Technological innovations applied in the underwater survey of the Antikythera shipwreck

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ABSTRACT

The Antikythera Wreck represents a unique example of implementation and development of technological methods and systems aiding archaeological research. Since 1900, when the wreck was discovered, the challenges posed by the underwater environment and the variety of archaeological data hidden in the multifarious artifacts has been yielding great opportunities for technological innovation.

Research on the Antikythera Wreck spreads over a century, covering a wide range of questions. Milestones in this long history are the discovery of the wreck in 1900 and the subsequent salvage operations, the exploration of the site by Ct Cousteau's team in the 1950s and in 1976 in collaboration with Greek archaeologists and finally the most recent research project "Return to Antikythera", carried out since 2012 by the Ephorate of Underwater Antiquities of the Hellenic Ministry of Culture, Education and Religious Affairs, supported by Woods Hole Oceanographic Institution and a number of collaborators and sponsors. Of course, during the intervals of the aforementioned in situ operations, research on the finds of the wreck that were recovered from the site, such as the many statues, marble or bronze, ceramics, parts of the ship, impressive glassware, jewelry, human remains and especially the Antikythera Mechanism, developed immensely.

In this text we present the major technological novelties that had been tested in the underwater study of the Antikythera Wreck, whether they are concerning methods of approaching the site in order to excavate and recover artifacts or documentation and extraction of archaeological information using advanced methodologies and systems.

One can easily consider as most distinguished examples of this technological innovation in underwater survey, the utilization of the diving suit in the 1900s, Cousteau's Self Contained Underwater Breathing Apparatus used during his team expeditions and the Closed Circuit Rebreather, as well as the Atmospheric Diving Suit deployed in the recent project in 2014 on Antikythera.

Similarly, the development of underwater photographic equipment by MIT professor H. Edgerton, who took part in Cousteau's missions on Antikythera, the creation of photo-mosaics and the 3D mapping of the site using Autonomous Underwater Vehicles created during 2014 expedition are mere samples of the technological innovations applied in the study of the site.

Finally, a vast number of specialized pioneering techniques were used in the study of the finds. From the first moment, immediately after the recovery, the importance of the finds dictated the most delicate treatment of the valuable antiquities. For example, the alloys of the bronze statues were chemically examined, in order to plan their conservation techniques. During the long study of the assemblage, more examinations were executed e.g. carbon dating of the ship's hull. Especially in the study of the Antikythera mechanism one can follow the evolution of archaeometric technologies through various implementations trying to analyze both the exterior and the interior of the fragments.

Future withholds more finds - and respectively new questions - to the wreck's researchers. Technology has provided and will continue to provide the means to unravel the mystery and lead us to more stable interpretations concerning this valuable archaeological assemblage.

ISSN: 2241-5599