

The Antikythera time machine

June 11 2012, By Jenny Winder



Part of the Antikythera Mechanism, by Marsyas via Wikimedia Commons

Leonardo da Vinci may have left behind sketches of helicopters, tanks and submarines but it is rare that we find actual artifacts that seem so way ahead of their time. Almost like a science fiction tale of archaeologists finding a wristwatch buried deep in an Egyptian pyramid or motorcar under the foundations of Stonehenge, we do have an example of a scientific computer that was built between 150 and 100 BC. It was so advanced, nothing as complex would be developed again until the 14th century.

The Antikythera mechanism was lost to the world for centuries. The device was salvaged in 1900 from a ship that sank en route to Rome, in the 1st century BC, between Crete and the island of Antikythera in the

Mediterranean. When one of the fragments was discovered to contain a bronze gear wheel, the idea that this was some kind of astronomical clock was dismissed as too fantastic an anachronism. It was not until 1951 that the investigation was picked up by a British science historian Derek J. de Solla Price. So far 82 fragments have been recovered of what is now considered the oldest known astronomical computer.

The device is made of bronze and contains 30 gears though it may have had as many as 72 originally. Each gear was meticulously hand cut with between 15 and 223 triangular teeth, which were the key to discovering the mechanism's various functions. It was based on theories of astronomy and mathematics developed by Greek astronomers who may have drawn from earlier Babylonian astronomical theories and its construction could be attributed to the astronomer Hipparchus or, more likely, Archimedes the famous Greek mathematician, physicist, engineer, inventor and astronomer. Why it was built, or for whom is unknown.



Replica Antikythera Based on the research of Professor Derek de Solla Price, in collaboration with the National Scientific Research Center Demokritos and physicist CH Karakalos. image by Marsyas via Wikimedia Commons

The main front dial showed the 365 day Egyptian year and the Greek signs of the Zodiac and could be adjusted to compensate for the extra quarter day in the solar year. The dial probably bore three hands that marked the date and positions of the Sun and Moon, while a separate mechanism showed the Moon's phases and it likely also displayed the 5 classically known planets, Mercury, Mars, Venus, Jupiter and Saturn.

On the back an upper dial showed 19 year Metonic cycle of Moon phases, the 76 year Callippic cycle (four Metonic cycles) and calculated the 4 year Olympic cycle (four games took place in two and four year cycles) The lower dial showed the 18 year 11 days Saros eclipse cycle and the 54 year 33 day Exeligmos or triple saros cycle. It was driven by a

hand crank now sadly lost. It is small, compact and portable with full instructions engraved upon it in Greek, about 95% of which have now been deciphered.

The fragile pieces that remain have been examined and modeled using high-resolution X-ray tomography and gamma rays and various reconstructions and replicas have been built. It has even had a working model constructed out of Lego. I can't help thinking that Archimedes would have rather liked Lego, if only we could go back in time and give him a set...

Source: [Universe Today](#)

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