Rediscovering a Hidden City: Exploring Vulci through Remote Sensing

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Introduction

This project focuses on using remote sensing techniques to map out and analyze the Etruscan-Roman city of Vulci, Italy. This flourishing city was home to a vast population for hundreds of years, yet much of the city proper remains hidden. This project demonstrates the effectiveness of these digital techniques to analyze the urban morphology of Vulci.

The analysis and conclusions presented here form a crucial part of the digital analysis section of my dissertation, as well as the Vulci3000 project. The project seeks to study the transformation and transition of Vulci from the earliest period (Etruscan) to the Roman occupation and the late antiquity.

Challenges of a Traditional Approach

Although Vulci is now a protected archaeological park, it is too large and would be too expensive and time consuming to excavate the whole plateau. Unable to excavate the entire city, we therefore approached the problem from a different angle by using remote sensing techniques. This allowed us to piece together a more complex and nuanced understanding of the urban center in a holistic manner.

Methods

This project combines various remote sensing data as well as procedural modeling for a layered analysis, which provides a holistic interpretation. From 2014 through 2016, we have collected data from magnetometry, ground penetrating radar (GPR), and aerial photography from two separate drones using four different cameras.

While a magnetometry survey of four areas was carried out during the summer of 2014, it produced patterns that were relatively indistinct and inconclusive. Thus, we moved to a different type of remote sensing technique, ground penetrating radar.

Inconclusive magnetometry results

Ground Penetrating Radar

Ground Penetrating Radar, or GPR, is a remote sensing technique that uses radar pulses to construct an image of subsurface features. Our team conducted a GPR survey of four hectares centered on the main western forum of the city during the summer of 2015.

Analysis of the GPR layers reveal several new features, offering a more holistic view of both the public and private buildings in the western forum and southern area of the site. Further, from this data, it is clear that the layout of the western forum and southern area remained constant throughout several periods. These findings also substantiate previous claims.

Conclusions and Further Research

- There is evidence to support the reuse of the street grid and urban layout by subsequent occupants
- The combination of different bands from aerial photographs reveals the presence of several large buildings south of the main Western Forum, as well as an expansion of smaller features south
- Further analysis is needed in the northern sector of the site to determine spatial patterns
- While the data covers the urban center of the city, the boundary between the city and the rural area needs to be more clearly defined

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