

The PALIMPSEST of ARCHIMEDES

In October 1998, a battered manuscript of parchment leaves was sold for \$2 million US, to an anonymous bidder at auction. The 1000 year-old manuscript contains a copy made of several original writings by Archimedes. The story of the 174-page volume's journey from its creation in Constantinople to the auction block at Christie's in New York is very interesting indeed, and illustrates in a remarkable way not only the extraordinary way in which some of the most valuable insights into antiquity have come down to us, but also gives a real insight into the art of the historian. Some of the milestones are as follows:

circa 240-212 B.C. Before his death at the hands of a Roman soldier at Syracuse in 212 B.C., Archimedes writes down some of his most important treatises and equations onto a collection of papyrus scrolls in Greek. These include "*On the Method of Mechanical Theorems*", "*On Floating Bodies*", "*On the Measurement of the Circle*", "*On the Sphere and the Cylinder*", "*On Spiral Lines*", and "*On the Equilibrium of Planes*". For a brief discussion of the contents of these, see the main course notes. It is not known how many copies were originally made of the scrolls of Archimedes.

212 B.C.- A.D. 1000 The original Archimedes scrolls are lost, but fortunately unknown scribes copy them down at least once beforehand onto other papyrus scrolls. Most of these manuscripts end up in the Islamic world, where they are studied intensely by some of the great Arab mathematicians of the Eastern Islamic empire, in centres ranging from Baghdad and Damascus to as far East as modern Pakistan. Translations are made into Arabic, but other copies also exist in the original Greek

circa 1000 A scribe working in Constantinople, capital of the Eastern Roman empire (and modern Istanbul), makes a handwritten copy of the Archimedes treatises, including their accompanying diagrams and calculations, onto parchment. This is then assembled into a book, with a hard cover.

circa 1200 A Christian monk in Constantinople handwrites a collection of prayers in Greek over the Archimedes text, turning it into a new prayer book. The original text is largely removed, either by washing the parchment or by scraping off the text by hand. The book is now a palimpsest, a manuscript with a layer of text written over an earlier text. The previous text is now mostly invisible, except here and there in the book where fragments can be seen. However the text has left chemical traces in the pages of the parchment, which are ingrained under its surface.

circa 1200-1906 For centuries the monk's prayer book is used in religious study, but eventually it is stored within the Mar Saba monastery in Constantinople. There it survives numerous abuses, including the Fourth Crusade in 1204, during which Constantinople is sacked and many of its books burned.

1906 The Danish philologist Johan Ludvig Heiberg discovers the lost manuscript in the library of The Church of the Holy Sepulchre in Istanbul, identifies the underlying layer of text as the work of Archimedes, and, not being able to remove the volume, he photographs every page. Heiberg transcribes what he can make out of the palimpsest's original shadowy bottom layer, using a magnifying glass as his only aid. He publishes his transcription in the West with the accompanying images.

1907-1930 The palimpsest goes missing and is believed to have been stolen. At some point during this period, probably after 1929, a forger paints copies of medieval evangelical portraits in gold leaf onto four pages in the book, presumably in an attempt to increase its value and perhaps unaware of the Archimedes text beneath.

circa 1930 A member of a French family who is an amateur collector of antiques visits Istanbul, and finds and purchases the manuscript from a local dealer. Completely unknown to the outside world, the book is kept in the family's Paris home for the next seven decades. The French family is quite unaware of what lies beneath the surface layers of the pages of the book.

1971 Nigel Wilson, a classics professor at Oxford, examines a leaf from an old manuscript housed in a Cambridge University library. Aware of Heiberg's 1906 discovery, he is able to identify the page as being from the very same missing Archimedes palimpsest which Heiberg had photographed and transcribed 65 years earlier. Wilson surmises that Constantine Tischendorf, a German scholar who described a palimpsest he saw in a Greek monastic library in 1846, must have torn out the page from the original book, and taken it from the library in Istanbul for further examination. Interest in the whereabouts of the book is revived.

1991 The French owners of the Archimedes palimpsest confidentially approach an expert at Christie's in Paris to ask for an appraisal. After the appraiser realises that there is text beneath the surface, he discovers that the manuscript is the lost Archimedes palimpsest (in part by comparing it to Heiberg's photographs). He then values it at between 800,000 and 1.2 million US.

1998-present Not long after its sale for roughly double the appraised amount in the fall of 1998, the manuscript's anonymous billionaire owner loans it to the Walters Art Museum in Baltimore, Maryland, where a team of restorers and scholars are cleaning, imaging, and currently translating the Archimedes palimpsest. The imaging is done using very advanced tools which are capable of highlighting the original writings.