

BEYOND MATERIALITY

REFRAMING ARCHAEOLOGY THROUGH
SENSORIALITY, DIGITAL METHODS
AND NEUROSCIENCES



INTERNATIONAL SYMPOSIUM
5-7 June 2025

Istituto Svedese di Studi Classici a Roma, via Omero 14

THURSDAY 5 JUNE 2025

10.00 Coffee and Mingling

10.30 Opening and welcome:

- Ulf R. Hansson, Director of the Swedish Institute of Classical Studies in Rome
- Giacomo Landeschi (Lund University)

SESSION 1- SENSORY ARCHAEOLOGIES. Chair: Eleanor Betts (Open University)

11.00 **Anna Collar** (University of Southampton)
Spectres of the Past: Haunting and Uncertainty

11.30 **Phil Perkins** (Open University)
Exploring the archaeological record and landscape affordances at Potentino in southern Tuscany

12.00 **Liv Nilsson Stultz** (Linnaeus University)
A Sensory Archaeology of Death: examples from the Stone Age

12.30 **Riccardo Olivito** (IMT School for Advanced Studies Lucca)
Nunc Roma est, nuper magna taberna fuit - Commercial Atmosphere and the Occupation of Public Spaces in the Roman World

13.00 Lunch break

SESSION 2- SENSES AND THE DIGITAL. Chair: Giacomo Landeschi (Lund University)

14.30 **Demo on VR Eye-Tracking and the study of Pompeian house**

15.30 Coffee break

16.00 **Pamela Jordan** (University of Amsterdam)
Did you hear that? Comparability in sonic perception of the past

16.30 **Mark Gillings** (University of Bristol)
Prehistoric Landscapes as engines of fascination and wonder: developing an archaeology of actualisation, affordance and affect.

17.00 **Sara Mura** (Kiel University)
From illustration to interpretation: Rethinking digital visual tools' affordance in sensory-based archaeological practice

17.30 **Roundtable (until 18.30)**

20.00 Social event



FRIDAY 6 JUNE 2025

SESSION 3- ILLUMINATION, MOBILITY AND THE SENSE OF SPACE. Chair: Danilo Campanaro (Lund University)

- 09.30** **Ruth Bielfeldt** (LMU)
Roman Light Art and the Sense of Space
- 10.00** **Stuart Dunn** (King's College London)
Blurred sites: towards a dynamic archaeology of routeways
- 10.30** Coffee break
- 11.00** **Holley Moyes** (UC Merced) & **Graham Goodwin** (UC Merced)
A Naturalized Phenomenology: Dealing with Subjectivity in Archaeacoustics
- 11.30** **Monica Degen** (Brunel University of London)
Researching Urban Aesthetics: the entanglements between embodiments and materialities in cities
- 12.00** **Eleftheria Paliou** (University of Cologne)
Enhancing computational models of forager mobility and behaviour in arid ecosystems using empirical data on San hunter-gatherer movements and decision-making
- 12.30** **Questions & Answers**
- 13.00** Lunch break

SESSION 4- NEUROSCIENCES AND ARCHAEOLOGY. Chair: Cristina Corsi (University of Cassino - EU+)

- 14.30** **Maurizio Forte** (Duke University)
Neuroartifacts in between AI and Brain
- 15.00** **Lambros Malafouris** (University of Oxford)
Archaeology and the lived peripersonal space
- 15.30** Coffee break
- 16.00** **Charles Spence** (University of Oxford)
Archaeology and the senses: A multisensory perspective
- 16.30** **Mathilde Salagnon** (University of Geneva)
Neuroarchaeological perspectives on symbolic behavior and human cognitive evolution
- 17.00** **Luis M. Martinez** (Instituto de Neurociencias de Alicante) & **Felipe Criado-Boado** (INCIPIT, CSIC)
An approach to Material Minds combining Archaeology and Neurosciences
- 17.30** **Final roundtable (until 18.30)**
- 19.00** Wine reception / social event



SATURDAY 7 JUNE 2025

09.30 Field excursion to Ostia Antica (until 14.00)



Humanities Lab
JOINT FACULTIES OF HUMANITIES
AND THEOLOGY



SVENSKA INSTITUTET I ROM
ISTITUTO SVEDESE DI STUDI CLASSICI A ROMA



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THURSDAY 5 JUNE 2025

SESSION 1- SENSORY ARCHAEOLOGIES.

Chair: Eleanor Betts (Open University)

ANNA COLLAR (UNIVERSITY OF SOUTHAMPTON)

SPECTRES OF THE PAST: HAUNTING AND UNCERTAINTY

Everywhere, we live alongside the material remains of monuments, but although the terms 'reuse' and 'afterlife' are commonly-used to describe what happens with or to monuments beyond the time of their primary use, these terms carry serious conceptual issues: implying both passivity in monuments' roles in later periods, and imposing hierarchies of significance on our interpretation of them. The Avebury landscape as a 'heritage asset' is a case in point: the monument has been 'preserved' as a composite 'mythical moment' of Neolithic and Bronze Age—and the significance of the monuments in later periods is ignored (Hughes 2021: 9). Landscapes are inhabited—the material remains of the past play an active, agential, and sensorial role in structuring and influencing later societies (Barrett 1999: 258). Ruination and abandonment may lead to memories and meanings associated with monuments being forgotten or disrupted, but this does not remove the agency of these places. Instead, ruination makes monuments sites for haunting: that is, places that may be poorly understood and which may affect the present in unexpected ways (Derrida 1994). Such places of uncertainty are places where 'spirits thrive [...] in conditions of doubt rather than belief.' (Bubandt 2017: 125). Haunting radically alters our conception of how earlier monuments impact later peoples' lives, experiences, and cosmologies by acknowledging the agency of monuments as loci of uncertainty. I suggest that the monuments at Avebury became such places of doubt in the Iron Age-Roman period: spiritually dangerous, and in need of continuing boundary-work. Being aware of the spectres of the past in a Derridean sense enables us to glimpse what has been forgotten.

PHIL PERKINS (OPEN UNIVERSITY)

EXPLORING THE ARCHAEOLOGICAL RECORD AND LANDSCAPE AFFORDANCES AT POTENTINO IN SOUTHERN TUSCANY

*The Potentino Exploration Project is investigating the archaeology and landscape of a rural area on the western slopes of Monte Amiata. Through field survey and archival research we are locating and mapping places in the natural environment where materials deriving from the archaeological record are encountered by humans. Through phenomenological survey we are also recording sensory affordances in the landscape, including at places where archaeology is encountered. Our data is incorporated in a GIS to map and analyse the distribution of both the archaeological materials and the landscape and natural environment affordances. This involves the combination of sensory data, geographic information, flora and fauna observation with the historical and archaeological record. A case study will explore presence of cicadas (*C. Orni*) in the past soundscapes of the archaeological landscape.*

LIV NILSSON STULTZ (LINNÆUS UNIVERSITY)

A SENSORY ARCHAEOLOGY OF DEATH: EXAMPLES FROM THE STONE AGE

The traditional archaeology of death has often read burials as signs to decode in order to reconstruct past cultures and societies. This archaeology has been sophisticated in many ways,

but it has failed to capture the lived experience in the past and has remained detached from the human scale. Through a few selected case studies of Mesolithic burials – from Latvia, Scandinavia, and Portugal, this paper shows how careful empirical analysis of the handling of the dead body combined with a focus on the lived experience of practice and the sensory dimension of death rituals, allow us to not only paint a more vivid picture of the deep past, but also explore meaningful dimensions of past lives beyond the burial context and start exploring how rituals would have been entangled with other practices, and how the senses might have constituted a conduit between the ritualized and non-ritualized in this hunter-fisher-gatherer world.

RICCARDO OLIVITO (IMT SCHOOL FOR ADVANCED STUDIES LUCCA)

NUNC ROMA EST, NUPER MAGNA TABERNA FUIT - COMMERCIAL ATMOSPHERE AND THE OCCUPATION OF PUBLIC SPACES IN THE ROMAN WORLD

This paper explores the dynamics of occasional trade in ancient Rome, with a focus on the temporary occupation of public spaces—such as streets and squares—by vendors and pedlars. While fixed commercial establishments like tabernae have been extensively studied, more informal and mobile forms of trade remain underexplored. The study investigates the legal and social frameworks that enabled such uses of public areas, and considers how these practices reshaped the urban environment during market days, fairs, and in everyday life. Special attention is given to shifting perceptions of public space, including its sensory dimensions—sounds, smells, visual stimuli, and spatial dynamics—that shaped the lived experience of these transient marketplaces. Drawing on literary, epigraphic, and iconographic evidence, the paper offers a multifaceted analysis of this ephemeral yet significant phenomenon. Ultimately, it examines Roman street commerce through legal, archaeological, perceptual, and sensorial perspectives.

SESSION 2- SENSES AND THE DIGITAL

Chair: Giacomo Landeschi (Lund University)

PAMELA JORDAN (UNIVERSITY OF AMSTERDAM)

DID YOU HEAR THAT? COMPARABILITY IN SONIC PERCEPTION OF THE PAST

Archaeological research has yet to escape the project of gathering insights about the past through abstracted datasets. Those who explore sensory modalities of investigation have been threatening to upend this sequence by allowing what had been seen as individual bias—the relational, the affective—a primary seat at the investigatory table. The rapid development of specialized digital tools has simultaneously expanded this table in considering the affordances of past spatial configurations. Yet the output is often quantitative datasets: digital distillations of complex, relationally created spaces, based on limits and standards implicit in the tools themselves. Drawing on psychoacoustic field recording and analysis in the ancient Greek sanctuary on Mt. Lykaion, this presentation will propose the ‘neutral’ standards of digital tools as a form of contemporary bias that must be a part of open analytic inquiry. The discussion will explore affordance comparability in collaboration with sound-focused digital tools and the contemporary interpretation required to decode them.

MARK GILLINGS (UNIVERSITY OF BRISTOL)

PREHISTORIC LANDSCAPES AS ENGINES OF FASCINATION AND WONDER: DEVELOPING AN ARCHAEOLOGY OF ACTUALISATION, AFFORDANCE AND AFFECT.

This paper seeks to further develop a landscape archaeology of affect and affordance; an archaeology of wonder and enchantment. Its goal is to look at how we can utilise computational approaches to move beyond the modelling and representation of sensory modalities (either in isolation or combination) to focus instead on the upshot of those moments of sensory engagement. In short, the emphasis is on mapping/exploring/appreciating what such sensory engagements may have done in the past, and actually do in the present. Drawing upon a range of inspirations – including Deleuzian notions of maps (as experimentations) and tracings (as copyings), enactivist approaches to cognition, insights from process philosophy and the ontological turn – I will seek to develop ways in which we can actively evoke, capture and engage with affect. This will be illustrated through vignettes drawn from my on-going research on prehistoric monumentality. First, I will look first at how we can productively map specific relational capacities (an attempt to realise Masumi’s notion of a cartography of potential). Second, I will look at how we can directly affect, through the creation of new analogue technologies that encourage direct physical engagement with the past – in this case a device for allowing megaliths to tell their own stories.

SARA MURA (KIEL UNIVERSITY)

FROM ILLUSTRATION TO INTERPRETATION: RETHINKING DIGITAL VISUAL TOOLS’ AFFORDANCE IN SENSORY-BASED ARCHAEOLOGICAL PRACTICE

Visual digital media have become integral to modelling and communicating past experiences in sensory-focused archaeological research. While often positioned as neutral extensions of perception, these tools are deeply intertwined in the researcher’s own interpretive encounter with archaeological remains. While the sensory turn in archaeology seeks to reintroduce embodiment and affect, it has frequently relied on digital visualisation to stabilise such experiences—perpetuating the same epistemological detachment critiqued in traditional

approaches. As the discipline continues to evolve, a critical methodology is needed to assess the affordance of these digital tools in shaping archaeological understanding. Focusing on Punic ritual architecture, this paper explores how visual media not only simulate the past but actively structure its interpretation. Through a combination of morphological study, spatial analysis, and 3D modelling, the discussion addresses how reconstructions guide interpretive outcomes and highlights the importance of acknowledging the subjective decisions embedded in their production.

FRIDAY 6 JUNE 2025

SESSION 3- ILLUMINATION, MOBILITY AND THE SENSE OF SPACE

Chair: Danilo Campanaro (Lund University)

RUTH BIELFELDT (LMU)

ROMAN LIGHT ART AND THE SENSE OF SPACE

Roman oil lamps carry and control fire. Through their sculpted geometries and reflective material surfaces, they produce visible light. As dispensers of light and creators of cast shadows, lamps transcend their material boundedness and generate aesthetic events in space. In enabling performative viewing, the lamps themselves turn into objects of visual and social intelligence.

In the first part of my paper, I will present the results of the project "New Light from Pompeii/Neues Licht aus Pompeji" (LMU Munich), with a focus on the experimental archaeological research we conducted. In the second part, I will reflect on the opportunities and limitations of replicating and understanding ancient light perception through embodied virtual reality.

STUART DUNN (KING'S COLLEGE LONDON)

BLURRED SITES: TOWARDS A DYNAMIC ARCHAEOLOGY OF ROUTEWAYS

The very concept of the archaeological "site" conveys assumptions of stasis and immobility; an earth-bound museum of motionless features and artefacts awaiting excavation. Pathways which have been in use for centuries or even millennia however challenge these assumptions. Ancient trackways, the subject of recent work by writers such as Robert Macfarlane and historians and archaeologists such as Paul Readman and Jim Leary, represent interaction between immaterial traditions and folklore and the physical landscape. In a paper last year, I examined the idea of the "blurred site" in relation to ancient pathways. Using historic coffin roads as a case study, this presentation will develop the idea of the blurred site as a dynamic and lateral scene of activity over long periods of time, rather than a lifeless "site" devoid of motion or interaction.

HOLLEY MOYES (UC MERCED) & GRAHAM GOODWIN (UC MERCED)

A NATURALIZED PHENOMENOLOGY: DEALING WITH SUBJECTIVITY IN ARCHAEOACOUSTICS

The application of phenomenological practice in archaeology has been heavily criticized, and as its detractors note, fraught by subjectivity. However, its proponents counter that phenomenological observations are valid based on universal broadly shared physical characteristics. The dirty little secret is that all archaeologists to some degree rely on their own experience and observations about a space to guide their research, though this typically remains unacknowledged. We propose that a naturalized phenomenological approach that employs replicable and quantifiable data mitigates both stances via its ability to validate or invalidate subjective observations. In this paper, we will present a case study of archaeoacoustics from the cave located at the Las Cuevas site in Belize, Central America to demonstrate this methodological approach.

MONICA DEGEN (BRUNEL UNIVERSITY OF LONDON)

RESEARCHING URBAN AESTHETICS: THE ENTANGLEMENTS BETWEEN EMBODIMENTS AND MATERIALITIES IN CITIES

In this talk I will discuss why it is important to research urban aesthetics: the embodied sensations evoked by places and the sensory ideologies shaping them. By doing so both in contemporary and ancient cities I argue that urban aesthetics stratify and mediate urban power relations that influence both the actual experience, social life and imaginaries of cities. I will also discuss some of the methods we have used in different projects to research the entanglements between embodied sensations, uses of place and urban materialities.

ELEFThERIA PALIOU (UNIVERSITY OF COLOGNE)

ENHANCING COMPUTATIONAL MODELS OF FORAGER MOBILITY AND BEHAVIOUR IN ARID ECOSYSTEMS USING EMPIRICAL DATA ON SAN HUNTER-GATHERER MOVEMENTS AND DECISION-MAKING

Computational models of hunter-gatherer mobility and behaviour are frequently used in archaeology to shed light onto the subsistence strategies, survival resilience and social development of early human societies. Integral to these models are foraging practices which were shaped by complex socio-ecological dynamics. Modelling such practices poses, however, significant challenges for archaeologists, since they are little visible in the archaeological record. Despite numerous ethno-archaeological studies, several aspects of human-environment and human-animal interactions in the context of traditional hunting practices (i.e. hunting on foot, with a bow and arrow as opposed to firearms, and without orientation instruments) are still poorly understood. This paper discusses how quantitative and qualitative datasets on traditional hunting practices, obtained in the framework of an interdisciplinary and collaborative project that brings together archaeologists and indigenous hunting experts from the Ju/'hoansi and Hai//kom San communities in Namibia, can inform theoretical and computational models of hunter behaviour in arid ecosystems.

SESSION 4- NEUROSCIENCES AND ARCHAEOLOGY. CHAIR: CRISTINA CORSI (UNIVERSITY OF CASSINO - EUT+)

MAURIZIO FORTE (DUKE UNIVERSITY)

NEUROARTIFACTS IN BETWEEN AI AND BRAIN

The intersection between Artificial Intelligence (AI) and cognitive neuroscience offers unprecedented insights into the perceptual understanding of archaeological objects and sites, generating new interpretive frameworks known as "neuroartifacts." This concept encapsulates the integration of neuroaesthetic principles and machine learning techniques to explore how the human brain cognitively engages with archaeological materials, revealing underlying perceptual patterns, emotional resonance, and symbolic meanings. By leveraging advanced AI models such as neural networks and saliency prediction tools, researchers can simulate and visualize attention mechanisms and cognitive biases inherent in human perception, thereby creating dynamic, non-Euclidean representations that more closely mirror human experience and memory formation. This approach challenges conventional, geometry-driven documentation in archaeology, advocating instead for representations enriched by human cognition and sensory experiences. Through empirical neuroimaging experiments and computational modeling, neuroartifacts thus foster a deeper understanding of past human interactions, enhancing both scholarly interpretations and social engagement with material culture.

LAMBROS MALAFOURIS (UNIVERSITY OF OXFORD)

ARCHAEOLOGY AND THE LIVED PERIPERSONAL SPACE

Many of the issues we have been centrally concerned in the archaeology of mind depend on our understanding of the self and its boundaries. That is, they depend on our understanding of the processes by which self-boundaries become constituted and transformed. One way to map those boundaries is by adopting from neuroscience the established spatial coordinates of personal, peripersonal, and extrapersonal space. Neurophysiological studies with humans and animals provide evidence that the use of objects and tools exert strong plastic effects on the neuronal topography of those spaces. But how can we avoid the pitfalls of neuro-centrism in the way we interpret the shifting boundaries of personal space (near or far)? In this paper, trying to identify possible points of intersection between the neural and the socio-material dimensions of self I will attempt a reconceptualization of the lived action space around the body. I propose a shift of attention away from the current focus on the neural representation of personal and peripersonal space and toward a study of the plasticity of human lived space—that is, where the affordances of the hand meet the affordances of the tool or the relevant material environment. I suggest that rethinking the meaning of lived peripersonal space as a field of profound embodiment and seeking to understand the conditions that affect the permeability and plasticity of the self-world boundary are two areas where archaeology and neuroscience could productively work together.

CHARLES SPENCE (UNIVERSITY OF OXFORD)

ARCHAEOLOGY AND THE SENSES: A MULTISENSORY PERSPECTIVE

There has been an explosion of interest in contemporary cognitive neuroscience around the multisensory nature of human perception. At the same time the sensory turn in archaeology has drawn attention to the unisensory experiences of The Ancients. In this talk, I want to take a multisensory perspective on the archaeology of the senses, considering both the experience

of food and drink, as well as the multisensory atmospherics of place and the role of multisensory perception in the context of ritual and entertainments.

MATHILDE SALAGNON (UNIVERSITY OF GENEVA)

NEUROARCHAEOLOGICAL PERSPECTIVES ON SYMBOLIC BEHAVIOR AND HUMAN COGNITIVE EVOLUTION

We employed a neuroarchaeological approach to investigate the neural bases of early symbolic behaviors. Using neuroimaging, we conducted three complementary studies examining how the human brain processes potentially symbolic cultural innovations from the Paleolithic. In the first study, participants viewed abstract engravings to assess perceptual processing. The second study explored how both archaeologists and non-experts attribute human origin to these patterns. The third study focused on the attribution of social status based on ornamented faces. Across all studies, we observed consistent activation of associative visual areas, engagement of the salience network during the attribution of intentionality, and recruitment of regions within the social brain during social status inference. These findings suggest that by the Middle Paleolithic, the neural architecture was already functional for detecting and decoding symbolic features of the environment, enabling the attribution of intentionality and, subsequently, the assignment of culturally determined meaning, within an increasingly complex social organization.

LUIS M. MARTINEZ (INSTITUTO DE NEUROCIENCIAS DE ALICANTE) & FELIPE CRIADO-BOADO (INCIPIT, CSIC)

AN APPROACH TO MATERIAL MINDS COMBINING ARCHAEOLOGY AND NEUROSCIENCES

The XSCAPE Project on Material Minds is a ERC Synergy Grant that involves archaeology and neurosciences to study the interaction between materiality and cognitive processes. It tries to check how the worlds we build alter how the mind processes information. Thus, the project studies the influence of materialities on cognitive and mental processing. In particular, we check the Predictive Brain and Extended Mind paradigms through the study of how perceptual stimuli affect sensorimotor behaviour by using eye- and motion-tracking techniques, biometrics measurement and computational modelling besides an archaeological account of the material world, its complexity and social foundations. The project is a good example of synergistic transdisciplinary research that allows to answer complex problems about the humanity and the world by creating a symmetrical positive interaction between different disciplines. Andy Clark (UK) and Johannes Müller (GE) are the other two PIs of the project, together with the contributors for this presentation.

