

Fig. 2. Pseudosections of the apparent resistivity measurements in the laboratory

Fig. 4. Simplified picture of the experimental setup in the laboratory; RU = Remote Units

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## Recent Work on Pseudosections for Archaeology

Standard earth resistance surveys for archaeology normally use fixed electrode arrays to cover large areas. The features detected depend on the penetration depth of the probe arrangement and by combining surveys undertaken with various electrode spacings it is possible to investigate anomalies at different depths. Such data can be subjected to complex algorithms to calculate the actual resistivity distribution of the ground (tomography) or converted without further processing into values of apparent resistivity (pseudosections).

This paper investigates how the simple use of pseudosections can provide images of the subsurface to aid the archaeological interpretation of sites. Efficient field techniques for cheap data acquisition will be reviewed and the responses to various elec-

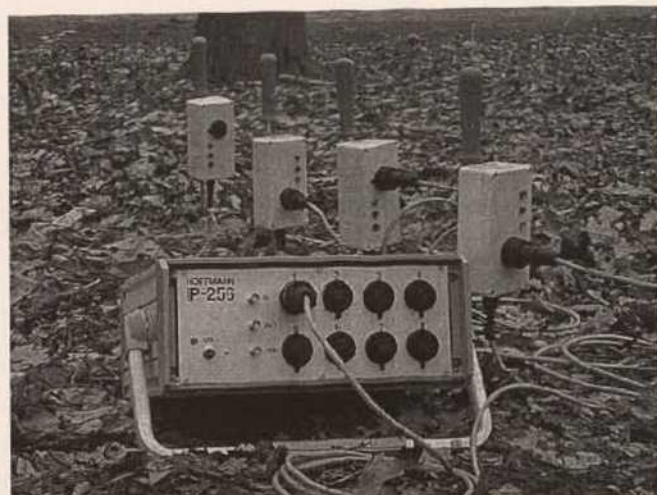
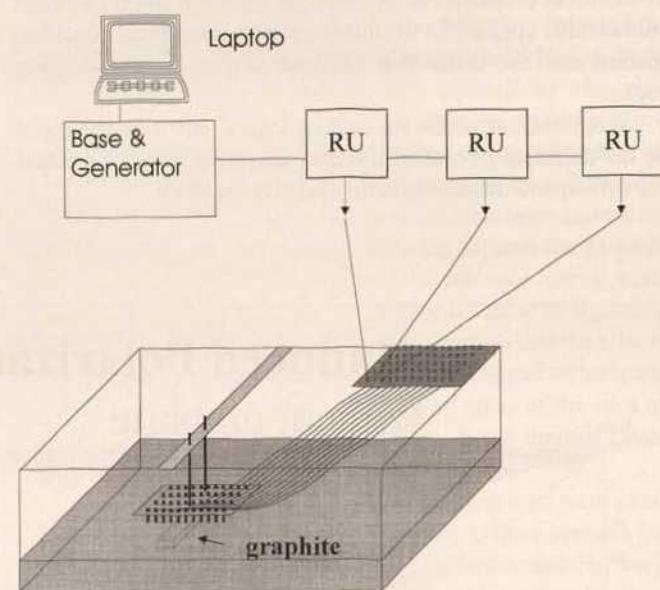


Fig. 3. SIP-256 Multichannel Geoelectrics-Instrument



trode arrangements (twin-probe, Wenner, Wenner-broadside) illustrated. Data collection, manipulation and display are important issues when dealing with such data sets and case studies for the use of pseudosections, pseudoslices and volume visualisations will be provided. A major advantage of pseudosections is their minimal requirement for processing and basic data treatment tools (e. g. topographic adjustments, depth scaling) will be assessed.

Pseudosections are an efficient tool for an initial evaluation of the third dimension (i. e. depth) and survey examples will be provided to show the validity of this approach despite limitations of the simplistic data treatment.

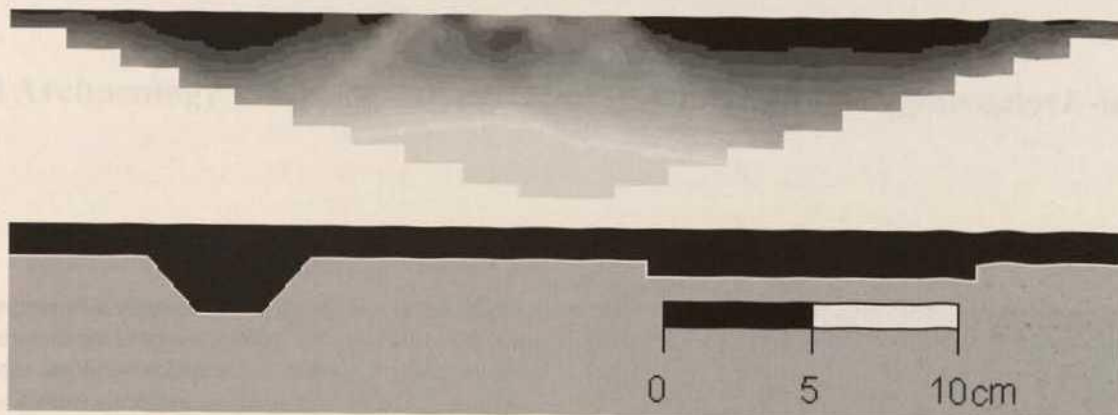


Fig. Wenner pseudosection of a test tank with sketch of the actual profile; Range: 2 ... 20  $\Omega\text{m}$  (dark to light, linear)

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## Archaeological Geophysics in South Asia

According to its mission of protecting and preserving the cultural heritage world-wide, UNESCO has provided funding for the geophysical investigation of buried archaeological remains related to World Heritage Sites in South Asia. During two pilot studies the response of buried features to standard geophysical prospection methods was investigated on selected sites in Bangladesh and Nepal in 1997.

The use of fluxgate gradiometers and earth resistance meters is well established in the developed world and the interpretation of geophysical anomalies as archaeological features is fairly well understood. However, very few geophysical surveys were undertaken on archaeological sites in South Asia and due to the climatic, environmental and geological conditions the geophysical signature of subsoil archaeological structures is markedly different. The specific problems encountered in the subcontinent will be exemplified with geophysical survey results from Bangladesh and Nepal (FM36 fluxgate gradiometer and RM15 earth resistance meter with twin-probe array).

Bangladesh is dominated by the alluvial floodplain of the Ganges with heavy Monsoon rain in the summer. As a consequence the non-perished architecture is dominated by solid brick structures with ornamental terracotta tiles which, as a ruin, manifest themselves as brick walls within brick tumble. Accordingly, magnetometer results are difficult to interpret. It was, nevertheless, possible to enhance the monument records of the World Heritage Sites of Bagherat and Paharpur considerably.

The survey of the sites of Tilaurakot and Ramagrama in Nepal showed much clearer evidence of buried brick foundations and provided insight into the layout of the ancient citadel and the stupa site, respectively.

Fig. Fluxgate gradiometer survey over remains of an ancient monastery

