extraordinary machines and structures in antiquity

S. A. PAIPETIS, Editor
EXTRAORDINARY MACHINES AND STRUCTURES IN ANTIQUITY

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FOREWORD

The present volume consists of the papers presented at an International Symposium, title "Extraordinary Machines and Structures in Antiquity". Ancient Olympia, Greece, 19-24 August 2001. The Symposium was aiming to deal with the important structure of ancient times scattered all over the face of the planet, as well as with machines and devices discovered by the archaeologist or described in sacred books, epic poetry etc. with one common characteristic: Although no engineering science existed at the time of their construction or manufacture, they seem to be based on fairly advanced technology in the modern sense of the word. Since, with some of those objects, this supposed technology appears astonishingly advanced, the next question is whether such technology did indeed exist. To avoid speculation, one must be cautious: The temptation to slip to wild assumptions or to popular fantasy is always present. But, after all, this is what science is about: Its rules, if honestly obeyed, always ensure that one remains on the right track.

A peculiarity of the said Symposium was its strongly interdisciplinary character. Engineers are now using their analytical, numerical and experimental tools in archaeological research. In fact, by applying such powerful tools as modern computer codes, one can simulate many problems of ancient engineering and also perform wide parameter studies, making optimal use of the usually scarce data available. In the present, descriptive as well as more or less heavily technical papers are included, and not all of them can easily be accessible by all participants. However, this is the aim of such a Symposium, e.g. to bring together people of a wide spectrum of specialties, who, by joint efforts, may be able to reconstruct societies and cultures that flourished hundreds or even thousands of years ago and for which human creativity and inventiveness have been the cornerstones of their existence.

A foreword to the present works must certainly include a tribute to the late Andrew D. Dimarogonas, W. Palm Professor of Mechanical Engineering at Washington University, St. Louis, USA, co-chairman of the Symposium, along with Professor Theodosios Tassios of the National Technical University of Athens and the undersigned, and a pioneer in the research on Ancient Engineering, who passed away almost a year before the Symposium. Andrew D. Dimarogonas was a man of genius, and an ardent worker in widely differing areas, always with amazing success: He was a great designer, a philosopher, a politician and a fearless warrior for freedom and human dignity and, finally, an exceptionally kind human being. His achievements in many various fields he has been working, are endless and important, and so was his incredible courage during his last tortured years under his terminal illness. As a token of great appreciation for his great contribution, the present volume is dedicated to his memory with utmost respect.
EGYPTIAN OBELISKS IN ROME

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Abstract
Aim of this work is to present the figure of the obelisk as a divine symbol of the Egyptian era, as well as to define the role of the obelisk within the urban fabric of Renaissance Rome.

The Egyptian obelisks
The obelisk, which name is derived from the Greek word obelos (staff, pole) was present in Ancient Egypt from the IV Dynasty, some 4000 years BC. This extremely unique monument was closely related to the sun cult, since its form was believed to have been derived from the pyramid, which was the very expression of the beam of the rays of the sun that extend downward toward the earth to give it light and warmth. To the Ancient Egyptians, the sun was the most solemn symbol of the divinity, since it was believed to be the bestower of eternal youth and victory over darkness; clearly, then, both the pyramid and the obelisk were the monuments essential to the Egyptian solar religion [1].

The uppermost part of the obelisk, called hen ben by the Egyptians and pyramidion by the Greeks, was the expression of the beam from the rays emanating from the sun. The remaining trunk represented the prolongation down to the point where it touched the earth; this is why the obelisk was worshiped as the symbol of the sun, just as it is represented ideographically as the god Amon Ra, the highest divinity of Thebes; for the very same reason obelisks were placed before the temples of Ra as his sacred symbols, and were situated as well before sepulchres, so that the rays of the sun might accompany the deceased on their journey to the beyond [2].

As a reinforcement of this identification of the obelisk with the sun’s rays, its tip would often be covered with a gilded metal, so that the luminous rays could sparkle from atop the granite monolith.

Following the conquest of Egypt, the Roman Emperors brought some of the obelisks back to Rome as victory trophies, consecrating them to the Sun and inserting them within various monuments of Imperial Rome, like the Circus Maximus and the Tomb of Caesar Augustus (Fig. 1).
papal architect Domenico Fontana decided to place it in the Lateran square where it can be admired to this day as a extraordinary structure arrived in Rome from ancient Egypt (Fig. 4.5).

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