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Summary

Over the past decades, an impressive quantity of archaeological data has been registered by field survey projects. Large datasets have been produced, most notably in Mediterranean countries where field survey has been widely applied for the study of regional landscapes. A majority of these datasets is site-based, which means that only well-defined surface concentrations of archaeological finds were recorded by surveyors, who usually registered them as dots on topographic maps.

Despite the problematic nature of these site-based datasets, they represent an extremely important resource to the study of ancient settlement organization. Modern anthropogenic transformative processes, such as intensive agriculture, erosion, construction work and urbanization, are currently incisively disturbing and changing the soil all-over the world and, thus, threatening the archaeological material preserved on and under the surface. Considering that in many areas the surface record is rapidly being destroyed or becoming inaccessible to field survey, researchers will in the future increasingly have to rely on legacy survey data for regional settlement pattern analysis. Practical methodological solutions to properly use the data that have been collected in the past by previous surveys are therefore of great importance for historical reconstructions.

To fully use the potential of legacy site-based survey data, methodological procedures that engage with their limits, and more importantly with the distortions on data patterns caused by biasing factors, are necessary. Using such procedures, archaeologists can make their interpretations of the past settlement behavior more robust. The GIS procedure this PhD thesis proposes, consists of various different methodological approaches to infer settlement patterns from site-based survey datasets.

The GIS procedure unfolds in two parts. One part assesses the effect of biases on site-based survey datasets (*i.e.* the application of bias-testing approaches). The other part aims to extract historical meaning from data patterning. To show how the proposed GIS research procedure works in practice, a case-study was employed. Site-based datasets collected by three survey projects in central-southern Italy were used to investigate settlement patterns in the early Roman colonial period (3rd century B.C.).

By applying the proposed GIS procedure, two distinct settlement theories about Roman colonization which presume radically different site densities and patterns, were tested. The aim was to establish which one is more probable based on survey data. The first theory presumes the existence of a dense and evenly dispersed distribution of farms in landscapes that were settled by Roman colonists. The second, in contrast, proposes a nucleated settlement theory, hypothesizing that villages, rather than dispersed farms, dominated in early colonial landscapes. Not only did the presented GIS procedure permit us to establish which scenario is more likely to have occurred in the past, it also produced entirely new insights into the settlement organization of early Roman colonial landscapes.

Jeremia Pelgrom. LERC is based at the Faculty of Archaeology of Leiden University and the KNIR (Royal Netherlands Institute in Rome). Besides the present PhD book, several other research output was produced by the members of the LERC project. These members are: Dr. Tesse D. Stek (Director), Dr. Jeremia Pelgrom (co-Director from the KNIR), Rogier Kalkers (Project assistant), Dr. Marleen Termeer (Post-doctoral researcher), Dr. Jesús García Sánchez (Post-doctoral researcher), Anita Casarotto (PhD researcher), Arthur Hamel (PhD researcher), Dr. Gianluca Cantoro (Post-doctoral researcher), Dr. Emily Modrall (Post-doctoral researcher), Jitte Waagen (PhD researcher), Lisa Götz (PhD researcher), and a long list of affiliated researchers amongst which there are Dr. Hans Kamermans, Prof. Jan Sevink, Ruud van Otterloo, Lucia Lecce, and Prof. Maria Luisa Marchi.