

Science may hold the clue to an ancient riddle

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The combination of an international project to enhance carbon dating from archaeological samples, and the remains of an olive tree, may hold part of the clue to resolving an age-old archaeological controversy stemming from the times of ancient Greece.

This new research could answer the argument amongst experts about the age of Bronze Age cultures in the Aegean region – when a major volcanic eruption occurred. For archaeologists, this eruption is a key marker for assessing the civilisations of ancient Greece, Egypt and Cyprus, but has been the subject of debate for decades.

A team headed by Professor Sturt Manning of Cornell University, who is also visiting professor at Reading University, along with colleagues Christopher Bronk Ramsey and Thomas Higham from Oxford University, have used funding from the Natural Environment Research Council (NERC) to date the period.

Their findings, published in the journal *Science* today, suggest that the dates of the Aegean cultures may be earlier than previously thought.

Archaeologists have previously used similarities amongst artefacts to date the civilisations, but uncertainty about radiocarbon dating was enough to leave experts debating the dates.

Professor Manning's team have created one of largest sets of focused radiocarbon data ever. With analysis spanning a 300 year period, it has been possible to suggest new chronology for the Aegean late Bronze Age

1700-1400 BC.

By analysing 127 samples taken from sites in Santorini, Crete, Rhodes and Turkey, they have pointed to the Aegean culture being older than previously suggested – with links to previous Egyptian civilisations – over whose chronology there is less uncertainty.

In an attempt to address some of the questions over radio carbon dating calibration, such as contamination, location, and atmospheric factors, the team used a sophisticated statistical analysis and far wider sample base. The project also used more than one laboratory to further limit the risks of error in setting the carbon dates.

As an example, the team can define the age of charcoal from a very small segment of an oak chair that was buried for more than 3,600 years, to within a date range of 27 years with 95 per cent confidence.

By coincidence a separate investigation by a Danish and German team, headed by Walter Fredrich from the University of Aarhus, also studied the Aegean period. They radio carbon dated the remains of an olive tree excavated from volcanic soil on the island of Santorini. The results strongly corroborate the British team's work.

The two sets of findings mean a shift of the dates for the Aegean civilisation and its cultures – such as the buried town of Akrotiri on Santorini, the 'Pompeii' of the Aegean – by about 100 years earlier.

Professor Manning said: "Our findings also imply that some previously hypothesized dates and associations for the Santorini eruption around 1650 or 1645 BC are now not so likely, and new efforts need to be directed at the ice-core and tree-ring records if a specific date is to be achieved. Together the two studies offer a very solid basis to a re-dating of this period. This has major ramifications for the archaeology, art-

history and other records for the region.”

“If the findings are accepted, then the earlier chronology would frame a different context, and a longer era, for the very genesis of Western civilisation. The seventeenth century BC may become a very important period,” he added.

Source: Natural Environment Research Council

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