

# Be-Archaeo First Summer School

CLE Campus, University of Turin, green room

Lungo Dora Siena 100, Torino 10153

## program

### 19 June 2023

Chair: Eliano Diana

9.00 prof. **Marcello Baricco**, University of Turin  
Opening

9.15 prof. **Simon Kaner**, University of East Anglia,  
*Protohistoric Archaeology in Japan*

11.00 Coffee Break

11.30 prof. **Akira Seike**, University of Okayama,  
*The Changes of Chiefly Inheritance System in the Kofun Period*

13.00 - 14.00 Lunch

Chair: Monica Gulmini

14.00 dr. **Beatrice Demarchi**, University of Torino,  
*Biomolecular Archaeology: the method, recent advances and practical applications*

15.45 Coffee Break

16.15 prof. **Takehiko Matsugi**, National Museum of Japanese History,  
*Exploring the cultural dynamics of the past: Design and identity of iron weapons in the Kofun period Japan*

### 20 June 2023

Chair: Diego Elia

9.00 prof. dr. **Thomas Knopf**, University of Tübingen,  
*Burial Mounds in Central Europe and in Japan: Features and Approaches*

10.45 Coffee Break

11.15 dr. **Daniele Petrella**, I.R.I.A.E., Napoli,  
*Archaeological investigation: from the academy to the private activity*

13.00 - 14.00 Lunch

Chair: Naoko Matsumoto

14.00 prof. **Minoru Yoneda**, University of Tokyo  
*Ancient life unveiled: the contribution of isotope analysis*

15.45 Coffee Break

16.15 dr. **Cristiano Nicosia**, University of Padova,  
*Soil science and Archaeology*

### 21 June 2023

Chair: Alessandro Lo Giudice

9.00 prof. **Francesco Grazzi**, C.N.R. and University of Firenze,  
*The ancient arms and armour production technologies in Japan revealed through neutron imaging and neutron diffraction*

10.45 Coffee Break

11.15 prof. **Vincenzo Lombardo**, University of Torino,  
*Digital archives in Archaeology: from tools to methodology*

13.00 - 14.00 Lunch

14.00 Workshop

17.00 Concluding remarks.

## Abstracts

**Prof. Simon Kaner**, Sainsbury Institute for the Study of Japanese Arts and Cultures, University of East Anglia, S.Kaner@uea.ac.uk

### Protohistoric Archaeology in Japan

The archaeology of the protohistoric period in Japan – a time when the only written records we have about what was happening in the archipelago were either from later periods or from outside Japan, has a long and distinguished history. A key figure in the early study of this period was William Gowland (1842-1922), who investigated some 400 burial mounds while working at the Osaka Mint between 1872 and 1888. His collection of kofun period material, unparalleled outside Japan, is on display at the British Museum. This paper will review Gowland's contribution, and those of his contemporaries W.G. Aston (1841-1911, who translated the *Nihongi*) and the Genoese Eduardo Chiossone (1833-1898) and place them in the history of the subsequent study of this fascinating period. We will conclude with a consideration of what these characters might have thought of the Mozu and Furuichi Tomb Groups being inscribed as UNESCO World Heritage in 2019.

**Prof. Akira Seike**, University of Okayama, aseike@okayama-u.ac.jp

### The Changes of Chiefly Inheritance System in the Kofun Period

The transition in chiefly inheritance during the Kofun Period derives from military tensions throughout East Asia, in particular, China and the Korean Peninsula. Patrilineal inheritance was promoted by the elite chiefly class of the 5th century in response to strong outside factors. In addition, this transition was not a natural phenomenon that occurred spontaneously in each region, but rather a political strategy carried out by the central government of the Middle Kofun Period that was rapidly and widely enacted across the Japanese archipelago. Located on the edge of China's advanced sphere of influence, Japan's process of state formation was extremely sensitive to changes in the international environment.

**Dr. Beatrice Demarchi**, University of Torino,

### Biomolecular Archaeology: Recent Advances and Practical Applications

Biomolecular archaeology has emerged as a whole new field of research, which can be split into different sub-disciplines (palaeogenomics, palaeoproteomics, palaeolipidomics, stable isotope geochemistry) intersecting evolutionary biology, anthropology, archaeology, cultural heritage and conservation sciences. These methodological advances have allowed us to reconstruct the evolution of organisms, migration of people and animals, subsistence practices, diet and cuisine, health and disease. In this lecture I will give a brief historical introduction to biomolecular archaeology and then focus more specifically on the study of ancient proteins using mass spectrometry ("palaeoproteomics"). I will explore the potential of palaeoproteomics by presenting a range of case studies, with a broad thematic focus on prehistory and on past human-environment interactions. A second theme will be the contribution of ancient protein studies towards reconstructing objects biographies, particularly with regard to human choices of raw materials for crafting personal ornaments.

**Prof. Dr. Thomas Knopf**, University of Tuebingen/Museum of the Celts, Hochdorf, thomas.knopf@uni-tuebingen.de

### Burial Mounds in Central Europe and in Japan: Features and Approaches

In both parts of the world, Central Europe and Japan, burial mounds form an essential part of the archaeological heritage. Although differing in form, size and chronology there are similarities regarding for example their function as monuments in the landscape. In my lecture I want to give an overview of burial mound building in Central Europe, especially in the Celtic Iron Age (800-400 BC) and point out some archaeological finds and features. A special emphasis is put on more recent approaches of landscape archaeology and burial mounds. I will then try to identify approaches to burial mounds in Japanese archaeology and describe in a comparative way differences, resemblances and potentials between Europe and Japan.



**Dr. Daniele Petrella**, International Research Institute for Archaeology and Ethnology (I.R.I.A.E.) Napoli, daniele.petrella@iriae.com

### **Archaeological investigation: from the academy to the private activity**

Archaeologist work has never been easy. Like any science, archaeological research has always had a decisive framework in the academic field, but the difficulties inherent in this world, such as the difficulty of access or the scarce funds dedicated to it, makes it an increasingly rare activity and which, necessarily, excludes talented researchers and professionals.

For some time, to solve this problem, in Europe (as in other parts of the world) numerous private Archaeological Research Institutes have been springing up, often as Non Profit, which allow the realization of archaeological research also outside the academia, while maintaining its accuracy and scientific rigor.

Through the experience of IRIAE (the first example of its kind in Italy), we will try to understand how such a project can be realized.

**Prof. Minoru Yoneda**, University of Tokyo, myoneda@k.u-tokyo.ac.jp

### **Ancient Life Unveiled: the Contribution of Isotope Analysis**

Isotope analyses are used for many kinds of purposes, such as diet, migration and age determination, in archaeology today. These can produce "scientific data" for archaeologists but the interpretation of data should be done in the light of history and environment. I will share my experience in some interdisciplinary projects.

**Dr. Cristiano Nicosia**, University of Padova, cristiano.nicosia@unipd.it

### **Soil Science and Archaeology**

Soils form in conditions of prolonged stability of the surface, i.e. when sedimentation and erosion are inactive. They are the result of the post-depositional transformation of substrate, either rock or soft sediments, brought about by a series of "soil forming factors". These include: climate, topography, organisms (including humans), time

(the duration of soil formation), and the parent material. In an archaeological perspective, all these soil forming factors represent glimpses of the past environment that can therefore be exploited to reconstruct key aspects of the landscape, of the paleo-environment, and of past human practices. Moreover, specific soil forming processes such as bioturbation, oxido-reduction, decalcification, etc. have a prominent role in transforming archaeological deposits. An archaeopedological approach can decipher all these transformations, allowing us to extract from the deposits the traces of human activities that are concealed in them. Lastly, several soil science analytical techniques, such as for example soil micromorphology (the study of soils and sediments under the microscope in thin section), or standard soil analyses (granulometry, organic carbon, soil phosphorus) are now routinely employed in archaeological research.

**Dr. Prof. Francesco Grazzi**, CNR-IFAC, Sesto Fiorentino (FI), Italy, INFN-CHNet, Sesto Fiorentino (FI), Italy

### **The ancient arms and armour production technologies in Japan revealed through neutron imaging and neutron diffraction**

The history of metallurgy represented for several centuries the history of the main technological features reached by civilizations. Among metal objects production, arms and armour are some of the most interesting objects in archaeometallurgy and historical metallurgy because they were manufactured, over the ages, using the highest quality materials and the most advanced technology and skill. The compositional and microstructural characterization of these artifacts can hence allow us to learn about the technological skills reached by different civilizations. The use of non-invasive techniques allows for the study of museum objects in excellent conservation conditions, thus giving a clear view of their characteristics. Neutron imaging and neutron diffraction are, to the author's knowledge, among the best methods to quantify phase composition and microstructure, study morphology, identifying non-metallic inclusions, cracks and defects. Thanks to the use of advanced techniques such as energy selective imaging, the microstructural features and the distribution of the different phases in metal complex artifacts can be determined, so gaining important information about composition and



manufacturing treatments (both thermal and mechanical). Following this path, we have performed a number of experiments using neutron imaging and neutron diffraction to reveal the characteristics of many artifacts from different civilizations, of which the production procedures are not yet fully clear. Among them, a special place takes the analysis of Japanese steel artifacts, which were produced in a very peculiar way and exhibit interesting specific characteristics related to the skill of the craftsmen. The results obtained and presented in this work, allow us to identify unique features that can shed new light on the manufacturing methods, thus increasing the level of our knowledge about the technological skills of the historical Japanese metal technology.

**prof. Vincenzo Lombardo**, University of Torino, [vincenzo.lombardo@unito.it](mailto:vincenzo.lombardo@unito.it)

### **Digital archives in Archaeology: from tools to methodology**

Nowadays, the documentation of an archaeological excavation, with its recordings of stratigraphic units and archaeological findings, is addressed through database and content management systems.

The design of the database depends on a machine-readable description of the knowledge underlying the archaeological and the archaeometrical methods; the content management systems implements a documentation workflow.

The digital archive, consisting of the records filled by the researchers after excavations and scientific analyses, becomes a living entity for the production of knowledge about the archaeological site.

The lecture introduces the basic methods as well as practical examples and exercises from the case study of the BeArchaeo project.