

Institute of Continuing Education

Ancient disruptive technologies

Start date	16 October 2020	End date	22 October 2020
Venue Tutor	Virtual Classroom Piers Bursill-Hall	Course code	2021NDR410
Director of Academic Centres		Dr Corinne Boz	
For further information on this course, please contact the Lifelong Learning team		Zara Kuckelhaus, Fleur Kerrecoe shortcourses@ice.cam.ac.uk_or 01223 764637	
To book		See: <u>www.ice.cam.ac.uk</u>	or telephone 01223 746262

Tutor biography

Piers Bursill-Hall was educated in England, France, USA, and Canada; university studies in mathematics and foundations of quantum mechanics (quantum logic) at Cambridge. Subsequently he has had a career in history of mathematics, and history of science, teaching at Cambridge in the Faculty of Mathematics and the Institute of Continuing Education, and elsewhere in Europe and North America, South Korea, India and Bangladesh. His research has concentrated on ancient mathematics (origins of proof; mathematical astronomy), Renaissance mathematical arts and sciences (changing status of mathematics, maths and engineering), and Enlightenment mathematics (foundations and dissemination of higher mathematics in France). Recently he has developed a side interest in early Islam and the origins of Islamic interest in science. He has taught very widely on the last two or three thousand years of history of science, history of mathematics and history of medicine for the Institute for Continuing Education.

Course programme

These interactive online sessions will start at 6.30pm each day for 7 days beginning on Friday 16 October. Each session will last approximately one hour (often with additional time for questions and discussion) and all sessions will be recorded and made available to students shortly after the course has finished. The lectures will be online using a secure version of Zoom, and you will get an email before the lecture with the meeting invitation, URL, and password. If you are new to Zoom, there will be a separate guide for how to set it up.

Lectures will cover:

Friday 6.30pm

Session 1: Mesopotamian hydrology: impressive, but disruptive? Innovative? Hittite metallurgy: disruptive tech or infrastructure?

Saturday 6.30pm

Session 2: Egyptian logistics, and the disruptive power of being organised with tech. Are the pyramids examples of DT, or just a lot of slaves?

Sunday 6.30pm

Session 3: Eupalinos' tunnel, Samos: is this sort of confidence indicative of something? Mining silver near Athens: this *did* change everything.

Monday 6.30pm

Session 4: Boat building; the *trireme* and, of course, Salamis

Tuesday 6.30pm

Session 5: Heron of Alexandria: are a vending machine and an automatic temple door important?

Wednesday 6.30pm

Session 6: Roman pumps: mass production? Mills and waterwheels: a complex society needs a lot of products.

Thursday 6.30pm

Session 7: Anti-Kythera mechanism: reset, reboot, and start again; ancient technology was *nothing* like what we thought it was.

Course syllabus Aims:

This course is not intended as a survey of ancient technology ... but perhaps more as a taster to realise just how much interesting new and innovative technology there was in the ancient world, and how much the innovations of ancient technical abilities changed *their* world. We all hear about the idea of 'disruptive technology' today, and we know lots of examples of what might be disruptive tech today – but is this just modernist hype, or is there a genuine category of technological innovation that exists through the ages and is 'disruptive'? We will be coming back to this idea – what has been disruptive in the past, and how and why. Looking at examples that are *not* from our modern context may help us understand a bit more deeply what we really mean by disruptive tech.

Content:

The course content is given in the lecture titles; we will look at different and un-connected examples of technological innovation in the ancient world, with a view to understanding in what ways they might be disruptive (or if the technology really is disruptive, or if the disruption has a different origin than the technological change). The idea behind these lectures is not a narrative history of ancient technology but some very different examples, and a discussion of what these different examples tell us about ancient tech, and its social context and consequences.

Presentation of the course:

These lectures will be online, with a certain amount of illustrations, and will be lectures with ample time for discussion.

As a result of the course, within the constraints of the time available, students should be able to:

- Appreciate the diversity of ancient technology, the richness of the technology of ancient societies and how they, like modern societies, were driven and influenced by their technology
- (ii) Understand some of the complexity in the ideas of 'disruption' in what is often just the hype of modern rhetoric of 'disruptive tech', sorting wheat from chaff in that sort of hype
- (iii) Get a sense of the difficulty and the richness in non-literary sources from the past: most of what we know about past technology is not derived from written sources, and that inevitably changes what sorts of things we can know about past technology and its context, and influences.

Reading and resources list

Listed below are texts that might be of interest should you wish to supplement your learning on the course. Many can be found 2nd hand.

Please note:

There is an awful lot of misleading stuff written about ancient Egyptian technology, particularly about the Pyramids. Please be careful about literature on ancient tech because there is so much complete junk written ... aliens who made the pyramids (obviously), the hidden magical sciences the Egyptians had, how there are vast hidden or lost civilisations in the past that had vast technology that was subsequently lost, and so on. It is fertile terrain for New Age fantasists, mystery cult

enthusiasts, con-artists, charlatans, conspiracy theorists, QAnon, and worse. The Internet is also full of the same rubbish, possibly even weirder and more idiotic. Please try to stay clear of this nonsense.

What follow are mostly pretty dry and straightforward books ... not exactly thrilling or embedded in deep historical analysis. But if you want to follow up anything from these lectures, they will at least give you a decent start. There isn't a reading list for this course, but these are decent sources for further reading on ancient technology.

Author	Title	Publisher and date
Landels, JG	Engineering in the Ancient World	Constable, 2000. A dated book with an update; sound and sensible – a good start.
Hill, Donald	A history of engineering in Classical and Medieval times	Routledge 1996; Standard, fairly elementary and straightforward
Oleson, JP (ed)	The Oxford handbook of Engineering and Technology of the Classical World	Oxford 2009; more like an encyclopaedia, but up to date and sound. Very expensive.
Hodges, H	Technology in the Ancient World	Allen Lane & subsequent eds, 1970; very dated and limited, but not at all bad really
Mayor, Adrienne	Gods and Robots: Myths, Machines and Ancient Dreams of Technology	Princeton UP 2018: thoroughly odd and often only tangentially about ancient tech, but full of interesting ideas and insights
Irby, GL (ed)	A companion to science, technology and medicine in Ancient Greece and Rome (2 vol set)	Blackwell, 2019; goes well beyond tech, but covers a lot of relevant material and is general sound and up to date.
Baker, JL	Technology of the ancient near east: from the Neolithic to the early Roman period	Routledge 2018; overpriced and goes well beyond this course, but sound and up to date and straightforward

Nicholson, P (ed)	Ancient Egyptian materials and technology	CUP 2009; scholarly, overpriced and fascinating if you like those sorts of details
Cuomo, S	Technology and culture in Greek and Roman Antiquity	CUP 2007; sometimes fairly lightweight and ideologically orientated, but also up to date and full of useful information
Sherwood, AN (ed)	Greek and Roman Technology: a sourcebook of translated Greek and Roman texts	Routledge, 2019; does what it says on the tin, but is expensive
Jones, Alexander	A Portable Cosmos: revealing the Antikythera mechanism, scientific wonder of the ancient world	OUP 2017; the most important object of ancient tech, by the most qualified author
Shaw, Ian	Ancient Egyptian Technology and Innovation	Duckworth, 2012; thoroughly interesting on Egyptian tech and its culture.
Basalla, G	The evolution of technology	CUP 2010; not a lot is relevant to this course, but his thesis is very relevant.

Additional information

Venue

Online using 'zoom'. A link to the course will be made available via email, and any queries should be emailed to <u>shortcourses@ice.cam.ac.uk</u>.

Note Students of the Institute of Continuing Education are entitled to 20% discount on books published by Cambridge University Press (CUP) which are purchased at the Press bookshop, 1 Trinity Street, Cambridge (Mon-Sat 9am – 5:30pm, Sun 11am – 5pm). A letter or email confirming acceptance on to a current Institute course should be taken as evidence of enrolment.

Information correct as of: 13 October 2020