

INTRODUCTION

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The Lošinj series of Conferences (see <http://www.ecsac.eu/>) focus on interdisciplinary themes, with the aim to promote a forum involving researchers, scholars and students from natural and social sciences and humanities. This interdisciplinary dialogue and the active involvement of local communities and non-specialists, with particular attention to young people, is one of the main objectives of the European Centre for Science Arts and Culture (ECSAC, <http://www.ecsac.eu/>), the main organizer of the conferences.

ECSAC has its headquarters in Mali Lošinj, Croatia, while the Managing Committee and the Secretariat are based in Trieste, Italy, hosted by the Consortium for the Promotion of Study and Research in Physics, at the ICTP – the Abdus Salam International Centre for Theoretical Physics. ECSAC's President, Paolo Budinich, at the same time President of the Trieste International Foundation for the Progress and Freedom of Science, has been one of the key figures in the process started in the 1960s to develop the “Trieste System” as an international institutional scheme that promotes advanced knowledge involving also scientists and students from developing countries.

ECSAC, ICTP and the Trieste University, promoters of the Lošinj Conference, belong to the Trieste System, as well as SISSA / ISAS - the International School for Advanced Studies, AREA Science Park and the Consortium mentioned above, who all supported the project. Besides these partners, the institutional representatives of UniAdrion - the Virtual University of the Adriatic-Ionian Basin (a net including both ECSAC and Trieste University) and IAEA - the International Atomic Energy Agency, as well as scientific scholars from many European countries have guaranteed the international dimension of the Lošinj events.

The 7th Lošinj International Conference on Science, Arts and Culture was titled “Science for Cultural Heritage: Technological Innovation and Case Studies in Marine and Land Archaeology in the Adriatic Region and Inland”. It was inspired by recent studies on the ancient bronze *Apoxyomenos*, found in 1999 in Veli Lošinj waters, carried out by the Hrvatski Restauratorski Zavod

(Croatian Institute of Restoration) in collaboration with Opificio delle Pietre Dure, the famous restoration centre based in Florence, Italy..

The Conference was held on 28 - 31 August in Lošinj and involved 50 scientists, archaeologists and restoration experts mainly from north-eastern Italy, Carinthia, Slovenia and Croatia, but also from other prestigious European centres.

The aim of the conference was to discuss the contribution of physics and other sciences in archaeological research and in the preservation of cultural heritage. Considering that the mission of ECSAC is to promote the interaction among the diverse cultures of the peoples from the lands on the Adriatic and Ionian seas, the major themes were related to the history and pre-history of this region, from greek-roman archaeology on the eastern Adriatic coasts to the palaeoanthropology of the Neanderthals of the Vindija caves in Croatia, from the Roman city of Aquileia to the pleistocenic cave of Homo heidelbergensis in the Karst of Visogliano (Trieste), from the Roman ship Julia Felix of the Grado lagoon to the ancient bronze *Apoxyomenos* of the Veli Lošinj waters.

A variety of scientific disciplines provide tools and methods that are crucial to reconstruct humanity's past and to preserve material remains that witness the evolution of human culture. Geology reconstructs the history of terrestrial environments, critical for the evolution and dispersal of humans. Chemistry explains reactions that modify materials left by human activities, including the destructive effects of pollution. Biology has a critical role in archaeology, particularly with the recent progress in the analysis of DNA in ancient organic materials.

Physics has a special role in archaeology and cultural heritage, providing a variety of non-invasive analytical methods that can characterise ancient materials. These methods include new microscopes based on synchrotron radiation, high-energy ions, neutrons, lasers and other radiations or particles that can detect in-situ the structure and composition of art objects and archaeological remains, with resolution at molecular and atomic level. High resolution satellite imagery allows the prospection of archaeological sites over distances of several kilometres. Also the time dimension is critical in archaeology. Physicists have developed clocks based on natural radioactivity that provide chronologic information on time scales from centuries to million years, from the Middle Ages to the Pleistocene. Finally, the analysis of certain isotopes such as nitrogen, calcium and strontium provide information that can be used to reconstruct diets, diseases and migrations of ancient human populations.

The conference has offered the opportunity to promote the debate among scholars and students from natural sciences, humanities and social sciences,

considering the impact of the most recent scientific and technologic developments in applications to art and archaeology.

Acknowledgements

We would like to extend our warmest thanks to the Mayor of Mali Lošinj Gari Cappelli who always helped and sustained the organization of the series of conferences on Science and Culture (see <http://www.ecsac.eu/>) in the beautiful island of Lošinj. This year in particular we would like to thank the Town Council of Veli Losinj who offered the newly refurbished theater, now Kulturni Dom, of Veli Losinj.

This conference wouldn't have been possible without the unbelievable dedication, kindness and patience of Morena Petrich who was responsible for the secretariat and for all the organizative matters.