A geophysical survey of the Roman villa at Santa Maria della Strada Matrice (Campobasso, Italy)

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Summary
In October 2017 a multi-method geophysical survey was undertaken at the site of the rural Roman villa near the Church of Santa Maria della Strada at Matrice, 10km to the northeast of Campobasso in the central Italian region of Molise (Fig. 1). The aim of the survey was to examine the area in the immediate proximity to the excavated villa and in particular, through Ground-Penetrating Radar (GPR), a section of the modern road which divides the site (Fig. 2). The survey was successful in identifying further parts of the villa, as well as providing further detail about the internal layout of the building.

Introduction
The site of the Roman villa at Matrice lies 200m to the north of the Church of Santa Maria della Strada on an elevated ridge overlooking a valley and the intersection of two transhumance routes. At approximately 812m asl, the villa is one of very few identified at a high altitude in rural central Italy.

The site was first discovered during the construction of a road in the mid-1970s and was brought to the attention of Graeme Barker and John Lloyd who were at the time directing a field survey of the Biferno valley (Barker 1995).
Subsequently, between 1980 and 1984, a joint team from the University of Sheffield and University of Aberdeen led by John Lloyd undertook several seasons of excavation.

**Archaeological background to the project**

The excavations of the villa revealed that the site was continuously occupied from the 2nd century BC through until the 5th century AD, therefore offering an opportunity to examine a long chronology of a rural Roman villa. The first phase identified by the excavations was a Samnite building built in *opera poligonale*. Over the course of the 1st century BC the building was gradually enlarged, occupying a space of around 2500m². Developed around a central courtyard, the ‘villa rustica’ appeared to have been divided into three parts.

![Fig. 2. The villa at Matrice, Campobasso.](image)

The aim of the new phase of research, kindly funded by the Society for the Promotion of Roman Studies, was to use techniques such as geophysics and topographical survey to complete the plan of the villa and in particular to assess whether it extended towards the west. The new results will support the final publication of the site in memory of John Lloyd.
**Geophysical survey**

The site at Matrice was investigated using both magnetometry and GPR with the aim of assessing both the extent of the site as well as extracting further detail from some of the areas cleared by the excavations of the 1980s.

![Magnetometry and GPR survey at Matrice.](image)

The magnetometry survey (Fig. 3), which covered an area of approximately 0.5 hectares, was undertaken using a Bartington fluxgate gradiometer Grad601-2 with zigzag parallel traverses at an interval of 0.5m and a reading interval of 0.25m. The GPR survey was split across seven different areas due to the varying topography and changing ground surfaces across the site. The survey was undertaken using a GSSI SIR-3000 with a 400 MHz antenna, with data collected in parallel traverses every 0.25m. The location of the geophysical surveys was recorded by GPS for subsequent data processing and interpretation.

**Survey results**

The magnetometry survey was undertaken to the west of the site where the earlier excavations had identified part of the villa that continued beyond the road. The survey indicated that whilst the villa did not appear to extend further to the south or west, a series of structures were recorded at the north-western extent of the site (Fig. 4). The strong positive anomalies suggest a series of rooms that continue the northern range of the villa, with an open courtyard towards the south. Surface material also suggests the presence of further structures although, due to recent deep ploughing, it was not possible to further verify the results using GPR.
The GPR survey focused upon a number of areas around the villa, both within the excavations and to the north, east and south. Along the modern asphalt road a series of walls were recorded which differed from the hypothesised structures (Fig. 4), whilst the central section confirmed the interpretation that the building was focused around a courtyard.

![Fig. 4. Geophysical survey results and data interpretation](image)

The survey within areas uncovered in the 1980s aimed to provide further detail to the plan of the villa. A series of new walls were recorded in addition to several structural features including water channels and a possible well.

The aim of the GPR surveys beyond the known extents of the villa was to test whether the structures continued further into the wooded area to the east and whether the excavation had correctly interpreted the southern wall of the villa as an external wall. The survey confirmed that the villa extended under the road at the northern limit, joining with the structures recorded by the magnetometry survey but that it did not appear to further extend to the east or south.
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Bibliography

