



A decade of UrbNet

closing in and zooming out

17-19 September 2025

Organized by Rubina Raja and Søren M. Sindbæk
with Sarah Croix (Aarhus University),
Emanuele Intagliata (Università degli Studi di Milano)
and Federica Sulas (University of Gothenburg)

Centre for Urban Network Evolutions (UrbNet)
Aarhus University

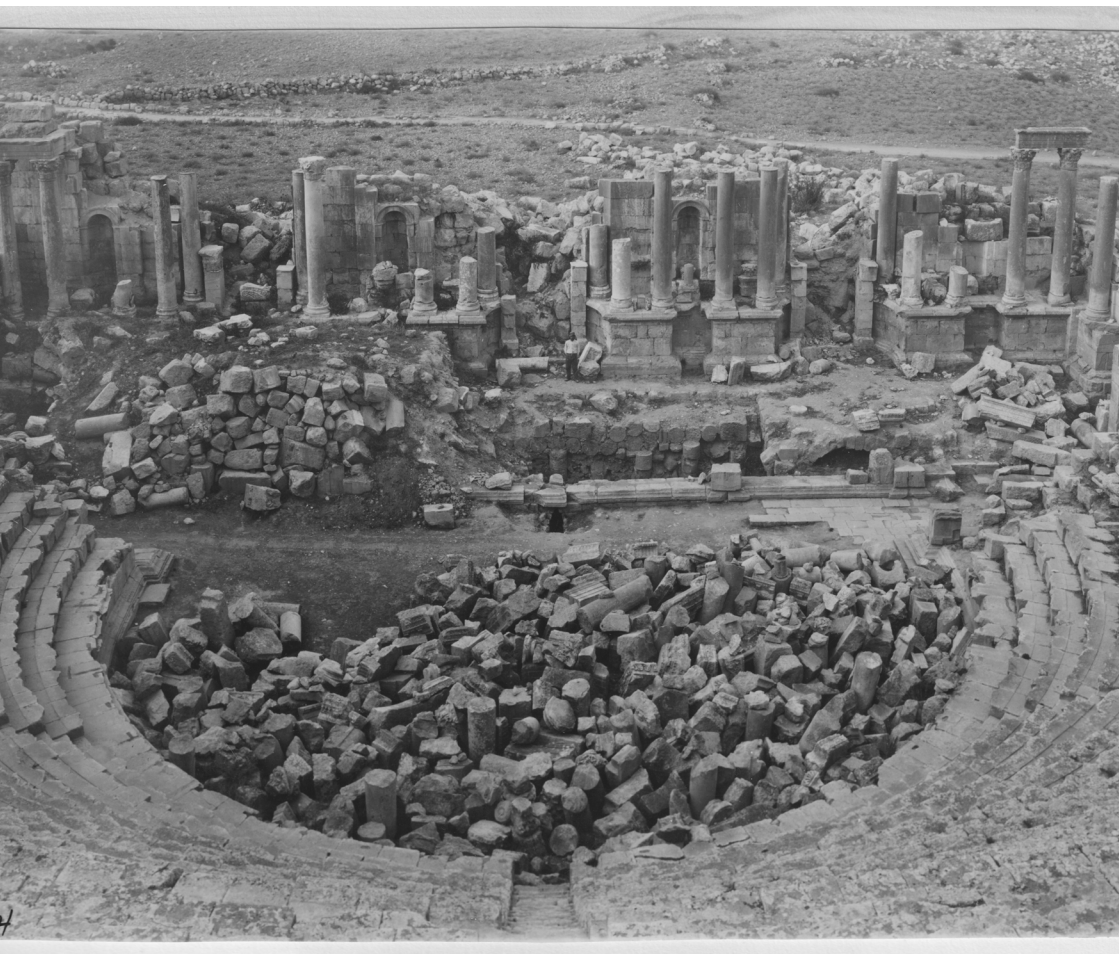


Danmarks
Grundforskningsfond
Danish National
Research Foundation



AARHUS
UNIVERSITY

CARLSBERG FOUNDATION



View of the scenae frons building in the South Theatre in Gerasa/Jerash, Jordan, 1931
(Courtesy of Yale University Art Gallery)

Front cover

Map of Jerash, Jordan (Courtesy of Google Maps)
Stratigraphy from Ribe (Photo: Søren M. Sindbæk)

Table of Contents

| | |
|-----------------|---|
| Outline | 4 |
| Programme | 7 |

Abstracts

| | |
|--|----|
| John North Hopkins: High-definition Sculptural Analysis: A Case of Layered Archaeometric Precision and the Scales of Creative Ecology | 12 |
| Rowan Stanley English: Small worlds from a bird's eye view – Integrating globalisation with natural and transformed materials | 13 |
| Andreas Hennius: Outlands and global networks | 14 |
| Annalisa Marzano: Urban Networks and Agricultural Diffusion in the Roman World | 15 |
| Joakim Kjellberg: Networks of urbanness – Material culture as sociolects in high and late medieval towns of the North | 16 |
| Derek James Parrott: Complexity in urban casting workshops: a view from Viking Age Ribe | 17 |
| Cristina Boschetti: Glass, city, landscape. Notes for an environmental history of Mediterranean glass | 18 |
| Visa Immonen: Circular economies in the urban metabolism of the late medieval Nordic towns | 19 |
| Vana Orfanou: Sustainability for the masses: A framework for decoding the reuse of resources and their critical role in urban communities | 20 |
| Karen Milek: The implications of high-definition multi-proxy geoarchaeology for interpreting the spatial and temporal dynamics of Viking-age urban and rural life | 21 |
| Yannick Devos: Medieval cities under the microscope: from complex stratigraphies to town development | 22 |
| Bente Philippsen: From tree rings to urban layers: radiocarbon markers and high-definition chronologies | 23 |
| Kirstine Haase: Opening the archive - Understanding urban stratigraphies through voxel modelling .. | 24 |
| Gareth Davis, Paul Flintoft, Kristiana Krawiec and Fiona Moore: York as a laboratory for high-definition grand narratives? Integrating geoarchaeology, science and research design to manage buried heritage, and to kill sacred cows | 25 |
| Wojciech Filipowiak: High-definition archeology approach to ports, harbours, islands, land- and waterscapes in early medieval Wolin | 26 |
| Elizabeth Murphy: Urban Economic Networks and Industry Development: Perspectives from the Roman World | 27 |
| Manuel Fernández-Götz: Alternative urbanisms, alternative societies? | 28 |
| Scott Ortman: Characterizing inequality in an ancient urban society: the example of Roman Britain .. | 29 |

| | |
|---|----|
| Venues, Organizers and Conference Webpage | 35 |
|---|----|

Outline

The international conference *A decade of UrbNet: closing in and zooming out* will address fundamental conceptual frameworks in the archaeology of urban societies. The event will feature a series of presentations that critically and constructively reflect on the ideas and outcomes of the research conducted at the centre, as well as its impact on the respective academic fields. The conference aims to facilitate comparative frames of reference through case studies and thematic explorations of past urban societies and networks, structured around four thematic sessions:

The evolution of urban networks: the rise and fall of globalisation

A central feature of UrbNet's research is the study of ancient urban networks through the circulation of materials, and defining and charting how production (of things for subsistence, cultural and other services) shaped urban dynamics. This research has been boosted by new isotopic and biomolecular research methods and framed by theories ranging from globalization to ANT, new materialism and ecological economics. This outlook was shaped by interest in historical globalization in the 2010s. To what extent has UrbNet succeeded in breaking new ground in this field, and where is this theme heading at a time when global connectivity is increasingly associated with societal and economic threats?

Circular ancient cities and wicked problems: Urban sustainability and resource management

Cities emerge from the dialogue between homo faber and natural agents. Research at UrbNet has explored how ancient urban societies managed natural landscape resources including water, and food production, as well as harnessed internal resources through re-cycling and circular economy. This research highlights how responses have evolved in tandem with changes in the environment and climate. Today, we understand environmental and climate changes as wicked problems for which we do not seem to have a solution yet. Some even speak about an 'urbanocene'. Wicked problem is here broadly defined as large-scale (transregional?) phenomena driven by natural and/or human factors that affect people across different regions. How can the research and perspectives developed at UrbNet contribute to decipher such problems? Can we see urbanism as a human response to wicked problems? Where should research go from here?

High-definition archaeology and beyond

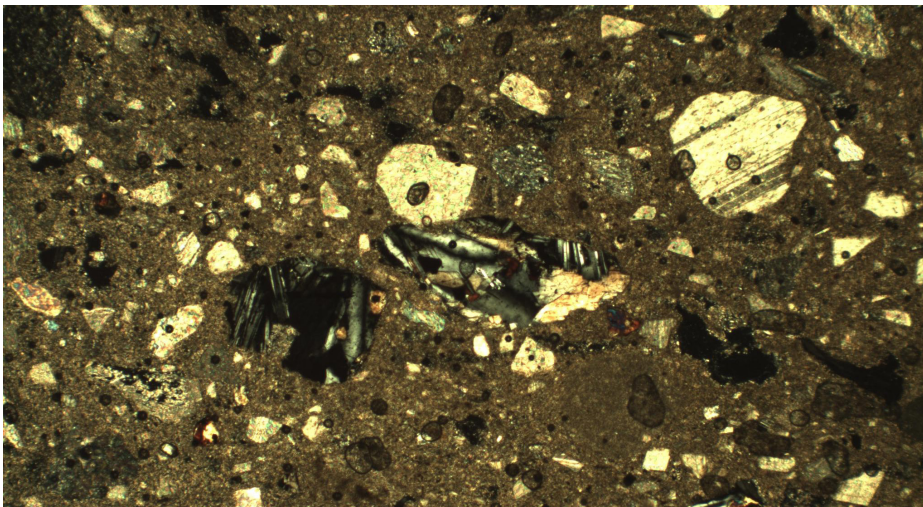
One of UrbNet's aims was to enhance the precision, scale, and interpretive quality of archaeological data, especially for urban and complex sites. We have pursued high-definition archaeology as a strategy to integrate different forms of data and "an approach which seeks to revise grand narratives by replacing approximate observations with more exact ones." Specifically, the approach aimed at more precise chronologies that go beyond conventional archaeological timelines, enhanced environmental analysis through micromorphology, soil chemistry, isotope analysis and proteomics, as well as digital data integration. Seeing urban stratigraphies as archives of past urban evolutions, the new methodologies have been able to unpack massive amount of data on widely different scales – from a stratigraphic interface captured in a thin section to the topography of low-density urban landscapes. However, successful methodologies and the theoretical considerations concerning the nature of the archaeological records they trigger ought to carry some degree of transferability – potentially also to other kinds of archaeology. How far has UrbNets research succeeded in developing a transferable methodological vision, and what are the frontier challenges presently? And has this changed the views on past urban worlds?

Networks urbanism and urban networks

UrbNet has aimed to understand ancient and medieval urban societies in terms of their networks, and eventually to reveal "how – and to what extent – urban networks catalysed societal and environmental expansions and crises in the past". This objective has involved conceptual explorations of urbanism as a theme, and a focus on places and evidence at the limit of common understanding. These themes are explored in particular in the volumes of the *Journal of Urban Archaeology*, with discussions of "anomalocivitas", "anomalous giants" and "weak ties". What are the outcomes and further ramifications of these explorations? As urban settlement emerged and spread, the new settlement form changed the nature and magnitude of human-environmental interactions. Has urbanism had a similar impact – in terms of scale and magnitude – in (re-)shaping social development. If cities were never born, what would our global society look like?

**Northern Emporium**

Sampling a Viking-age brooch model for lead isotope analysis (Photo: Søren M. Sindbæk)

**The Danish-German Jerash Northwest Quarter Project**

Microscope image of Middle Islamic Ceramic from Jerash, Jordan, so-called marble-tempered group defined by stone and basalt fragments added to the fabric as tempering materials (Photo: Achim Lichtenberger, Rubina Raja and Carmen Ting)

Programme: Wednesday 17 September**A DECADE OF URBNET - CLOSING IN AND ZOOMING OUT**

- 15:30–16:15 *A decade of UrbNet*
Rubina Raja (Aarhus University)
& Søren M. Sindbæk (Aarhus University)
- 16:15–17:15 *Weaving networks*
Sarah Croix (Aarhus University), Emanuele Intagliata (Università degli Studi di Milano) & Federica Sulas (University of Gothenburg)
- 17:30 **Reception**



Programme: Thursday 18 September**Session 1: The evolution of urban networks: the rise and fall of globalisation****Chair:** Sarah Croix (Aarhus University)

| | |
|-------------|--|
| 08:30–08:40 | <i>Introduction</i> Sarah Croix (Aarhus University) |
| 08:40–09:30 | <i>High-definition Sculptural Analysis: A Case of Layered Archaeometric Precision and the Scales of Creative Ecology</i> John North Hopkins (New York University) |
| 09:30–10:20 | <i>Small worlds from a bird's eye view – Integrating globalisation with natural and transformed materials</i> Rowan Stanley English (Aarhus University) |
| 10:20–10:50 | Coffee |
| 10:50–11:40 | <i>Outlands and global networks</i> Andreas Hennius (Upplandsmuseet) |
| 11:40–12:30 | <i>Urban Networks and Agricultural Diffusion in the Roman World</i> Annalisa Marzano (Università di Bologna) |
| 12:30–13:30 | Lunch (Moesgaard Café) |

| | |
|-------------|---|
| 13:30–14:20 | <i>Networks of urbanness – Material culture as sociolects in high and late medieval towns of the North (online)</i> Joakim Kjellberg (Medeltidsmuseet) |
|-------------|---|

| | |
|-------------|--|
| 14:20–15:10 | <i>Complexity in urban casting workshops: a view from Viking Age Ribe</i> Derek James Parrott (Independent Scholar) |
|-------------|--|

| | |
|-------------|---------------|
| 15:10–15:30 | Coffee |
|-------------|---------------|

Session 2: Circular ancient cities and wicked problems: Urban sustainability and resource management**Chair:** Emanuele Intagliata (University of Milan)

| | |
|-------------|---|
| 15:30–15:40 | <i>Introduction</i> Emanuele Intagliata (University of Milan) |
| 15:40–16:30 | <i>Glass, city, landscape. Notes for an environmental history of Mediterranean glass</i> Cristina Boschetti (Independent Scholar) |
| 16:30–17:20 | <i>Circular economies in the urban metabolism of the late medieval Nordic towns</i> Visa Immonen (University of Bergen) |
| 17:20–18:10 | <i>Sustainability for the masses: A framework for decoding the reuse of resources and their critical role in urban communities</i> Vana Orfanou (Ludwig-Maximilians-Universität München) |

Programme: Friday 19 September

Session 3: High-definition archaeology and beyond

Chair: Federica Sulas (University of Gothenburg)

- 08:30–08:40 *Introduction*
Federica Sulas (University of Gothenburg)
- 08:40–09:30 *The implications of high-definition multi-proxy geoarchaeology for interpreting the spatial and temporal dynamics of Viking-age urban and rural life*
Karen Milek (Durham University)
- 09:30–10:20 *Medieval cities under the microscope: from complex stratigraphies to town development*
Yannick Devos (Vrije Universiteit Brussel)
- 10:20–10:40 **Coffee**
- 10:40–11:30 *From tree rings to urban layers: radiocarbon markers and high-definition chronologies*
Bente Philippsen (Norges Teknisk-Naturvitenskapelige Universitet)
- 11:30–12:20 *Opening the archive - Understanding urban stratigraphies through voxel modelling*
Kirstine Haase (Museum Odense)
- 12:20–13:20 **Lunch (Moesgaard Café)**
- 13:20–14:10 *York as a laboratory for high-definition grand narratives? Integrating geoarchaeology, science and research design to manage buried heritage, and to kill sacred cows*
Gareth Davis (York Archaeology), Paul Flintoft (York Archaeology), Kristina Krawiec (York Archaeology) & Fiona Moore (York Archaeology)

- 14:10–15:00 *High-definition archeology approach to ports, harbours, islands, land- and waterscapes in early medieval Wolin*
Wojciech Filipowiak (Instytut Archeologii i Etnologii)

15:00–15:20 **Coffee**

Session 4: Networks urbanism and urban networks

Chair: Rubina Raja (Aarhus University) & Søren M. Sindbæk (Aarhus University)

- 15:20–15:30 *Introduction*
Rubina Raja (Aarhus University)
& Søren M. Sindbæk (Aarhus University)
- 15:30–16:20 *Urban Economic Networks and Industry Development: Perspectives from the Roman World*
Elizabeth Murphy (Florida State University)
- 16:20–17:10 *Alternative urbanisms, alternative societies?*
Manuel Fernández-Götz (University of Oxford)
- 17:10–18:00 *Characterizing inequality in an ancient urban society: the example of Roman Britain*
Scott Ortman (University of Colorado Boulder)
- 18:00–18:30 Final remarks
- 19:30 **Speakers' dinner (Restaurant ET)**

High-definition Sculptural Analysis: A Case of Layered Archaeometric Precision and the Scales of Creative Ecology

John North Hopkins
New York University, United States

The grand narrative of Roman Studies is an invasive species. Since antiquity, it has strangled and silenced the stories of many who lived amidst its presence. This is particularly true for those communities of sacro-creative labor whose actions are claimed in the narratives of Roman art, visual languages, architecture, and urbanism. One example of their work is found in the sacred sculptures that populated temples across peninsular Italy before and under Roman occupation. Scholars have long recognized that the artisans responsible for them were not necessarily Roman, but how does one trace their presence and recover their contributions without textual documentation of their labor—itsself silenced through the writing of selective histories.

This talk will explain the work of the Antefixa Project, a high-definition scientific and computational archaeology initiative. We compare thousands of remains of urban sanctuaries using a multi-technical suite of scientific analyses, including SEM-EDS, Raman spectroscopy, laser ablation, micro-FT-IR, Powdered X-ray Diffraction, and Neutron Activation. By analyzing the big data results with Machine Learning, we recover over a dozen layered chemical and physical qualities of sculptural fabric, surface treatments, supply chains and creative decisions. The goal of the project is to move beyond scholarly analysis of so-called artistic languages, which rely on style and form and are often wedded to imperializing conglomerates and a single part of the multidimensional creative process. Instead, we examine archaeometric and geological data and visual analytical information to explore multistage creative ecologies as they changed over a 400-year span.

Small worlds from a bird's eye view – Integrating globalisation with natural and transformed materials

Rowan Stanley English
Aarhus University, Denmark

The past was an inherently connected place, or so modern archaeological narratives seek to tell us. Globalisation is increasingly used as a scaffold on which to hang our interpretations of the past. Work carried out at UrbNet, both intentionally and not, has almost certainly advanced the agenda to construct a globalised past. The foregrounding of a hyper-connected world at multiple times in the past often works to familiarise and materialise the people in the past to us. This allows our birds eye view of the past to be conflated with the lived experience of people across the ancient and medieval worlds.

In this paper, I will critically look at some of the many material provenancing studies that UrbNet and others have done and think about what they actually tell us about global connectivity in the past. This draws on my own research at UrbNet considering the transformation of value and meaning across contexts. Research from UrbNet has no doubt pushed methodological boundaries provenancing leather, fur, glass, antler, silver, and a plethora of other materials from innumerable contexts. However, what do these studies actually tell us about the past if our birds eye view and the knowledge that comes with it is removed, and we put ourselves into the shoes of consumers, craftspeople and merchants who relied on a connected world, whether they knew it or not.

Outlands and global networks

Andreas Henniuss
Upplandsmuseet, Sweden

During the transitional period between the early and late Iron Age (c. 300–650 AD), significant changes in land use and resource exploitation occurred across Scandinavia. Areas unsuitable for cultivation—often referred to as *Utmark* or Outlands—became increasingly important as a source for valuable resources such as iron, furs, antlers, and minerals. At the same time, similar non-agrarian resources began arriving in southern Sweden from distant regions: whale bone from northern Norway, elephant ivory from sub-Saharan Africa, cowries from the Indian Ocean, amethyst from Byzantium, garnets from present-day India and Sri Lanka, a Buddha figurine from present-day Pakistan, and silk from East Asia.

During this time Scandinavia becomes part of far-reaching trade networks, and outland resources became important commodities. These networks not only connected trading posts, market sites and elite settlements but also remote areas of extraction and production boreal forests in Norway and Sweden, with similar non-agrarian regions in other parts of the world.

Understanding outland exploitation is essential for interpreting societal developments of the time. The resource extraction sometimes led to the serial depletion of animals and other natural resources and the search for new resources may have contributed to the onset of Viking expansion. Comparative studies, from a global perspective, have an unexplored potential to increase the understanding on how resources from non-agrarian and non-cultivated production were an active force in the development of supra-regional trade networks.

Urban Networks and Agricultural Diffusion in the Roman World

Annalisa Marzano
Università di Bologna, Italy

Recent scholarship has been engaging with the concept of a ‘Roman Agricultural Diffusion’, stressing the degree of intercontinental crop plant dispersal that occurred during the Roman empire thanks to its well-developed trade networks, high levels of urbanisms, and geographic mobility. This paper will discuss the role of urban networks and a ‘globalized’ urban society in feeding such plant dispersal and stimulating the acclimatization of new plants in various parts of the Roman world. As pointed out by Kron (2025), this Roman phenomenon rested on “centuries of farming innovations from Egypt, Mesopotamia, South Arabia, the Levant, Classical and Hellenistic Greece, and Amazigh North Africa”. The paper will argue that it could come to full fruition starting from the Augustan age thanks to the connectivity of the Roman imperial period. Conversely, in the West a breakdown of urban society and the trade networks centred on the cities during late antiquity resulted in the ‘loss’ of some of the botanical novelties introduced in earlier centuries.

Networks of urbanness – Material culture as sociolects in high and late medieval towns of the North

Joakim Kjellberg
Medeltidsmuseet, Sweden

Inscribing meaning and significance to different types of material culture is a notably tricky subject and one that for a long time has been less studied in high and late medieval and urban contexts in Scandinavia. Instead, within a framework discussion on urbanisation, material culture has been discussed as mass-materials with a focus on urban production and urban functions. In the complex web of high and late medieval traderoutes, crossing the European continent and the Baltic sea, there are many object categories with potential for a wider discussion on meaning and significance of global or pan-european material culture; rhinish stonewares, valentian lustrewares, venetian and bohemian glass and a plethora of dress accessories from London and Bruges to mention but a few.

Excavations in Uppsala have provided a unique dataset consisting of finds from the 12th to 16th century (Kjellberg 2021). Zooming in on this dataset and looking outwards for comparison, it is possible to trace a number of indicative finds and investigate their various provenances, networks, depositions and significance within the urban households. From a vantage point of objects as materialised communication and as expressions of urbanness, two terms from current archaeological thinking, linguistics and urban anthropology (Price 2022, Modan 2018), the paper will demonstrate how careful and contextual comparative analysis of an increasingly international material culture holds the potential to further expand our knowledge on urbanity and everyday interactions in medieval towns.

Complexity in urban casting workshops: a view from Viking Age Ribe

Derek James Parrott
Independent Scholar

Recent excavations in metal-casting workshops from the Viking Age layers of Ribe have unearthed a massive corpus of casting mould fragments for various copper-alloy objects. A high-resolution digital survey of a selection of these mould fragments, namely brooches of Berdal type, reveals an incredible amount of diversity, not only in the ornamentation and form of the objects, but also in the production techniques undertaken by the artisans. The results are suggestive of a highly dynamic urban workshop environment in which traditions were taught and learned, and the objects direct products of the social milieu from which they emerged.

Glass, city, landscape. Notes for an environmental history of Mediterranean glass

Cristina Boschetti
Independent Scholar

The fragmentation of the glass production cycle in antiquity—including glassmaking, glassworking, cullet collection, reuse, and recycling—was strongly influenced by a combination of environmental and social factors. These included restricted access to suitable raw materials and the safeguarding and transmission of complex technological knowledge. Traditionally, glass studies have focused on the relationship between glass production and socio-economic dynamics.

In contrast, environmental factors have been only marginally addressed. Yet this alternative perspective holds considerable research potential, offering fresh insights into how the management of natural resources shaped the organization of ancient glass production.

In this presentation, I will examine the intricate interconnections between urban society, natural resources, and the glass production cycle, with the aim of tracing an environmental history of glass in the Mediterranean. Case studies will span from Late Bronze Age Egypt to Renaissance Italy, shedding light on the various strategies adopted by ancient societies to optimize the glass production cycle in response to climate conditions and the availability of raw materials and fuel.

Circular economies in the urban metabolism of the late medieval Nordic towns

Visa Immonen
University of Bergen, Norway

Medieval urbanisation has an ambiguous position in contemporary scholarship on ancient circular economies and sustainability. On the one hand, the Middle Ages can be seen as a period where the roots of the current ecological crisis lie. Modern attitudes towards nature and the ruthless utilisation of its resources are merely a continuation of the medieval patterns of thought and practice, it is argued. On the other hand, the Middle Ages has also been characterised as the era of circular economies par excellence with continual processes of recycling, reuse, and repairing of materials, structures and objects. In this sense, medieval towns can provide a model for more sustainable urbanisation in future. To scrutinise this conflicting relationship between the contemporary idea of circularity and medieval circumstances, this paper presents archaeological examples of waste management as well as the use and reuse of such materials as wood, stone and textiles in the late medieval Nordic towns. They demonstrate components of both circular and linear economies. This complexity is analysed from the perspective of 'urban metabolism' or the flows of the materials and energy within urban areas. This moves the notion of circular economy into limelight and reveals its historically fluctuating and culturally negotiated dimension.

Sustainability for the masses: A framework for decoding the reuse of resources and their critical role in urban communities

Vana Orfanou
Ludwig-Maximilians-Universität München

Reuse of materials and resources - as an all-encompassing term - has been integral to human societies going back to at least 1.3Ma (Toro-Moyano et al. 2009), hunter-gatherer societies (Schiffer 2014, p. 32) and the Stone Age (Amick 2015). Reuse is opportunity (Schiffer, op. cit.); one readily harvested by past peoples and closely linked to mechanisms of sustainability. Despite the ubiquity of reuse in the past, archaeological discourse still often grapples to a) define related but potentially distinct practices such as repurposing, reworking, recycling, and mixing of resources, and b) identify their material traces (Ponting and Levene 2015). An incomplete understanding of past reuse hinders our perception of past human-environment interactions, circular economies, and sustainability. Here, I propose a framework for decoding reuse that can assist in the trans-regional and diachronic contextualisation of resource management. The proposed framework is based on three scales: 1) **material transformation** (how much is a resource altered before its reuse), 2) **craft specialisation / performance** (who administers the material transformation and how), and 3) **representation / adoption** (who are the users of the end-products). In this task, I will be using and expanding on insights gained through pyrotechnological and cross-craft investigations as part of UrbNet during 2016-2019, which addressed aspects of reuse in a range of cultural contexts and periods including Roman to early Islamic Jerash, Jordan, and early Viking Age Ribe, Denmark. Finally, I will address the question set out by the session: Can we see urbanism as a human response to sustainable resource management?

Amick, D.S., 2015. The recycling of material culture today and during the Paleolithic. *Quaternary International*, 361, 4–20.

Ponting, M. and Levene, D., 2015. Recycling economies, when efficient, are by their nature invisible: A first century Jewish recycling economy. In: M.J. Geller, ed. *The archaeology and material culture of the Babylonian Talmud*. London: Brill, 39–65.

Schiffer, M.B., 2014. *Behavioral archaeology: principles and practice*. London New York: Routledge.

Toro-Moyano, I., De Lumley, H., Fajardo, B., Barsky, D., Cauche, D., Celiberti, V., Grégoire, S., Martínez-Navarro, B., Espigares, M.P., and Ros-Montoya, S., 2009. L'industrie lithique des gisements du Pléistocène inférieur de Barranco León et Fuente Nueva3 à Orce, Grenade, Espagne. *L'Anthropologie*, 113 (1), 111–124.

The implications of high-definition multi-proxy geoarchaeology for interpreting the spatial and temporal dynamics of Viking-age urban and rural life

Karen Milek
Durham University, United Kingdom

UrbNet's Northern Emporium Project explored the sedimentary archives of the Viking-age town of Ribe at an unprecedented level of detail using multi-method geoarchaeology, integrating exceptionally high-resolution spatial sampling with detailed vertical-temporal analyses afforded by sediment micromorphology and element mapping. The emerging results show how high-definition approaches to the analysis of anthropogenic sediments can provide a wealth of new information about the complexities and dynamism of daily life, craft production, and decision-making in the organisation and use of social space. This paper critically assesses the broader implications of the results from Ribe – both methodological and interpretive. First, drawing on a wide comparative analysis of other investigations of Viking-age and early medieval towns of northern Europe, it considers diversity of preservation conditions and interpretive potential, analytical methods, and inferences made about the spatial and temporal dynamics of urban living. It evaluates the added value of high-definition approaches, the degree to which they have extended our previous understanding of urban occupation, and the extent to which they are transferable to other urban contexts in northern Europe. Then, using this comparative dataset, this paper explores similarities and differences in urban and rural architecture and what we understand about the organisation of daily life and craft production in urban and rural contexts in the Viking Age. This comparative approach enables a fresh understanding of the decisions made by townspeople as they adapted to urban living, how towns remained deeply connected to rural social and economic spheres, and the interpretive potential of expanding high-precision approaches in rural as well as urban contexts.

Medieval cities under the microscope: from complex stratigraphies to town development

Yannick Devos
Vrije Universiteit Brussel, Belgium

Soils and sediments compose the very matrix in which archaeological excavations take place. Therefore, over the last decades geoarchaeology, and especially soil micromorphology, has gained an important position in the study of urban contexts. Initially, the studies focused both upon aspects of taphonomy and site preservation, and the understanding of complex stratigraphies, such as microlayered occupation levels or urban Dark Earth, ubiquitous in urban settlements. Today, the scope of this research has significantly widened. The high-definition geoarchaeological study of urban archaeological sites has shown to enable the reconstruction of the often-multifaceted site biographies, taking into account human and environmental factors. Its systematic application also enabled to tackle a series of issues that are at the core of current urban research. A first topic is the organisation and use of the urban space. This research focuses upon different scales from the household up to the town level, and also encompasses the distinction between open and build space. Other topics include the early formation of towns, aspects of daily life, waste management and soil pollution.

Present contribution intends through a series of case studies to showcase how the microscopic study of soils and sediments can enrich our understanding of the evolution of medieval urban towns.

From tree rings to urban layers: radiocarbon markers and high-definition chronologies

Bente Philippsen
Norges Teknisk-Naturvitenskapelige Universitet (NTNU), Norway

One of UrbNet's primary objectives is to understand the development of urban societies in a network dynamic. Establishing absolute chronologies for various urban centres is crucial for this understanding, as it provides a unified timeline across different regions. Additionally, absolute chronologies allow us to measure the pace of processes and developments.

In recent years, the precision of chronologies based on radiocarbon dating has significantly improved. This includes the integration of single tree ring measurements into the calibration curve as well as the discovery of the so-called Miyake events, which serve as radiocarbon markers of specific years.

UrbNet has utilised Bayesian modelling in stratigraphical excavations to produce high-resolution chronologies in Ribe, Copenhagen, Odense and Jerash. While Miyake events have been widely used for single-year dating of wooden remains, they had not been identified in stratigraphic sequences of short-lived samples. In Ribe, Denmark, we successfully identified Miyake events using short-lived samples from a sequence of floor and dirt layers. In my presentation, I will explore the transferability of this methodology by presenting case studies where we applied it to previously published excavations and dates. Furthermore, I will review the impact of the results from Ribe on the fields of high-precision radiocarbon dating and urban archaeology.

Opening the archive - Understanding urban stratigraphies through voxel modelling

Kirstine Haase
Museum Odense, Denmark

Today's urban terrain is the product of centuries of human activity, resulting in what we now recognise as archaeological stratigraphy. This stratigraphy is often considered the result of poor waste management and a more or less random accumulation of production waste, debris from demolished buildings or similar activities. This paper suggests viewing the accumulation as a conscious action caused by either the desire to include formerly uninhabitable areas in the city as the population grew, or to adapt the landscape to suit the ever-changing demands and needs of the citizens or the city's administration. The argument is presented through a case study from Odense in Denmark, where a deposit model has been constructed using voxel-based 3D software and data from 150 years of archaeological excavations, supplemented by geotechnical borings. The model serves two purposes: reconstructing the urban landscape's development and assessing the extent and preservation of archaeological stratigraphy.

Despite the promising results from the case study, the precision, resolution and implementation of voxel-based modelling are challenged by computing power, costs, and software limitations. It is therefore not yet a fully developed plug-and-play high-definition method. However, these issues are very likely to be resolved over time. Therefore, the paper will also present an example of how formation processes of archaeological stratigraphy can be studied on a small scale with high resolution. The example highlights the future potential of making use of the massive amount of data derived from modern commonplace field documentation methods. Such studies can change our views on past urban societies by understanding the reasons and motivations for the changes in the urban landscape and stratigraphy as more than random actions and changes in attitudes towards waste management.

York as a laboratory for high-definition grand narratives? Integrating geoarchaeology, science and research design to manage buried heritage, and to kill sacred cows

Gareth Davis, Paul Flintoft, Kristiana Krawiec and Fiona Moore
York Archaeology, United Kingdom

York was one of the first cities to have its sub-surface archaeological deposits modelled and published for the use of heritage managers (Arup 1991). The production of this study coincided with legislative changes in England, which for the first time required developers, as 'polluters', to fund the costs of excavating threatened archaeological deposits. Mapping zones of archaeological potential provided a platform for key research questions concerning the development of the city to be asked, including where key areas for early medieval and Viking activity, including waterlogged deposits, were located.

Since 1991, there has been a huge amount of archaeological excavation in York, including at Hungate, which revealed the development of a whole suburb of the Tenth Century AD and later. However, as most investigations have been undertaken in advance of specific developments, coverage across the city is uneven, and individual projects have not always been able to address specific research questions. Some deeply buried deposits are also hard to reach. As a result, a small number of keynote excavations, notably the plots and buildings of Coppergate, exist as 'sacred cows', framing a fixed narrative of a 'Viking Age city' focused on mercantile trade and exchange.

However, opportunities are now arising for development-funded archaeologists (York Archaeology) and heritage managers (City of York Council) to be more strategic, identify areas of archaeological potential, and to prioritise investigation/preservation of areas where threat to significant deposits is greatest. This paper will present two areas where, through collaborative working, it is hoped to achieve new, updated and high-resolution interpretations. Firstly, a new deposit model for the city, incorporating the insights of the last 35 years of commercial archaeological research. Secondly, pilot studies into the presence of microplastics as a contaminant within significant archaeological deposits, which is challenging existing preservation in situ strategies.

The paper will conclude by considering some emerging analytical techniques – as utilised to great effect by Urbnet - for studying geoarchaeological boreholes from York, including geochemical and stable isotope analyses. This work offers us a chance to return to neglected research questions, including the search for high status sites, early medieval waterfronts and areas of industrial production, and ask afresh how activities undertaken at these places contributed to the changing character of a place.

High-definition archeology approach to ports, harbours, islands, land- and waterscapes in early medieval Wolin

Wojciech Filipowiak
Instytut Archeologii i Etnologii, Poland

Wolin (Poland) was in the early Middle Ages one of the largest craft and trade centers on the Baltic Sea. It functioned from the end of the 8th to 13th centuries, when it transformed into a late medieval town. The heart of its development was trade and long-distance contacts, made possible by the development of ships and port infrastructure. This, in turn, depended on the terrestrial and underwater conditions of the Wolin landscape, while their development depended on the technical sophistication and intangible culture of Wolin's inhabitants.

Lots of archaeological sources were obtained through nearly 200 years of field research in the town. Their common shortcoming is the low precision of the chronology of the phenomena studied, as well as the predominantly cultural-historical approach to the processes analyzed. Thanks to the inspiration of UrbNet's activities, it was decided to apply the principles of high-definition archaeology to the study of Wolin, and together with Aarhus University two Danish-Polish projects were started to study the ports of early medieval Wolin. Thanks to this new approach questions about precise chronology of processes like forming of land- and waterscapes, building of harbours and moments of meetings between the cultural groups could be addressed.

Urban Economic Networks and Industry Development: Perspectives from the Roman World

Elizabeth Murphy
Florida State University, United States

Cities have long been understood as hubs of economic networks that helped to sustain regional development. This is reflected not only in the concentration and scale of commercial activities, but also in the organization of urban industrial works. This paper investigates the particular nature of urban industry in antiquity to consider how such economic activities might have differed from contemporary industry organizations in other settings (e.g., towns, villages, villas). Taking a comparative approach, the paper considers the embeddedness of local industries in terms of the networks sustaining raw material supplies, transmission of technical and professional knowledge, and access to consumers. Using the Roman world as a case study, this paper evaluates if, how, and why urban industry might differ and follow alternative trajectories of economic development.

Alternative urbanisms, alternative societies?

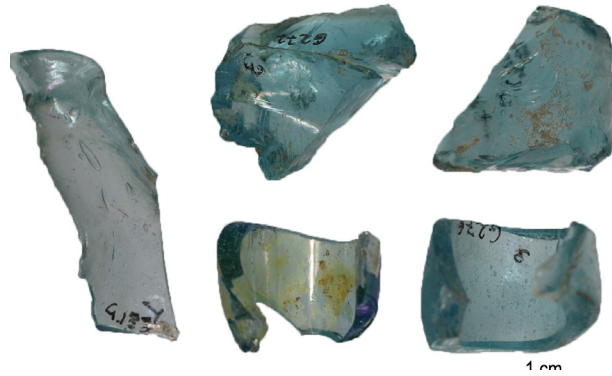
Manuel Fernández-Götz
University of Oxford, United Kingdom

The last few decades have witnessed a considerable expansion and diversification of the type of sites that are encompassed under the 'urban' umbrella. This is partly due to novel theoretical perspectives that have moved beyond traditional paradigms of urbanism, but also to new fieldwork that has allowed scholars to identify forms of urbanism in regions that were previously largely ignored or underestimated in mainstream debates about early urbanisation, particularly (although not exclusively) in areas of the Global South. The diversification of perspectives is illustrated by the use of expressions such as 'steppe urbanism', 'garden cities', or 'amphibious urbanism'. This paper will reflect on the social implications of rethinking the boundaries of the 'urban', for example in relation to inequalities and the question of the emergence of state forms of political organisation. Do alternative urbanisms also relate to alternative forms of societal organisation? I will discuss this question particularly with reference to examples from late prehistoric Europe and pre-Columbian North America.

Characterizing inequality in an ancient urban society: the example of Roman Britain

Scott Ortman
University of Colorado Boulder, United States

In recent years, archaeological studies of inequality have proliferated, and in many cases housing data from individual cities have been used to make inferences about entire societies. Here, I discuss several reasons why this approach is inadequate, using a robust sample of Roman houses from sites in England and Wales. The first issue is houses vs. families. It is often difficult to distinguish small and humble residences from outbuildings, and elite residences were often home to servants who shared living space with the owners. The second issue is tenancy. Many families in ancient urban societies rented their homes, complicating the interpretation of residence size as a wealth indicator. The third issue is the distinction between size and value. It is not possible to measure value directly, and the effect of construction quality for value is also indeterminate. The fourth issue is location. Houses today tend to be larger in rural areas and get smaller as they get closer to city centers due to increasing demand for space. Fifth, there is the issue of spatial clustering. Social networks in urban societies exhibit homophily at all spatial scales, and this is true for the past as well. Finally, there are network effects driven by concentrations of people and interactions in space, which exert systematic effects on incomes and residence sizes. Due to these complications, the sampling requirements for understanding patterns of inequality in a past urban society are quite extensive. But they can be satisfied once one is aware of them.



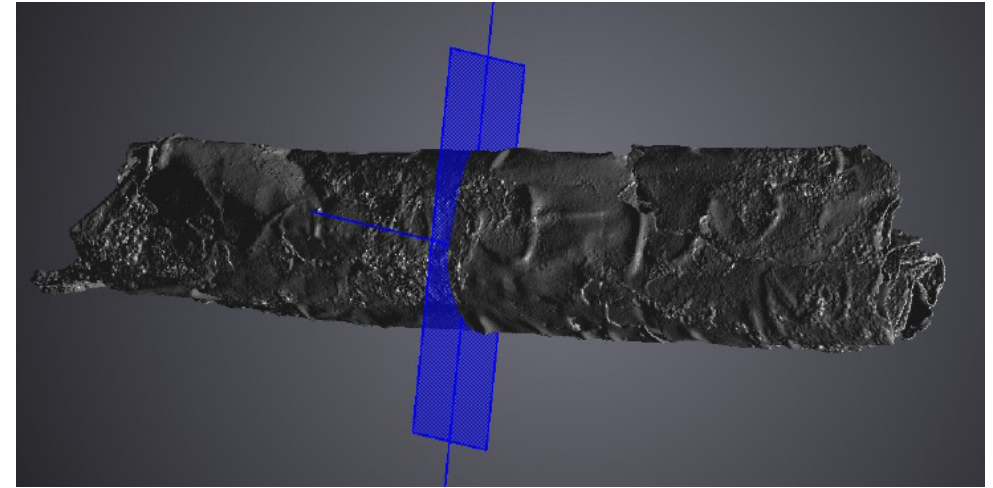
The Caesar's Forum Project

Glassworking waste excavated from the sewage system of Caesar's Forum
(Photo: The Caesar's Forum Project)



Urban Transitions in Zanzibar

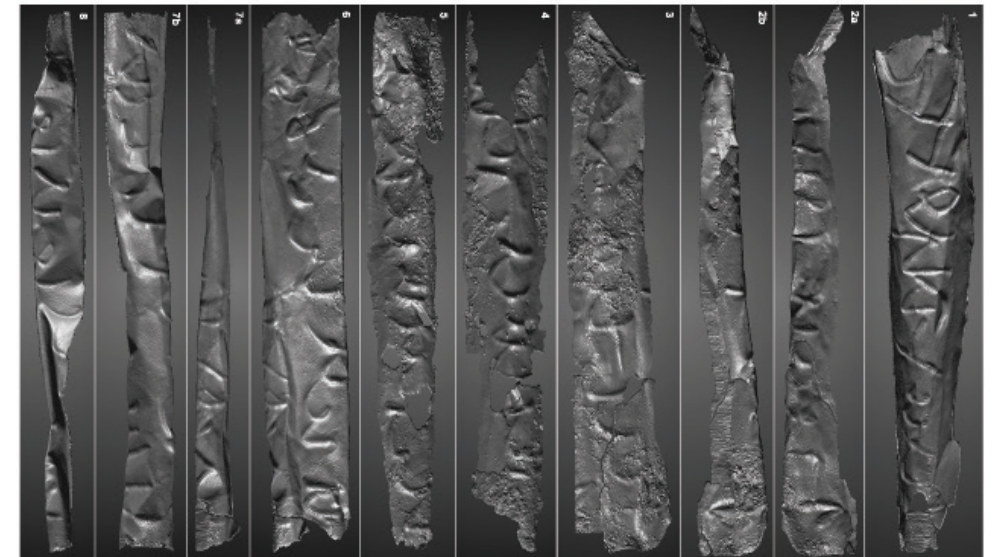
Biological material and man-made features are fast deteriorating in the harsh tropical soil environment in Africa. The nearly invisible traces in Unguja Ukuu of a medieval daub (clay) house were revealed by a combined multi-element and statistically based approach (Photo: Federica Sulas)



The Danish-German Jerash Northwest Quarter Project

Above: The Gerasa silver scroll rendered in VGStudio MAX 3 Beta

Below: Lines 1–8 from the silver scroll



**Northern Emporium**

Glass and glassworking finds from the excavation in Ribe (Photo: Søren Sindbæk)

**The Danish-German Jerash Northwest Quarter Project**

Mortar set in resin before further processing for thin section and micromorphology
(Photo: Kristine Thomsen)

Ceramics in Context

Pottery from Gerasa (Photo: Rubina Raja)



***Khirbet al-Khalde Archaeological Project***

Overview of fort and caravanserai, facing south-east (Photo: Craig Harvey)

***East African Pyro-Technological
Processes and Networks in 7th-
10th Century AD***

Iron slag excavated at Dakawa
1993 PRV 1 332/135 Level 2.
Bergen Museum collections
(Photo: Ema Bauzyte)

Venues**Centre for Urban Network Evolutions (UrbNet)**

Aarhus University
Moesgård Allé 20, Building 4230, 2nd floor
8270 Højbjerg

Restaurant ET

Mindegade 8
8000 Aarhus C

Organizers

Rubina Raja
Aarhus University
rubina.raja@cas.au.dk

Sarah Croix
Aarhus University
marksc@cas.au.dk

Federica Sulas
University of Gothenbrug
federica.sulas@gu.se

Søren M. Sindbæk
Aarhus University
farksms@au.dk

Emanuele Intagliata
Università degli Studi di Milano
emanuele.intagliata@unimi.it

Conference Webpage

<https://urbnet.au.dk/news/events/2025/a-decade-of-urbnet-closing-in-and-zooming-out>



Excavation of the tomb of Malkû, 1937

(© Palmyra Portrait Project and Rubina Raja, courtesy of the Yale Babylonian collection, Yale University)

Book of abstracts

A decade of UrbNet - closing in and zooming out

Organizers:

Rubina Raja and Søren M. Sindbæk
with Sarah Croix, Emanuele Intagliata and Federica Sulas