8. THE ANTIKYTHERA MECHANISM

A Mechanical Cosmos and an Eternal Prototype for Modelling and Paradigm Study

1. INTRODUCTION

The Mechanism of Antikythera is the oldest, the only and in fact the very best known example of a complex astronomical device, a dedicated analogue astronomical computer, possibly a planetarium, a device made with gears. We know that this type of devices have been used as educational devices in schools. As we read in Cicero and other ancient texts, great scientists and philosophers developed and used such devices either for education, entertainment, or to impress one’s visitors and guests, including state persons during their state visits. Such mechanisms were also offered to them as gifts (as it happened during the Byzantine times, and not only, when visitors entering the palace in Constantinople were passing through a hall with roaring mechanical lions, and other technological executives).

The Antikythera Mechanism was found in a large shipwreck of the 1st century BC off the coast of the small Greek Island of Antikythera. The vessel was huge, probably 9 to 12 m wide and 60 to 70 m long (private communication with admiral J. Theofanidis, 2006, 2009, who was in charge of diving expeditions there several times). We can guess that it was a commercial ship, or a pirate ship, as the small Island of Antikythera served as a base of pirates for very long and a fortification built by the Persians at the time of the Greco-Persian wars was still in use. Finally, Alexander and the Greeks threw away the Persians out of Greece for good. When the states of Alexander’s successors started to decline and to become weak at Roman times, the island becomes a pirate base, mainly of Crete and Cilicia. When there is lack of strong states, or when people are oppressed, piracy becomes the only road for them to stay free, to survive, and it is accepted initially as a necessity and then as a profession. The straits of Kythera (Cythera) and Antikythera are part of the natural route for navigation that links the Eastern to the Western Mediterranean and are thus of great importance in general, and especially for the ships of pirates. Recent finds prove that between the 4th and 1st Century BC Antikythera became an important town, fortified with walls that surround some 300,000 square metres. They were attacked several times by the Rhodians, who were the traditional important fleet in the Mediterranean, possessing excellent port facilities and navigators. Rhodes, Philip 5th of Macedonia, the Spartans and...
other Greeks, attack the pirates in Antikythera in their effort to eliminate piracy, mainly Cretan pirates, and dominate in Crete. Antikythera gets destroyed between 69–67 BC by the Romans during the so-called Cretan revolution (Tsavaropoulos, 2008). The shipwreck sunk in this island at a very turbulent historic period, when the sea battles between the pirates and the other Greeks (Rhodians, Macedonians and Spartans) and the Romans were at their heights. The content of the ship probably shows that it is a pirate ship full of treasures that come from all the Aegean, including statues especially made for the Romans. It is possible that it is merchandise, pirate lute from the islands and the Ionian coast (Asia Minor, Anatolia) and Roman plunder taken by the pirates. The possibility that the mechanism comes from Rhodes increases from the fact that Rhodes participates in the war against the pirates. Hence the Mechanism might be the planetarium of Cicero described as an educational and astronomical device in the school of his friend Posidonius. Naturally, the construction of the mechanism can have roots in the tradition of Hipparchus, the expertise of Rhodes in metallurgy, the long scientific and mechanical tradition of Syracuse (Archimedes and his successors), and the unique Alexandrian experience in automata and astronomy.

Figure 1. The main gear that moves the Sun and part of the Codex Antikytherensis, the manual of the instrument at the background. Image produced by the author using X-tek System CT data and Dr T. Malbender’s PTM method using his software (HP). Copyright University of Athens 2010.