enable us to discern meaningful patterns in site distribution and simulate interactions between populations and environmental resources—interactions that are crucial to archaeological studies. For instance, KDE studies have highlighted the impact of water resources on settlement locations in the Mediterranean (Barker 2006; Pérez-García 2011), while agent-based models have simulated migration patterns and cultural exchanges within specific historical contexts (Hughes 2006; Miller & Page 2007; Porr 2015). Additionally, land evaluation analysis (Sotgia 2024) and mobility studies (Harris 2000; Van Leusen 2002) have advanced our understanding of resource exploitation, shedding light on both the subsistence strategies of communities and the range of (market) economies present (Vacatello 2023).

Despite ongoing advancements, substantial challenges remain in this field, particularly regarding the theoretical integration of these analytical methodologies. Issues surrounding data quality, formalisation, and standardisation pose significant obstacles, as the variety of data sources and formats can affect the reliability of analyses. Integrating data across disciplines requires an approach that is as interdisciplinary as possible, allowing for models that are increasingly coherent and representative of the complexities of ancient societies and their perception of different potential scenarios.

In short, there is a need for collaborative forums where scholars can discuss the 'state of the art' in archaeological modelling, assess the current landscape, and consider future directions. Notably, there is growing interest in refining these analytical methodologies beyond merely predictive frameworks, which have long dominated this work, towards more postdictive approaches. Such methods aim to reconstruct ancient landscapes and historical scenarios with ever greater accuracy, as recently explored by Citter and Sotgia (2023).

We aim to bring together leading experts from diverse geographical and chronological backgrounds to explore the role of GIS modelling in archaeology, drawing on examples from their research and the theoretical foundations of their approaches, while also looking towards potential future developments in the field.