

ISAP NEWS

The newsletter of the International Society for Archaeological Prospection

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Editor's Note

Robert Fry

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Welcome to the 30th issue of ISAP News! A huge thank you to all who have found the time to contribute to the newsletter, I hope you will find it an enjoyable read.

As it's the beginning of the year, I would like to remind all to renew their ISAP membership, which was due on the 1st January. The price is still only £7 / €10. For details of how to renew, please click the following link:

<http://www.bradford.ac.uk/acad/archsci/archprospection/renew.php>

Please send any contributions or queries for the next newsletter (ISAP News 31) to the address above by the 30th April 2012. All entries are gratefully received; I will always try to respond to emails in the same day if possible.

Important Notices

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Large scale archaeological prospection of the Iron Age central place Uppåkra in Sweden

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Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology

The Iron Age archaeological site of Uppåkra in Scania, south-western Sweden, is one of Sweden's most prominent proto-urban settlements. Uppåkra is situated in the wide open, agriculturally used Scanian landscape about five kilometres south of the town of Lund. In 1996, members of different research institutes started the scientific project “*The Social Structures of Southern Sweden during the Iron Age*” lead by Prof. Lars Larsson from the University of Lund, focusing on the settlement site Uppåkra (Larsson 2002: 3-30). Since then several archaeological excavation campaigns have revealed the presence of thick occupational layers, rich archaeological finds, large hall buildings, as well as an exceptional ceremonial house. Numerous metal detector surveys have outlined a continuous settlement sequence from the 1st century BC until the 11th century AD (Larsson 2010: 189). The results of these investigations have been published in the series *Uppåkrastudier 1-11*.

In 2010 the Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology (LBI ArchPro – <http://archpro.lbg.ac.at>) selected the site of Uppåkra and its surrounding landscape as large-scale case study area for the test and development of novel high-resolution archaeological prospection technology and methodology.

In collaboration with the Swedish LBI ArchPro partner, the Contract Archaeology Unit of the Central Swedish Heritage Board, and Prof. Larsson in August/September 2010 a team from the LBI ArchPro, started motorized magnetic and GPR surveys at Uppåkra. In total 40 hectares of magnetic and 10 hectares of GPR measurements were conducted over the course of seven days. The magnetometer system used, consisted of five Foerster gradiometer probes mounted with 50 cm spacing on a non-magnetic trailer, towed by a Quad bike. The novel GPR system employed was a 16 channel 400 MHz MALÅ Imaging Radar Array (MIRA) with 8 cm in-line and 8 cm cross-line trace spacing (Fig. 1), mounted in front of a small tractor (Trinks et al. 2010). In April 2011, the fieldwork continued with the intention to cover all accessible areas surrounding the known Iron Age settlement site using magnetic prospection.



Figure 1: GPR measurements with the 16 channel 400 MHz MALÅ Imaging Radar Array (MIRA) with 8 cm channel spacing using a robotic total-station together with a prism for automated data positioning.

Additionally, a high-resolution digital terrain model of the central area was generated by using terrestrial laser scanning with a Riegl LMS Z420i. The application of two motorized magnetometer systems with five and ten channels (Fig. 2) made it possible to acquire more than 110 hectares of magnetic data over the course of nine measurement days. The investigated area located in wide open farmland offers perfect measurement conditions. The friendly support of the landowners, the University of Lund, and the Uppåkra Arkeologiska Center made it possible to survey the so far largest interconnected archaeological magnetometer prospection area in Scandinavia, covering in total over 1,75 km² (Fig. 3).



Figure 2: Motorized magnetic survey with 10-channel Foerster gradiometer array mounted with 25 cm probe spacing on a non-magnetic cart in April 2011. The RTK-GPS antenna for data positioning is visible on the cart. In the background Uppåkra church can be seen.

The magnetometer measurements illustrate a large number of previously unknown archaeological structures, such as pits, pit alignments, postholes, hearths and over-ploughed grave mounds surrounding the central settlement area of Uppåkra. Whether the detected structures, which partly differ in character, are contemporary to the Iron Age settlement or not, is currently unknown (Trinks et al.: 2011). Within the high-resolution geophysical data and through the combination of the GPR and magnetic method, several large longhouses with associated smaller buildings were identified south of the central area containing the earlier excavated ceremonial house (Gabler: 2011). In the west of the ceremonial house, round structures with central east-west oriented burials have been visible in the GPR data (Fig. 4). The most prominent of these structures was excavated in May 2011 by the University of Lund in collaboration with the Central Swedish Heritage Board. The excavation results showed very good agreement between the by high-resolution GPR predicted and the excavated structures. The archaeological interpretation of the GPR data as burial under a layer of packed stones with surrounding circular ditch has been confirmed (www.uppakra.se).

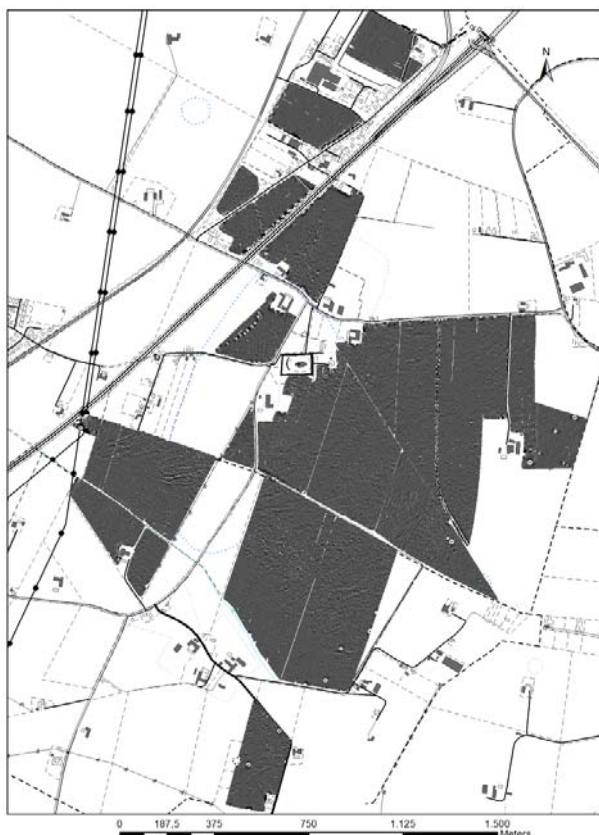


Figure 3: Area surveyed with motorized magnetic systems in 2010 and 2011 covering 175 hectares in total. Uppåkra church is located in the centre of the map. The magnetic data is plotted with 254 greyscale values distributed linearly between -8 nT (white) and 16 nT (black).

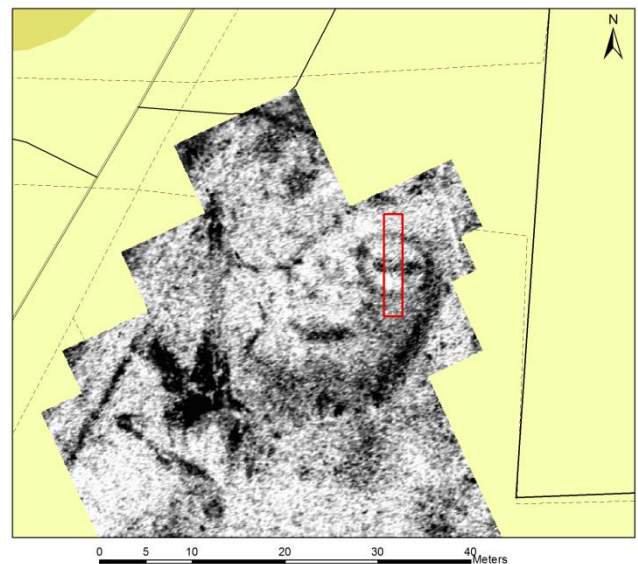


Figure 4: Circular burial outside Uppåkra churchyard with central east-west oriented grave. Mapped 2010 with single channel GPR (25 cm profile spacing) and 2011 with MALÅ Imaging Radar Array (8 cm profile spacing). The red rectangle shows the excavation trench from the University Lund in May 2011.

In 2012 it is planned to complete the magnetometer prospection of the central areas and to generate a high resolution digital terrain model using airborne laser scanning. Together with local experts the collected data will be interpreted within a GIS. The analysis of the data is expected to result in considerably new archaeological knowledge about this important site. The case study contributes to the advancement of the state-of-the-art of both archaeological prospection technology and methodology.

Acknowledgements

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The project members of the case study in Uppåkra are Anders Biwall, Pär Karlsson and Håkan Thorén (Contract Archaeology Unit of the Central Swedish Heritage Board), Lars Larsson (Department of Archaeology and Ancient History, University of Lund), and Manuel Gabler, Alois Hinterleitner, Matthias Kucera, Klaus Löcker, Erich Nau, Wolfgang Neubauer, Daniel Scherzer, Immo Trinks, Mario Wallner, and Thomas Zitz (LBI ArchPro).

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