The History of the World Written in Tree-Rings

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Format: In each class we will spend two hours (2 x 45 minute lectures, with Q & A and a mid-point break) discovering the topics listed below. For each session, reading materials will be available via the online Learning Portal. Reading is not required but will help you gain more from the class and improve participation in the Q & A sessions. In case you would like to dig a little deeper there are three recommended books echoing different aspects of the class, and further recommendations can be provided tailored to your areas of interest – please just ask.

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Course Overview:

This course will focus on the scientific field of dendrochronology (from dendron=tree and chronos=time), or tree-ring science, and what it can tell us about the past, present and future. We will explore the fascinating history of how the science was developed by a pioneering astronomer interested in solar cycles; how it works; how it has fed into other disciplines such as radiocarbon dating, art history and climatology, and how its applications have led to transformative discoveries about the past. We will look at what tree-rings can tell us about the rise and fall of civilizations, climate change, migration, trade, settlement history and natural hazards. Dr Pearson will also offer a guided tour of the Laboratory of Tree-Ring Research and Tree-Ring Archive as an added extra to compliment the class sessions.

Short descriptions of the topics covered in each class session:

August 8: The Origins and Methods of ‘Dendrochronolgy’ – an introduction to the science of tree-rings, how it was developed at the University of Arizona, how it works, and how it connects through a diverse range of disciplines to explore many different aspects of our past and future. This session includes footage of from the 1920’s showing the early stages of the science and comes right up to present day with applications in climate change research.

August 15: Tree-Rings, Chronology and Archaeology – how have tree-rings been used to underpin chronologies of human activity in the ancient world? What else can they tell us about about past human behavior? About trade? About the authenticity of musical instruments and

artworks? We tour examples from the Ancient Mediterranean, Northern Europe and Near East, and examine a variety of wooden artifacts from history and pre-history.

August 22: Tree-Rings, Climate and Civilization – we explore how the tree-ring record has been combined with various lines of evidence to reveal the influence of drought and floods on the rise and fall of Empires in Cambodia and Mongolia, the evolution of iconic Ancestral Puebloan sites in the American SW and the collapse of the Classic Mayan civilization.

August 29: Tree-Rings, Radiocarbon, Ice-cores and Volcanoes – We will explore Dr Pearson's latest research findings, traveling back over 3000 years to the Ancient Aegean. We will aim to solve a long running dating mystery over when, exactly, the eruption of Thera (modern day Santorini) took place, and what this means for the interconnected chronologies of Egypt, the Levant and the East Mediterranean. We will examine the diverse ways in which tree-rings have been utilized in this unfolding story, how they have combined and intertwined with the radiocarbon dating method and what the future of these two combined techniques looks like at the University of Arizona.

Reading List:

There is no required reading for course

A selection of articles related to each class will be provided via the online Learning Portal

Book Recommendations:

Baillie, M. G. (2012). *A slice through time: dendrochronology and precision dating.* Routledge.

Trouet, V. (2020). *Tree story: The history of the world written in rings*. JHU Press.

Webb, G. E. (1983). *Tree rings and telescopes. The scientific career of AE Douglass.* Tucson: University of Arizona Press.