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TRAVELLING IN THE SUBSOIL TO REVEAL AN ALMOST UNKNOWN SOCIETY: THE CASE OF MONT'E PRAMA (SARDINIA, ITALY)

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Sardinia is characterized by unique features which confer on it a charm that few other regions in the world possess. Certainly the most important is the presence of the Nuraghi, clear evidence of an evolved and organized people. Over 7,000 and perhaps as many as 10,000 Nuraghi of different forms and complexity are scattered across Sardinia, dating back to the second millennium BC. They tell of a pragmatic people, expert in building futuristic structures, in hydro-geological research and in territorial planning, on with particular attention also devoted to artistic aspects, and with customs and traditions which are not yet fully understood. A particular example comes from a micro-region called Sinis where the presence of Nuraghi exceeds two per square kilometer and where about 45 years ago a necropolis was discovered, with aligned well-tombs covered with slabs and. A parallel sacred road and giant stone sculptures were also found. After a few days of excavations carried out over a period of five years, the searches were hastily interrupted. Only four years ago the research was resumed by the Universities of Cagliari and Sassari, both geophysical surveys and archaeological digs. The task of finding out what the necropolis was linked to and its extent was made possible with the application of advanced geophysical methods. Above all the use of a multichannel Georadar, but also of aerial photos, thermal surveys from aerostats, rapid electrical survey and 3D ERT allowed us to explore a vast area and therefore to understand the extent and perhaps the meaning of some "digital" structures. Moreover, integration with the data of an aerial laser scanner has enabled us to create a system of visualization of dense geophysical data which enables us to attribute archaeological identity to the anomalies identified. In this way it is now possible to travel within the subsoil to discover the way of life of this almost unknown civilization.

Recent Publications

1. Santarato G et al. (2017) The consolidation and stabilization soils through the injection of expanding polyurethane resin



under a non-invasive diagnostic check by 3D-4D- ERT. Soil Stabilization Types, Methods and Applications. Nova Science Publishers. pp:165-230. ISBN: 978-1-53612-507-8.

2. Ranieri G et al. (2016) Geophysical Prospection of the Roman city of Pollentia, Alcludia (Mallorca, Balearic Islands, Spain). Journal of Applied Geophysics. 134:125-135. Doi:10.1016/j.appgeo.2016.08.009.
3. Trogu A et al. (2014) The ancient Roman aqueduct of Karales (Cagliari, Sardinia - Italy): applicability of geophysics methods to find the underground remains. Archaeological Prospection. 21(3):157-168. Doi:10.1002/arp.1471.
4. Piga C et al. (2016) Geophysical and aerial sensing methods for archaeology: a case history in the Punic Site of Villamar (Sardinia, Italy). Remote Sensing. 11(6):10986-11012. Doi:10.3390/rs61110986.

Biography

Gaetano Ranieri is retired and formerly has been full Professor of Applied Geophysics from the Faculty of Civil, Environmental Engineering and Architecture of the University of Cagliari (Italy). He has been the Director of the 1st International School on Soil and Environment Protection (1988) at Polytechnic University of Turin (Italy), Co-founder of (Environmental and Engineering Geophysical Society) (now NSG); Organiser of the first International Meeting on Sustainable Environment in Turin, Italy (1995). His main research topics include gravity, seismic, geo-electric, thermic and electro-magnetic applications to civil, mining, environment, agriculture and archaeology fields. He was the first to apply the geophysical methods to soil remediation, waste disposal, precision farm, monuments and earthquake precursors. In the archaeological field he made some important discoveries such as the Volubilis amphitheatre in Morocco, the continuation of the structures in Pollentia (Spain) and in the wide area of Mont'e Prama in Sardinia. He has led various research team in Europe, Africa and Latin America. He has more than 200 papers, 2 patents and 10 awards to his credit.

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