

Thursday, October 9, 2014

4:00pm–5:00pm

Chipman Room 6-104

Massachusetts Institute of Technology

Refreshments will be served.

THE SCIENCE OF EARLY PYROTECHNOLOGY

Dr. Thilo Rehren

Professor for Archaeological Materials and Technologies

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University College London

Director, UCL Qatar

The aim of the presentation is to show how man-made artifact materials, particularly metals and ceramics/glass, work together as pyrotechnologic engineering systems with mutual dependencies and interactions, at the same time that they function within specific social systems. Study of these systems can reveal processes (thought processes, engineering processes) that have led to different ways of using and designing materials that are culturally significant but not always discernible upon investigation of finished objects. I want not only to highlight the enduring importance of science and engineering in human development, but also to demonstrate how, as an interpreter of the products of pyrotechnologies – through the materials engineering sciences – I can make the study of material culture attractive and meaningful to engineering students, and the results of such study meaningful for the archaeological/anthropological interpretation of the past. I have chosen two case studies from my own research that illustrate these issues, perspectives, and investigative methods: the production and refining of silver in South America, and the production of crucible steel in Central and SE Asia. I will also refer briefly to current work I direct at the Terracotta Army, Xi'an, China, as an example of work done entirely 'on site'.

Dr. Thilo Rehren has carried out research in the field of archaeological materials and technologies for over two decades, first at the Institut für Archäometallurgie in Bochum, at the Institute of Archaeology, University College London, from 1990 to 2011, and since 2011 as director of the UCL Qatar campus. His research interests focus on understanding and reconstructing the technological and social processes related to the manufacture of metals, glass, glazes and other ceramics within given cultural settings. Rather than focus primarily on the study of finished artifacts, he has preferred to interpret chemical and microstructural data derived from 'technical finds' retrieved archaeologically, such as raw materials, intermediate and semi-finished artifacts, and waste products, in conjunction with archaeological and historical sources. Several current research projects include study of a workshop complex that produced bronze, glass, and faience at an Egyptian New Kingdom site on the Nile Delta; early Islamic urban industries focusing on crucible steel smelting, glass production, and glazed pottery; and African high temperature technologies involved in iron and copper production.