

TECHNOLOGIES – KNOWLEDGES – SUSTAINABILITY: CRAFTING SOCIETIES IN THE FIRST MILLENNIUM CE

The 74th International Sachsensymposium
STAVANGER, NORWAY, 16-20 SEPTEMBER 2023



Programme and abstracts



UNIVERSITY
OF OSLO

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ORGANISING INSTITUTIONS AND SPONSORS:

Museum of Archaeology, University of Stavanger

Museum of Cultural History, University of Oslo

HEI: Heritage Initiative Experience, University of Oslo

Stavanger municipality

CONFERENCE LOGO:

Gold foil figure from Hauge. The gold foil is one of 16 pieces found at Hauge at Tinghaug in Klepp. This is the only find of gold foils from western Norway. Owned by the University Museum of Bergen, the gold foils are currently on loan and exhibited at the Museum of Archaeology. Originally made for an exhibition in 1972, the logo was previously used as the logo of the Museum of Archaeology. It is reused as part of the ‘sustainable’ theme.

THEME OF THE 74TH INTERNATIONAL SACHSENSYMPOSIUM

'Technologies – Knowledges – Sustainability: Crafting societies in the first millennium CE' is the overarching theme chosen for the 74th Sachsensymposium.

Technology, in its widest sense, provides an avenue to explore relationships between materials, places, people and time. It allows researchers from across disciplines to investigate knowledges, skills, innovation, creativity, and to examine relationships and interactions between humans, things, knowledges, raw-materials, and landscapes. Operating at various scales, technology encourages discussions spanning from how specific crafted items were produced, used, and reused to the way major institutions were crafted. It invites studies with short- or long-term perspectives. Studies of crafting processes permit us to identify knowledge systems and transfer of knowledge within and beyond creative communities, while particular choices made in the past are manifested in crafted objects.

Can studies of technology also help us to make choices for our future? Living in a time when technologies transform our planet, can our studies of past technology also serve to better contextualize our current debates on the transition to a more sustainable society?

We welcomed researchers from all interested disciplines to contribute to share research results and ideas relating to the theme. The outcomes of the call are reflected by the scientific program and abstracts contained herein.

On behalf of the organizing committee,
we sincerely hope that you share our delight for this year's program and that you thoroughly enjoy your time in Stavanger!

GENERAL INFORMATION

VENUE

The 74th Sachsensymposium is taking place at the Museum of Archaeology, University of Stavanger (<https://www.uis.no/en/museum-of-archaeology>). Lectures will be held in the auditorium at the Museum of Archaeology.

Adress: Peder Klows gate 30A, Stavanger

[Arkeologisk museum, Universitetet i Stavanger - Google Maps](#)

See also City map on next page.

THE AUDITORIUM

The auditorium is set up for presentations. There will be assistants in the auditorium to help presenters with uploading presentations and other technical issues.

PRESENTATIONS

We kindly request all speakers to upload their presentations on the computer in the auditorium before the start of the scientific program on their respective presentation days.

COFFEE BREAKS AND LUNCHEAS AT THE MUSEUM

Will be served in the café on the ground floor of the Museum of Archaeology.

WIFI

The university uses Eduroam, anyone with a username at another institution affiliated with Eduroam can use their normal login details. For more information on Eduroam and guest network at UiS, please see the UiS webpages (<https://www.uis.no/en/student/wifi-network>).

CONTACT INFORMATION

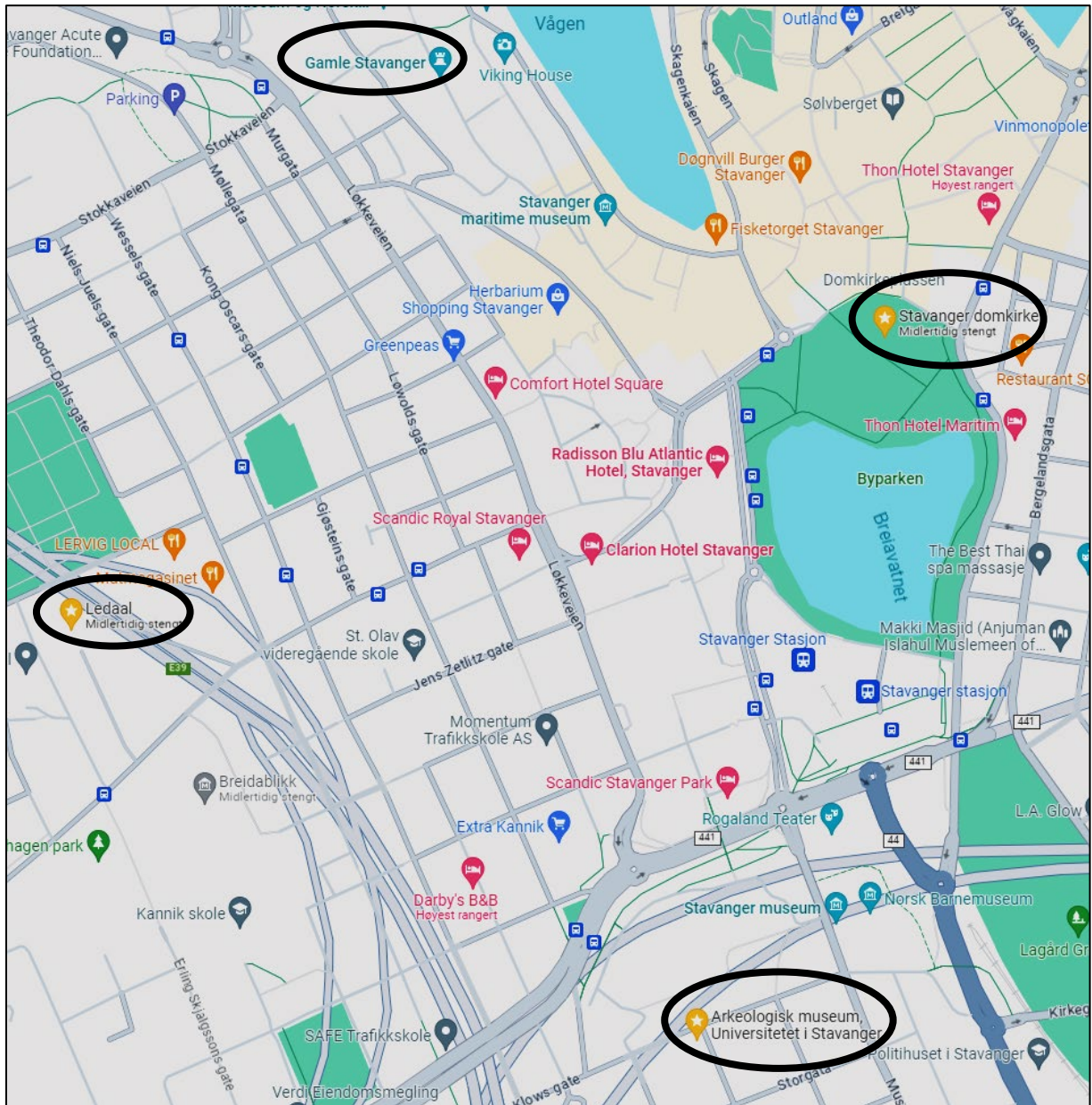
Håkon Reiersen, head of organising committee: hakon.reiersen@uis.no

Marie Amundsen, committee secretary: marie.amundsen@iakh.uio.no

TRANSPORT FROM AIRPORT

Stavanger airport is located 11 km south of the city centre. There are national and international connections. Please check relevant routes online.

The airport shuttle bus departs every 20 minutes. The bus ride takes from 25 to 30 minutes depending on traffic. The best price on tickets is found online (flybussen.no).



Venue and banquet: Museum of Archaeology, University of Stavanger
 City tour: Stavanger Cathedral and Old Stavanger
 Mayor's reception: Ledaal Manor

THE FIRST SACHSENSYMPIOSIUM IN STAVANGER (1971)

Det blir en stor arkeologkongress på Stavanger Museum mandag

Arkeologer fra Nordsjø-området skal drøfte jernalder-bosetningen

Mandag åpnes en stor arkeolog-kongress i Stavanger. Arkeologer fra hele Nordsjø-området har satt hverandre stevne. Det er et symposium som kalles »Arbeitsgemeinschaft für Sachsenforschung» som for første gang kommer sammen i Norge. Symposiet er en lukket organisasjon der medlemmene blir invitert.

Det tema som skal drøftes her er jernalder-bosetningen i Vest-Norge. I alt deltar ca. 40 vitenskapsmenn. Utenom det norske innslaget kommer det folk fra England, Holland, Tyskland, Danmark og Sverige. De belgiske medlemmer hadde meldt forfall.

Mandagen kommer til å gå med til de forelesninger som norske deltakere skal holde. Wenche Slomann, Oddmund J. Möllerop, Jenny-Rita Næss, Asbjørn Simonsen, Donald Provan, Bjørn Myhre, Thorleif Sjøvold og Jon Sannes skal belyse forskjellige sider ved jernalderbosetningen.

Tirsdag skal nyttes til ekskursjon til jernalder-anleggene på Leksaren, Klauhaugane, Dysjane,

gravfeltet på Hå, gardsanlegg på Ullandhaug, helleristingene på Fluberget i Revheim og multigens også Lyngaland.

Onsdag skal så utlendingene forelese om parallelle fenomener i deres respektive hjemland, og så blir det drøftinger av den kulturkontakt det må ha vært mellom Nordsjølandene i jernalderen.

Førstekonservator Oddmund J. Möllerop forteller at man fra magasinene har hentet fram en del av den rike jernalder-keramikken som finnes der og som nå blir stilt opp. Det er meningen at den utstillingen skal monteres slik at den når konferansen er over, kan presenteres for publikum.

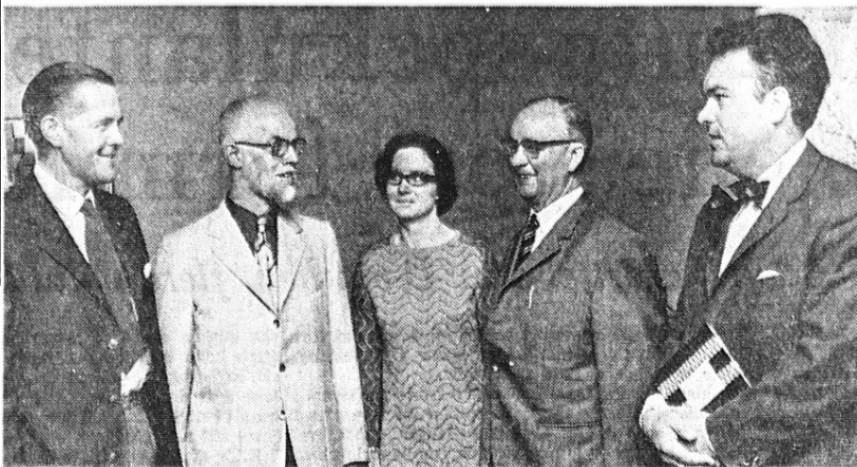
Arkeologisk konferanse åpnet i Stavanger

Stavanger, 11. mai.

(NTB) En arkeologisk konferanse med deltagere fra landene omkring Nordsjøen, det såkalte Sachsen-symposium, ble åpnet i Stavanger mandag. Arkeologene skal i tre dager drøfte jernalderbosetningen i Vest-Norge. Foruten forelesninger blir det en rekke ekskursjoner.

De 35—40 deltagere kommer fra Norge, England, Nederland, Tyskland, Danmark og Sverige.

Mandag 10. mai 1971



Arkeologkongress i Stavanger

I helgen var det innrykk av arkeologer i Stavanger. De kom fra landene omkring Nordsjøen, og de er deltakere i det såkalte »Sachsen-symposium» som i tre dager skal drøfte jernalder-bosetningen i Vest-Norge.

I går kveld hadde deltakerne en uformell sammenkomst i Mortepumpen, der førstekon-

servator Jan Hendrich Lexow viste lysbilder fra Stavanger og fortalte om den byen gjestene var kommet til.

I morges åpnet konferansen i Museets foredrags-sal. Dagens program byr på en rekke norske forelesninger. I morgen blir det ekskursjon til forskjellige jernalder-anlegg, og på onsdag skal så de utenlandske

gjestene trekke fram paralleler til det norske materiell de har fått seg forelagt.

På bildet ser en fra venstre: Førstekonservator J. Oddmund Möllerop, dr. phil. J. Ypey, Amersfort, Holland, magister Ulla Lund Hansen, København, professor dr. H. Hinz, Kiel og dr. Weichstein, Kiel.

The 22nd International Sachsensymposium in Stavanger in 1971 was the first symposium held in Norway. It was the second in Scandinavia, between Odense in 1969 and Stockholm in 1972.

Newspaper articles from Stavanger Aftenblad and Aftenposten (Oslo)

The 1971 program is found on the official site of the symposium: Stavanger 1971 (sachsensymposion.org)



Programme

SATURDAY, 16 SEPTEMBER

- 11:00 Registration in the reception at the Museum of Archaeology opens (arkeologiskmuseum.no)
- 13:00 Workshop starts in the auditorium at the Museum of Archaeology. Talks on the on-going restorations, excavations, and research at the Stavanger Cathedral by Sean Denham, Bettina Ebert, and Sverre C. Guldberg (University of Stavanger)
- 14:30-16:00 Walk from museum to Stavanger Cathedral ([Stavanger Cathedral - Wikipedia](https://en.wikipedia.org/wiki/Stavanger_Cathedral)).
Tour in Stavanger Cathedral, followed by city tour to the port and Old Stavanger. City tour led by Arnvid Lillehammer and Ellen Hagen (University of Stavanger)

17:00–20:00:

OPENING OF THE 74TH SACHSENSYMPIOSIUM AT THE MUSEUM OF ARCHAEOLOGY

By Magnus Haaland, Head of Collections at the Museum of Archaeology, Univ. of Stavanger

Welcoming speech by Adam Cieslinski, Deputy-Chair of the International Sachsensymposium

Short keynote: ON THE ICONOGRAPHY OF THE GOLD FOIL FIGURES FROM HAUGE

By Sigmund Oehrl (University of Stavanger)

Exhibition opening: FABULOUS ANIMALS (loan from Museum of Cultural History, Univ. Oslo)

By Hanne L. Aannestad (University of Oslo), Elna Siv Kristoffersen (University of Stavanger) and Ingunn M. Røstad (University of Oslo)

Followed by reception at the museum with hors d'oeuvres and wine.

SUNDAY, 17 SEPTEMBER – SESSION I: TECHNOLOGIES

09:15–17:00 Lectures in the auditorium at the Museum of Archaeology

Lectures 15 min, followed by 5 min Q&A. Opportunity to visit exhibitions during breaks.

08:30 Registration in reception opens

09:15 Welcome and introduction by Unn Pedersen (University of Oslo)

Chair: Torun Zachrisson (County Museum of Uppland)

09:20 NITHIJO AND HIS COLLEAGUE FROM THORSBERG - SOME ASPECTS OF HIGH CLASS GOLDSMITHING AT THE BEGINNING OF THE 3RD CENTURIES AD
Claus von Carnap-Bornheim

09:40 PRODUCTION AND REPAIR OF STANDARD AND 'ROGUE' MIGRATION PERIOD GOLD BRACTEATES
Nancy Wicker (University of Mississippi)

10:00 MANUFACTURE AND TREATMENT OF GOLD FOIL FIGURES
Alexandra Pesch (Centre for Baltic and Scandinavian Archaeology)

10:20 **BREAK (20 min)**

Chair: Catherine Hills (University of Cambridge)

10:40 CRAFTS AND CULINARY PRACTICE – NEW PERSPECTIVES ON THE MID-6TH CENTURY TRANSITION AND THE EARLY VIKING AGE
Grethe Bjørkan Bukkemoen (University of Oslo)

11:00 IN SEARCH OF THE ORIGINS OF ROTATING GRINDING TECHNOLOGY IN NORTHWESTERN EUROPE
Sibrecht Reniere and Ewoud Deschepper (Ghent University)

11:20 RE-USE OF QUERN-STONES IN SETTLEMENT CONTEXTS IN IRON-AGE DENMARK
Louise Søndergaard (Museum Skanderborg)

11:40 BETWEEN PRAGMATISM, RELIGION, AND PERCEPTION OF IDENTITY – SPOILIATION OF PRE-CHRISTIAN STONE MONUMENTS IN GOTLANDIC RURAL CHURCHES IN THE LIGHT OF CONTINENTAL PARALLELS
Sigmund Oehrl (University of Stavanger)

12:00 LUNCH AND COFFEE IN THE CAFÉ AT THE MUSEUM OF ARCHAEOLOGY

Chair: Zanette Tsigaridas Glørstad (University of Oslo)

- 13:00** WHAT HAPPENED IN THE HINTERLAND? A BATCH STUDY OF EARLY BUCKET-SHAPED POTS FROM THE 4TH AND 5TH CENTURIES AD IN SOUTHWEST NORWAY
Per Ditlef Fredriksen (University of Oslo) and Anders Lindahl (Lund University / University of Pretoria)
- 13:20** WHEEL-MADE POTTERY OF THE PRZEWORSK CULTURE - ITS ORIGINS, CHRONOLOGY AND ECOLOGICAL CONDITIONS OF PRODUCTION
Judyta Rodzińska-Nowak (Jagiellonian University)
- 13:40** A ROMAN PUGIO FROM HALTERN – DAMASCEENED ALL-OVER ... RIGHT?
Ulrich Lehmann (Landschaftsverband Westfalen-Lippe)
- 14:00** **BREAK (40 min)**
With opportunity to see the new gold bracteate hoard from Rennesøy

Chair: Anna Wessman (University of Bergen)

- 14:40** TEXTILE PRODUCTION AND USE IN A MARTIAL CONTEXT – A METHODOLOGICAL APPROACH
Charlotte Hedenstierna-Jonson (Uppsala University)
- 15:00** CRAMPONS - AN EVERYDAY OBJECT FROM LATE IRON AGE AND/OR AN OBJECT WITH SACRED MEANING?
Anne-Sofie Gräslund (Uppsala University)
- 15:20** **BREAK (20 min)**

Chair: Andreas Rau (Centre for Baltic and Scandinavian Archaeology)

- 15:40** MERO-JEWEL. PRODUCTION, MATERIALS AND EXCHANGE OF MEROVINGIAN JEWELLERY (5TH-8TH CENTURIES) (BELGIUM)
Britt Claes, Elke Otten, Line Van Wersch and Helena Wouters (Royal Museums of Art and History (Brussels), Royal Institute for Cultural Heritage (Brussels), University of Liège)
- 16:00** CRAFT PRODUCTIONS IN QUENTOVIC: A STATE OF THE ART
Inès Leroy (University of Louvain)
- 16:20** FRISIAN COMBS? COMB-MAKING AND THE DYNAMICS OF NORTH SEA TRADE IN THE EARLY VIKING AGE
Nelleke IJssennagger-van der Pluijm (Fryske Akademy) and Steve Ashby (University of York)

- 16:40** MADE IN LIFE – FOR USE IN DEATH. ASPECTS OF THE 7TH-CENTURY HARPOLE
BED BURIAL
Lyn Blackmore (Museum of London Archaeology)
- 17:00** Info about the excursion on Monday (15 min)
Elna Siv Kristoffersen (University of Stavanger)
- 18:00** MEETING, COORDINATING COMMITTEE (KA) AT THE MUSEUM
Meeting room Vistehola (up the stairs from café, turn right, to end of corridor)

Selected excursion photos:



Eikeland brooch with runes



Beach burial site at Hå old rectory

MONDAY, 18 SEPTEMBER – EXCURSION

09:00–17:00 EXCURSION TO JÆREN

Please bring suitable footwear and outerwear, preferably also a water bottle.

Toilets are available at the museum before embarking the bus. Toilets are also available at the lunch and coffee stops at Vitengarden and Hå old rectory, as well as in the bus.

Buses depart from the Museum of Archaeology at 09:00. Please be ready at 08:45.

We will visit (see route next page):

- Reconstructed Iron Age farm at Ullandhaug
- Courtyard site and burials at Tinghaug
- Vestly and Eikeland burials
- The Lyngaland farm site
- Courtyard and farm sites at Vitengarden
- Beach burial site at Hå old rectory

Warm lunch will be served at Vitengarden/Jærmuseet (jaermuseet.no), coffee with dessert will be served at Hå old rectory (hagamleprestegard.no)

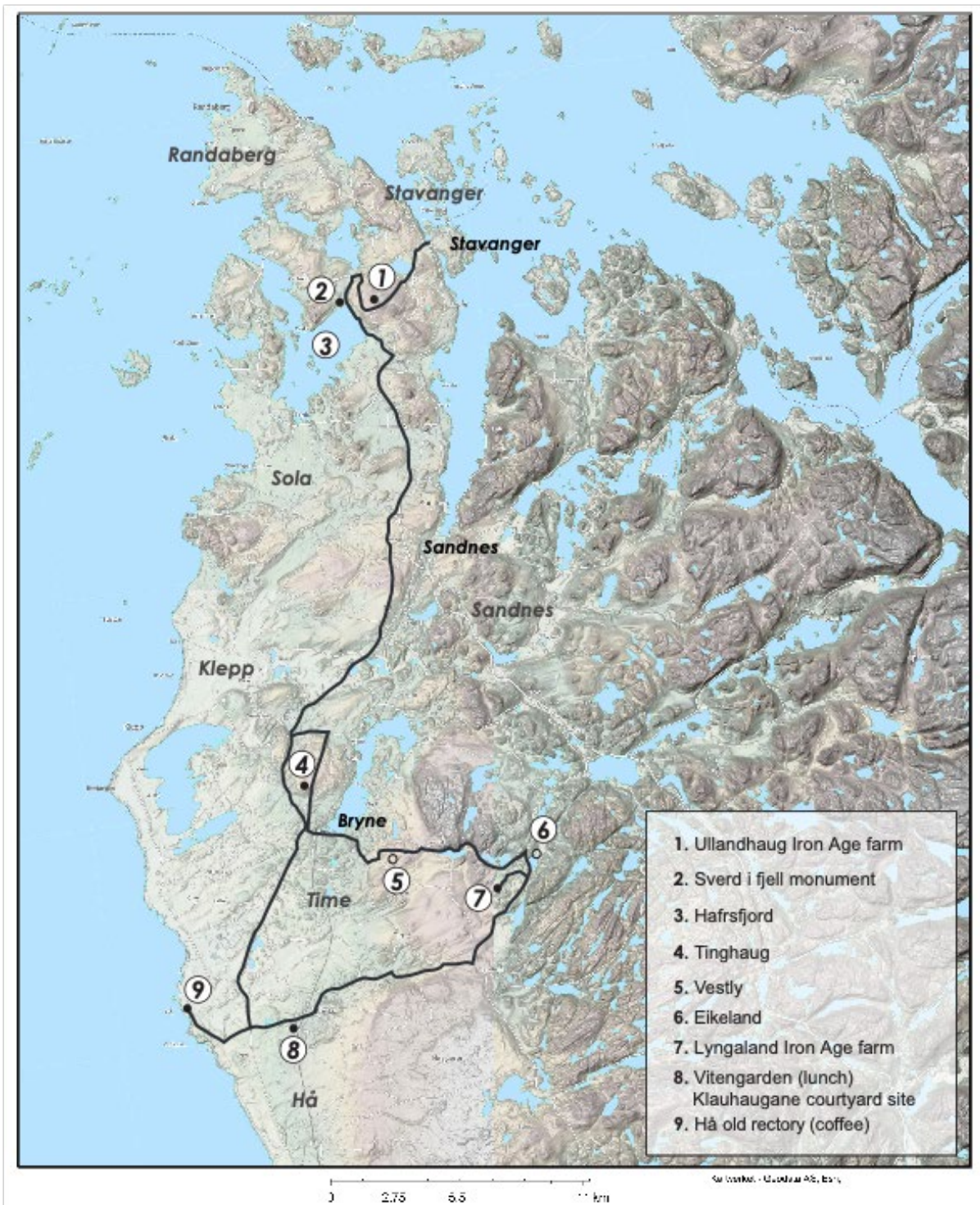
19:00–20:30 MAYOR’S RECEPTION AT THE LEDAAL MANOR

Separate invitations will be sent by the mayor’s office to participants prior to the reception (ledaal.no, [Ledaal - Google Maps](#)). Please accept the email invitation before the 8 September.

Due to health and safety restrictions, the mayor’s office only allows 75 participants to Leedal. Non-members will have the option of an alternative arrangement. Info will be sent on email.



Ledaal



Route: Short stop at Ullandhaug Iron Age farm (Jernaldergården), stop at Tinghaug, passing burial sites at Vestly and Eikeland (photo), stop at Lyngaland, stop at Vitengarden, stop at Hå old rectory (photo).

See photos on p. 9.

TUESDAY, 19 SEPTEMBER – SESSION II: KNOWLEDGES

09:20–17:00 Lectures in the auditorium at the Museum of Archaeology

Chair: Sam Lucy (University of Cambridge)

09:20 THE WEB OF WAR – WARFARE, WEAPON GRAVES AND TECHNOLOGY TRANSFER IN NORTHERN AND CENTRAL EUROPE BCE 200-400 CE
Rasmus Birch Iversen (Moesgaard Museum)

09:40 AN UNUSUAL TREASURE FIND OF THE 3RD CENTURY FROM SULUC IN DOBRUDJA (RO) WITH FRAGMENTS OF A SCANDINAVIAN SNAKE HEAD ARM RING
Dieter Quast (Schleswig-Holsteinische Landesmuseen Schloss Gottorf)

10:00 THE BERGKAMEN WARRIOR – A SCANDINAVIAN INFLUENCED HIGH STATUS BURIAL IN WESTPHALIA?
Eva Cichy and Ulrich Lehmann (Landschaftsverband Westfalen-Lippe)

10:20 MOUNTING A FRANKISH DEFENCE AGAINST THE VIKINGS? THE POSSIBLE CONTEXT OF SPECIALISED PRODUCTION IN THE GHENT AREA (NORTHERN BELGIUM) IN RELATION TO THE MILITARY DUTIES OF THE GHENTIAN ABBEYS
Ewoud Deschepper (Ghent University)

10:40 **BREAK (20 min)**

Chair: Michaela Helmbrecht (archäotext GbR)

11:00 THE RAVEN'S EYE. STYLISTIC REFERENCES TO SIGHT AND VISION AS SYMBOLS OF KNOWLEDGE AND POWER CONNECTED WITH ODIN
Anne Nørgård Jørgensen and Laurine Albris (National Museum of Denmark)

11:20 VIKING MAN, VIKING WOMEN: THE IOM 2018 OVAL BROOCHES AND THE END OF THE MYTH OF MEN-ONLY GROUPS OF WARRIORS SETTLING IN THE ISLE OF MAN
Dirk H. Steinforth (Göttingen)

11:40 SHIP STEM MODELS: NOT MERELY CHILDREN'S TOYS. AN EXAMPLE OF LEARNING AND IDENTITY CONSTRUCTION IN NORSE SETTLEMENTS
Massimiliano Ditta (University of Stavanger)

12:00 **LUNCH AND COFFEE IN THE CAFÉ AT THE MUSEUM OF ARCHAEOLOGY**

Chair: Ulla Moilanen (University of Turku)

13:00 FROM HÅLOGALAND TO ROGALAND AND BEYOND AD 180–400
Dagfinn Skre (University of Oslo)

- 13:20** KNOWLEDGESCAPES OF PRE-CHRISTIAN RELIGION ON IRON AGE BORNHOLM
Laurine Albris (National Museum of Denmark)
- 13:40** METALWORKING AND ANIMAL ART AD 400-800 IN NÄRKE PROVINCE, SWEDEN
Martin Rundkvist (University of Łódź)
- 14:00** THE EARLY MEDIEVAL CEMETERY OF KEITUM ON SYLT, NORTH FRISIA:
THOUGHTS ABOUT COMPLEXITY AND HERITAGE IN A CULTURAL ZONE BETWEEN
FRISIANS AND DANES
Bente Sven Majchczack (Kiel University) and Nelleke Ijssenagger-van der Pluijm
(Fryske Akademy)
- 14:20** **BREAK (20 min)**

Chair: Sonja Marzinzik (Bavarian State Archaeological Collection)

- 14:40** REINVESTIGATING WORKSHOP TRADITIONS ALONG THE NORWEGIAN WEST
COAST: CREATIVITY AND COPYING
Elna Siv Kristoffersen (University of Stavanger), Unn Pedersen (University of
Oslo)
- 15:00** ON 'UTILITY GOLD' AND USES OF GOLD IN THE NORWEGIAN MIGRATION PERIOD
Marie D. Amundsen (University of Oslo)
- 15:20** FINE METALWORK AND LOCAL SOCIAL STRATEGIES: THE JEWELRY FROM THE
BURIAL GROUND AT GRØNHØJGAARD, NORTHERN JUTLAND, IN A REGIONAL
PERSPECTIVE
Torben Trier Christiansen (Nordjyske Museer)
- 15:40** **BREAK (20 min)**

Chair: Anne Pedersen (National Museum of Denmark)

- 16:00** CREATING RELATIONS – CRAFTING COMMUNITIES
Mari Østmo (University of Oslo)
- 16:20** TECHNOLOGIES AT DISPLAY. THE STORHAUG SHIP BURIAL
Håkon Reiersen (University of Stavanger)
- 16:40** TECHNOLOGY – ART – IDENTITY. ZOOMORPHIC SPURS IN THE LIGHT OF
METALLOGRAPHIC ANALYSIS
Paweł Szczepanik (Nicolaus Copernicus University in Toruń) and Sławomir
Wadył (University of Warsaw)
- 19:00** **BANQUET/FORMAL DINNER AT THE MUSEUM OF ARCHAEOLOGY**

WEDNESDAY, 20 SEPTEMBER – SESSION III: SUSTAINABILITY

09:00–12:30 Lectures in the auditorium at the Museum of Archaeology

Chair: Egge Knol (Groninger Museum)

09:00 CLIMATE CHANGES AS DRIVING FORCES FOR THE DEVELOPMENT OF SOCIETIES, ECONOMIES AND ENVIRONMENTS IN THE NORTH SEA AND BALTIC SEA REGIONS DURING THE LAST 2000 YEARS? – REFLECTIONS ON THE STATE OF RESEARCH IN NORTHERN CENTRAL EUROPE AND SCANDINAVIA
Daniel Hepp and Hauke Jöns (Lower Saxony Institute for Historical Coastal Research)

09:20 ARABLE FARMING AND ANIMAL GRAZING AT HULJE, ÖSTERGÖTLAND
Maria Petersson (The Archaeologists, Statens historiska museer)

09:40 EFFECTIVE HOUSES. PROPERTY RIGHTS AND SETTLEMENT IN IRON AGE EASTERN NORWAY
Lars Erik Gjerpe (University of Oslo)

10:00 HOUSEHOLD ECOLOGY, GENDER AND FUNERARY RITES: THE TUNE INSCRIPTION
John Hines (Cardiff University)

10:20 **BREAK (20 MIN)**

Chair: Rica Annaert

10:40 THE DARK EARTH PHENOMENON - AN INDICATION OF SUSTAINABLE MANAGEMENT?
Jens Schneeweiß (Kiel University / Centre for Baltic and Scandinavian Archaeology)

11:00 SUSTAINABLE ENERGY AND ARCHAEOLOGY
Pernille Kruse (Museum Sønderjylland)

11:20 CRAFTED WORLDS, IMAGINED PASTS: FANTASY, GAMING AND ARCHAEOLOGY
Andrew Richardson (Isle Heritage CIC) and Julia Rawcliffe

11:40 SYMPOSIUM SUMMARY
Anders Andrén (Stockholm University)

12:00 Invitation to the 75th Sachsensymposium in Copenhagen, Denmark

End of symposium



Abstracts

OPENING

ON THE ICONOGRAPHY OF THE GOLD FOIL FIGURES FROM HAUGE

Sigmund Oehrl (University of Stavanger)

The gold foil figures from Hauge, Klepp kommune, were found in 1897, not far from Krosshaugen, a richly furnished and well-known Migration Period burial. All 16 gold foils represent the same motif, a man and a woman embracing each other. This couple motif is very common on Scandinavian gold foils of the Merovingian period and is often interpreted as a pair of gods or a wedding rite. What particularly distinguishes the find from Hauge, however, is a staff or plant-like stem that the woman seems to be holding in her hand. I will explore the meaning of this plant, which can also be seen on other Iron Age and Viking Period pictorial representations and, against the background of a rich literary and runic tradition, can be understood as an *allium* plant, a leek. Since antiquity and especially in the north, this plant has been attributed magical power and healing properties, but in particular it was associated with fertility and sexuality, which makes it understandable on the gold foils from Hauge, the old logo of the Stavanger Archaeological Museum.

SESSION I: TECHNOLOGIES

NITHIJO AND HIS COLLEAGUE FROM THORSBERG - SOME ASPECTS OF HIGH CLASS GOLDSMITHING AT THE BEGINNING OF THE 3RD CENTURIES AD

Claus von Carnap-Bornheim

The Scandinavian war booty offerings of the later Roman Imperial period contain an extraordinarily rich inventory of top-quality handicraft products of their time, which can be understood in particular as status-indicating pieces of armour of the military elites. The aspect of imitation and variation of provincial Roman style elements and their combination with Germanic/Barbarian style elements is particularly striking. Although different regions of origin are assumed for the materials from Thorsberg and Illerup, both ensembles from the area of personal furnishings, sword equipment and horse harnesses can be juxtaposed and compared especially with regard to their adaptation of provincial Roman elements, but also to the personal handwriting of the respective producing craftsmen and their workshop circles including even their mentalities. Furthermore, new perspectives of interpretation result from the compilation of more extensive sets in the respective complexes.

PRODUCTION AND REPAIR OF STANDARD AND 'ROGUE' MIGRATION PERIOD GOLD BRACTEATES

Nancy Wicker (University of Mississippi)

The primary workshops where large numbers of Migration Period gold bracteates were produced may have been 'central places' often located in coastal or riverine regions. At such locations, bracteate dies most likely were initiated and manufactured—perhaps under central control—and multiples of bracteates were made. A standard technology of stamping multiples of gold disks from cast bronze dies was employed. The models that form the foundation for Alexandra Pesch's "formula families" of bracteates stimulated the production of closely related pieces, and many of these bracteates subsequently may have been distributed to secondary locales by trade, gifting, or other means, where they inspired further imitations.

Several bronze (copper alloy) dies for the production of "standard" bracteates have been discovered; however, upon examination of the dies and bracteates, we can see that not all bracteates were made by the same methods. Occasional 'rogue' bracteates were made, perhaps in remote places where the technology for producing bronze dies from which gold disks were stamped was not available. In these locations, some bracteates may have been made roughly in imitation of more typical bracteates, perhaps by stamping with wood or ceramic dies rather than bronze ones—techniques that scholars proposed before bronze bracteate dies were discovered more than a generation ago. They also sometimes exhibit suspension loops made by non-standard methods.

Close examination of bracteates to trace production methods also reveals that repairs often were made. Some fixes were made in response to damage that occurred during the production of bracteates, as found at central places. Other patches and replacement loops were made as the result of heavy usage of bracteates in all locales, in the vicinity of central places as well more distant settings.

MANUFACTURE AND TREATMENT OF GOLD FOIL FIGURES

Alexandra Pesch (Centre for Baltic and Scandinavian Archaeology)

Concerning the fascinating Gold foil figures of the Vendel period, different types of production can be distinguished. A large part was produced with the help of male moulds. This usage of dies made out of bronze resp. copper alloys allowed it to mass-produce the tiny sheets: Series with well over 100 identical embossments are known. However, all embossed Gold foil figures were reworked by cutting them out individually for final completion. Often the shapes are roughly rectangular, in others the cut follows the contours of the body exactly. However, there are also many Gold foil figures whose shapes were merely carved into a base sheet. Others just were quite roughly cut out of sheet gold, the latter still being able to be stamped with other things, e.g. figurines. Mixing of those techniques was also possible. After the basic processes of production, however, some more activities can be traced, namely several forms of secondary treatment of the paper-thin pieces. These include above all the application of a gold strip or gold ring (as neck jewellery). On the other hand, destructions such as the rolling up, folding or

tearing of the small figures exist. Those observations are not new at all. However, the question arises as to when exactly the individual steps were carried out. Were all the treatments part of the primary production, or can several time horizons be proven for the different activities? What does this mean for the historical context, the cultic activities that the Gold foil figures represent, and for the society in which this took place? Finally, what can we learn about the individual people who may have carried out different treatments of the Gold foil figures – were different intentions, even different religious or political philosophies involved?

CRAFTS AND CULINARY PRACTICE – NEW PERSPECTIVES ON THE MID-6TH CENTURY TRANSITION AND THE EARLY VIKING AGE

Grethe Bjørkan Bukkemoen (University of Oslo)

One of the markers underpinning a transitional period in Norway in the mid-6th century is a significant change in the use of materials for culinary artefacts. While a vivid production of high-quality ceramic tableware characterises the 4th – 6th centuries, this craft eventually fades and is replaced by cooking equipment made of iron and soapstone in the 7th – 9th centuries. This change in materials and artefact categories has often been approached as a sudden break or a “natural” development, leaving the emergence of the craft as social knowledge and the artefacts with their particular properties as almost unexplored fields. In a diachronic, ground-up approach with attention to materials and the contextual emergence of knowledge within craft communities, it is possible to bridge the suggested break in artefact categories and present a new interpretative framework for the emergence of iron and soapstone cooking equipment. Focusing on craft communities and their intersection with communities of consumption makes it possible to explore location, innovation, improvisation and emulation. This perspective provides insight into a considerable reorientation in the conservative tradition of cooking and meals, and their potent role in social practice. The benefits of a ground-up approach to artefacts, materials and technologies with sensitivity to signs of reorientation or continuation, is increased insight into social processes of memory and forgetting from the perspectives of individuals and social groups.

IN SEARCH OF THE ORIGINS OF ROTATING GRINDING TECHNOLOGY IN NORTHWESTERN EUROPE

Sibrecht Reniere and Ewoud Deschepper (Ghent University)

It is generally accepted that the innovative technology of the rotating grindstone, driven by a crank mechanism, was introduced in northwestern Europe during the Early Medieval period. Famously, the oldest portrayal of this technology is found in the Utrecht Psalter (first half of the 9th century). However, based on the existence of crank technology, an earlier introduction in the (Late-)Roman period cannot be ruled out. Nevertheless, Roman rotary grindstone finds are still unknown. To date, comprehensive comparative research on rotating grindstones is as good as absent in medieval material studies. This is unfortunate given the great economic and perhaps also symbolic value of these tools.

A preliminary inventory of 32 sites from nine countries with early medieval rotating grindstones points out that they appear to cluster in central places like *emporia* or larger agglomerations (e.g. Dorestad and Haithabu). Examples from rural sites in e.g. the Low Countries and France furthermore indicate a close relation with estates governed by large landowners and/or with the presence of specialized craft activities in the countryside (e.g. metallurgy, milling). In turn, this suggests that the rotating grindstone might be another marker of the socio-economic upturn of the period.

Were central places the ideal breeding ground to give rise to this innovative technology? Did a rising demand in productivity and efficiency then act as catalyst for the (privileged) spread of this tool category to the countryside? This paper explores these questions based on a preliminary analysis of find contexts of early rotating grindstones in northwestern Europe. As such, it adds to the evidence on the socio-economic dynamics of early medieval society.

RE-USE OF QUERN-STONES IN SETTLEMENT CONTEXTS IN IRON-AGE DENMARK

Louise Søndergaard (Museum Skanderborg)

Querns are as technologically brilliant as they are simple in design. This simplicity often leads us to mistake quern-stones for something that holds very little significance beyond the act of grinding. If we consider the contexts in which querns are found; the variety and depositional patterns this notion is obviously incorrect.

Unfortunately, few archaeologists pay much attention to querns and their context, and the metaphors mediated by the querns are thus overlooked. This paper will present a case in which the depositional contexts of querns on a large-scale excavation was analyzed. Most of the quern-stones found were re-used in a new context and clearly with a new agenda. Clear depositional patterns emerged from the depths of the GIS-based database proving that querns played important roles in the assemblage and the demolition of households throughout the Roman Iron Age.

The value, symbolism and meaning of querns in the past are probably impossible for us to understand, but the treatment, re-use and the subsequent deposition of the querns can definitely give us a hint.

BETWEEN PRAGMATISM, RELIGION, AND PERCEPTION OF IDENTITY – SPOILIATION OF PRE-CHRISTIAN STONE MONUMENTS IN GOTLANDIC RURAL CHURCHES IN THE LIGHT OF CONTINENTAL PARALLELS

Sigmund Oehrl (University of Stavanger)

Why did the medieval church builders of the Swedish Baltic Island of Gotland incorporate so many pre-Christian memorial stones with Germanic-pagan imagery into their Christian sacred buildings? Were the picture stones just regarded as easily available building material and integrated into the churches without any further intention? Or does the integration and re-contextualisation of these prehistoric monuments convey a certain message? Were they attributed certain powers (*Wirkmacht*)? Despite the considerable implications of this question

for the understanding of the medieval Scandinavian perception of the pagan past it is astonishingly undiscussed so far, a comprehensive study does not exist. But how can we determine the intentions of this «recycling»? First of all, we have to be aware of the fact that the phenomenon of re-use of ancient stone sculpture in medieval church buildings is embedded in a cross-cultural frame. Roman spolia such as tomb or votive stones are frequently found in medieval churches on the continent. As this was studied thoroughly, these continental perspectives have to be incorporated, thereby allowing a contextualisation of this phenomenon in a broader cultural perspective. In the paper, I will present various possible interpretations based on selected examples and parallels, including both archaeological and written sources.

WHAT HAPPENED IN THE HINTERLAND? A BATCH STUDY OF EARLY BUCKET-SHAPED POTS FROM THE 4TH AND 5TH CENTURIES AD IN SOUTHWEST NORWAY

Per Ditlef Fredriksen (University of Oslo) and Anders Lindahl (Lund University / University of Pretoria)

Rogaland in Southwest Norway was a core production area for bucket-shaped pottery throughout its era of around 200 years. Recent work by Elna Siv Kristoffersen, Bente Magnus and colleagues have provided a well-developed understanding of the final century of this Migration Period *Leitfossil*: certain ceramic craft networks rose to prominence, culminating in workshop milieux intimately tied to the formation of central places like those in Jæren, Rogaland from around AD 450/60, eventually making bucket-shaped alongside Style I metalwork. Notwithstanding this inventive cross-craft focus, however, we know less about the first century of production. A recent study of the Augland ceramic workshop suggests that the rise of the Jæren workshop milieux was concurrent with a gradual decline of production at Augland, which was related to the Oddernes elite milieu in Agder. Consequently, the areas around and between these two regional nodal points become of particular interest. What happened to connectivity in this hinterland during the emergent first century of bucket-shaped? This batch study identifies paste recipes and traces the movements of pots. Cognisant of the lack of comprehensive archaeometric studies, partly due to costs, this paper presents a transferrable and relatively inexpensive approach that combines qualitative macroscopy with quantitative analysis of data from a handheld X-ray Fluorescence (h-XRF) device.

WHEEL-MADE POTTERY OF THE PRZEWORSK CULTURE - ITS ORIGINS, CHRONOLOGY AND ECOLOGICAL CONDITIONS OF PRODUCTION

Judyta Rodzińska-Nowak (Jagiellonian University)

Wheel-made pottery appeared in the Przeworsk culture milieu (i.e. in the area of present-day southern and central Poland) at the beginning of the younger Roman period (second half of the 2nd century AD) as a result of technology transfer from both the Dacian cultural circle and the provincial area of the Roman state. Within a relatively short period of time, numerous workshops producing this type of pottery were established, the largest number of which were recorded in Lesser Poland and Silesia. This production continued to develop until the

disappearance of the Przeworsk culture in the early phase of the Migration period, i.e. until the mid-5th century AD. Excavations and non-invasive prospections carried out in recent years have provided many new sources for the study of the ecological conditions of wheel-made pottery production, its patterns of organisation and regional differentiation, as well as its role in the economy and daily life of the people of the Przeworsk culture.

A ROMAN PUGIO FROM HALTERN – DAMASCEENED ALL-OVER ... RIGHT?

Ulrich Lehmann (Landschaftsverband Westfalen-Lippe)

In 2019 a Roman pugio was found in a ditch surrounding a tumulus-grave in Haltern (Westphalia, Germany). The weapon seemed to have been put there deliberately. All metal parts of the cingulum as well as blade and scabbard were preserved in exceptional good conditions. Especially the scabbard presented rich decorations in niello, enamel and – what was supposed to be – extensive silver and brazen inlays. On the basis of thorough conservation and digital computed tomography-scans a faithful reconstruction was attempted.

The sheer mass and delicacy of the metal decorations gave rise to doubts that most of the small wires were classical damascened (german: tauschierte) inlays. Instead, it is much more likely that these were applied in a technique called koftgari. Thus, small wires and sheets are pressed on to a roughened metal base which is afterwards polished until an even but finely decorated surface is achieved.

When regarding other finds, the impression arises that koftgari was used at least until the 7th or 8th century. Compared to damascening koftgari is faster to produce and less complex in planning, which should affect our understanding of artisanal quality and crafting traditions. Isn't that a good reason to take another closer look at richly decorated finds?

TEXTILE PRODUCTION AND USE IN A MARTIAL CONTEXT – A METHODOLOGICAL APPROACH

Charlotte Hedenstierna-Jonson (Uppsala University)

In an archaeological context, the absence of textiles is seldom representative of what once existed. However, the perishability of the source material does not mean that there are no other types of traces reflecting the presence of the absent textiles. For certain types of objects, the connection is obvious, such as loom weights as indicators of textile production. In other cases, the connection is more indirect and requires a deeper pre-understanding of both the place and the context. A framework is needed in which the place, the activities and the actors are given a context. In this study, the framework consists of the martial setting of Birka's garrison, its warriors and specific activities. Textiles are often not considered a natural part of the life and activities of a warrior. The notion that the textile sphere was specifically female, and the martial sphere almost exclusively male, has created a perceived boundary between the two worlds that did not exist in reality. Using the garrison as a fixed framework, this presentation aims to explore the occurrence of textile production and handling in an

environment where it is archaeologically absent and also not expected, but where it nevertheless has formed an important part of everyday life and activity.

CRAMPONS - AN EVERYDAY OBJECT FROM LATE IRON AGE AND/OR AN OBJECT WITH SACRED MEANING?

Anne-Sofie Gräslund (Uppsala University)

Crampons are a relatively common object in Vendel Period and Viking Age graves. They are made of iron with rectangular “shanks” over either an irregular or band-shaped base plate, from the underside of which a single conical spike projects. The first type has been interpreted as crampons for horses and the second type as crampons for human shoes. Due to the way the “shanks” are bent, they have been interpreted either as crampons for horses’ hooves or shoe studs. The location of type 1 crampons in inhumation graves however suggests they have been used both by horses and by humans.

In addition to the practical use, the phenomenon of such crampons close to the feet of the dead has been interpreted as *Helskor*, shoes for the dangerous walk to Valhalla/Hel, which is mentioned in Gisle Surson’s saga. This interpretation is proposed by, among others, Dag Strömbäck and Anne Holtsmark.

Based on material from inhumation graves in Valsgårde and Birka, this presentation will explore the probability of the two interpretations, if the crampons could be both practical and symbolic, or if indeed there is other possible interpretations.

MERO-JEWEL. PRODUCTION, MATERIALS AND EXCHANGE OF MEROVINGIAN JEWELLERY (5TH-8TH CENTURIES) (BELGIUM)

Britt Claes, Elke Otten, Line Van Wersch and Helena Wouters (Royal Museums of Art and History (Brussels), Royal Institute for Cultural Heritage (Brussels), University of Liège)

In Belgium, a multitude of archaeological sites from the early Middle Ages has been investigated since the end of the 19th century exposing large numbers of precious jewels made of one or a combination of precious metals (gold and silver) with inlays of glass, gems, precious or semi-precious stones. Despite the preciousity and splendour of the items, the high skills and the creativity of the craftsmen, these items have rarely been subject of extensive analyses in Belgium.

The Mero-Jewel project started in 2023 and funded by BELSPO (Belgian Science Policy Office), proposes to fill in this research gap involving expertise from several scientific fields that will lead to a better understanding of the production, materiality and exchange of these high-quality products, namely fibulae, hairpins, rings, necklaces and earrings.

The paper will focus, on the one hand, on the original applied material-based approach of Mero-Jewel that combines different methodologies, ranging from traditional archaeological contextual research (analytical and descriptive analyses), non-invasive visual and archaeometrical analyses (pXRF, ion beam analysis, x-ray radiography, 3D modelling, ...) and desktop research methods (cataloguing and interpreting the data), using at the same time a

flexible and open information and documentation infrastructure (<https://heuristnetwerok.org>)
In order to collect, describe and manage the research data.

On the other hand, we will focus on the never published artefacts from the Merovingian necropolis of Harmignies (Wallonia) that was excavated between 1884 and 1889 by Baron Alfred de Loë and Count Georges de Looz-Corswarem and that is still one of the core collections of the Merovingian section of the Art and History Museum (Brussels) today.

CRAFT PRODUCTIONS IN QUENTOVIC: A STATE OF THE ART

Inès Leroy (University of Louvain)

To date, little is known about the craft productions in Quentovic. However, the artefacts discovered leave no doubt. At the heart of the settlement along the river Canche, the work of amber, metal, antler and glass is clearly attested from the very first occupations at the end of the 6th, until the site was abandoned around the 10th century. On the southern plateau of the valley, a Carolingien potter's workshop is in use located at the edge of the monastic estate of Saint-Josse.

Our paper will present the state of knowledge of these productions, their location and their integration into the site. It will also raise the question of the involvement of the abbeys established near the portus in the exploitation of the resources of the lower valley of the Canche, Quentovic's host estuary.

FRISIAN COMBS? COMB-MAKING AND THE DYNAMICS OF NORTH SEA TRADE IN THE EARLY VIKING AGE

Nelleke IJssennagger-van der Pluijm (Fryske Akademy), Steve Ashby (University of York), Mariana Munoz- Rodriguez, Sam Pressley, Krista McGrath, Lena Holmqvist and Jessica Hendy

This paper presents a new analysis of combs and comb-making in the North Sea area, by way of the first targeted biomolecular survey of the famed 'Frisian' combs in relation to a regional-contextual survey. Through the application of ZooMS analysis to a collection of early Viking-Age combs from Frisia, it is clear that for these combs traditionally interpreted as Frisian, there are other, and more complex, explanatory frameworks. For instance, even when found in Frisia, the combs in some cases are equally to be interpreted as having a marked Scandinavian signature, or a common North Sea background. Moreover, they are found widely spread beyond the main trading sites, giving us some indications that material and manufacture was much more widespread than to specialist centres. This raises our awareness of the gaps in our knowledge about manufacturing history and the trade of raw material, finished products and stylistic elements alike. Thanks to the new insights from the first targeted biomolecular survey of the terp finds, we can start building a better understanding of the complexity behind Frisian combs, combs in Frisia, and comb-making in the North Sea area, through which new questions arise.

MADE IN LIFE – FOR USE IN DEATH. ASPECTS OF THE 7TH-CENTURY HARPOLE BED BURIAL

Lyn Blackmore (Museum of London Archaeology)

The Harpole burial, discovered in 2022, belongs to a group of elite female bed burials which in England are broadly dated to between AD 630 and AD 680, a period when there was increased investment in female burials. While the bed itself seems to have been similar to most others in England, Harpole is the most exciting and intriguing burial of its type found in England to date as the deceased was buried with the most extravagant necklace yet found in Anglo-Saxon England and also the most overt religious symbolism.

At the time of writing the conservation assessments are still being carried out and the finds assessment has not yet begun. It is, however, clear that a number of crafts are represented, notably wood- and iron working (needed to construct the bed), the working of precious metals and the art of cloisonné. This paper will set the site in context, present the most up-to-date information possible on the craft activities represented in the burial and outline our plans for future work on the assemblage.

SESSION II: KNOWLEDGES

THE WEB OF WAR – WARFARE, WEAPON GRAVES AND TECHNOLOGY TRANSFER IN NORTHERN AND CENTRAL EUROPE BCE 200-400 CE

Rasmus Birch Iversen (Moesgaard Museum)

During the 2nd to 1st centuries BCE the weapon burial custom spread to large parts of Central and Northern Europe. However, it began to fade away again during the 2nd to 4th centuries CE only to survive as a consistent burial practice in remote areas like western Norway. Within this aperture a remarkably uniform weapons culture is revealed over vast areas. This was already observed by Jahn in his *“Bewaffnung der Germanen...”* (1916) and was explained as a common shared identity between Germanic tribes, however, this explanation is, obviously, no longer tenable.

The paper presents a sample study of 2.000 weapon graves in ten regions dealing with their chronologies and typologies, comparing, and correlating these regions over time. A new chronology of graves with Roman Imports and a new typology of Roman period swords has also been the outcome. However, in many cases, existing typologies have been applied. All analyses have been conducted by correspondence and principal component analysis.

The result of the combined analyses is still one of remarkable similarity, however mostly within the categories of shield equipment, yet regional differences and even at times insular peculiarities exist. This makes it possible to suggest that a high degree of typological similarity was reached through an endemic warfare between neighboring entities, which basically became a grid or a down the line system of technology transfer. In most of the period under study this was most likely stimulated by attraction of the Roman Empire.

AN UNUSUAL TREASURE FIND OF THE 3RD CENTURY FROM SULUC IN DOBRUDJA (RO) WITH FRAGMENTS OF A SCANDINAVIAN SNAKE HEAD ARM RING

Dieter Quast (Schleswig-Holsteinische Landesmuseen Schloss Gottorf)

In 1911, a most remarkable treasure find from the last third of the 3rd century was discovered in Suluc near the small town of Măcin (jud. Tulcea) in the province of Moesia inferior. The contents of the treasure find can be reconstructed on the basis of preserved originals and old photos. It contained four Roman gold coins (Hostilian and Gallienus), the golden head of an emperor's bust, two silver cups of the Leuna type, a golden crossbow brooch and three golden arm rings. One of them is a type C snake-head arm ring after Hildebrand.

Some of the objects were already in second or even third use and were obviously worn as jewellery or as "trophies", such as the coins and the imperial head. It is obvious (but impossible to prove) that the treasure is connected with the numerous Gothic incursions into the Roman Empire in the second half of the 3rd century. Alexander Bursche has used the numerous coinages of the Roman Emperor Decius' in the Barbaricum to describe the catchment area of the Gothic commander Cniva at the Battle of Abrittus in 250 AD on the basis of the distribution of these coinages. Perhaps the fragment of the snakehead arm ring from Suluc indicates that Scandinavian units were also active in this context.

The treasure find from Suluc is completely out of the ordinary, because a comparable composition does not exist in the eastern part of the Roman Empire. There, deposits in the 3rd century mainly contained coins, but occasionally also precious metal jewellery. Silverware, on the other hand, has only been deposited more frequently since the 4th century. It is therefore possible that the treasure find from Suluc was hidden by a non-resident within the Roman Empire.

THE BERGKAMEN WARRIOR – A SCANDINAVIAN INFLUENCED HIGH STATUS BURIAL IN WESTPHALIA?

Eva Cichy and Ulrich Lehmann (Landschaftsverband Westfalen-Lippe)

In 2011 a chamber burial was found in Bergkamen (Germany), which dates back to the second half of the 7th century. High-quality grave goods as a complete Civezzano type spatha belt and a silver-plated body belt were combined with comprehensive weaponry. Especially the addition of three shields characterizes the burial as unique beyond the region. Contemporary comparisons are documented exclusively from Middle Swedish funerary contexts. Is it pure coincidence that several shields are found in the Bergkamen or do they indicate a connection with the Scandinavian graves? May the Bergkamen warrior - according to Heiko Steuer - have been a military leader, whose status was to be emphasized by this regionally untypical combination of grave goods?

MOUNTING A FRANKISH DEFENCE AGAINST THE VIKINGS? THE POSSIBLE CONTEXT OF SPECIALISED PRODUCTION IN THE GHENT AREA (NORTHERN BELGIUM) IN RELATION TO THE MILITARY DUTIES OF THE GHENTIAN ABBEYS

Ewoud Deschepper (Ghent University)

Recent archaeological excavations in the municipality of Gentbrugge, just southeast of Ghent (northern Belgium) and located along the river Scheldt, brought to light two Early Medieval sites. The recovered evidence shows that the first site ("*Gentbrugge-Het Kamp*") clearly focused on livestock breeding (cattle, pig, horse), while the other site ("*Gentbrugge-Aard*") focused on a range of craft activities (cereal processing, processing of animal products, lime-burning). Furthermore, a small number of finds suggests a military presence on *Gentbrugge-Aard*, possibly to be narrowed down to cavalry.

Both sites date to the later 8th-first half of the 9th century. This is the time when the Frankish realm developed a more cohesive defensive strategy against the Viking threat. In AD 811, Charlemagne visited Ghent to inspect the construction of a fleet there. Based on written evidence, it is accepted that the Ghentian abbeys of St. Peter and St. Bavo, whose lay abbot at the time was Einhard, had to provide supplies and possibly also equip soldiers to defend the coast. Interestingly, both sites at Gentbrugge seem to have been (largely) abandoned around AD 850 or during the second half of the 9th century. This coincides with attested Viking presence in form of winter camps at Ghent, at AD 851, 879-880, and 881.

Focusing on these two archaeological sites, this paper will present the archaeological and historical evidence concerning 9th-century Ghent and Gentbrugge, in order to advance the hypothesis that the specialised production sites could be part of Carolingian military efforts, which were disrupted by Viking presence in the area during the second half of the 9th century.

THE RAVEN'S EYE. STYLISTIC REFERENCES TO SIGHT AND VISION AS SYMBOLS OF KNOWLEDGE AND POWER CONNECTED WITH ODIN

Anne Nørgård Jørgensen and Laurine Albris (National Museum of Denmark)

Eye symbolism has a special function in connection with religion, mythology and superstition in many cultures throughout history. In some mythologies, eyes are linked to birds and their ability to be omnipresent and gather information, like the white raven of the Greek god Apollo and the two ravens of the Old Norse god Odin, acting as extended eyes of the gods. Gods can take the shape of birds such as the Egyptian god Horus, or simply represented by the "eye". In Old Norse written sources, strong, piercing eyes can symbolise power, masculinity and royal descent and there is a special eye symbolism related to knowledge and esoteric insight surrounding the one-eyedness of Odin.

The animal ornamentation on high-status metal objects from the 5th-8th century AD contains a very special decoration on splendid weapons and jewellery. These are the hemispherical rivets with a fluted rim along the edge, which seem monstrous and functionally almost inexplicable. This decorative feature is interpreted here as a stylistic imitation of the raven's characteristic eye. The imitations are often found in pairs with or without surrounding stylistic bird heads. The rivets are attached to lances, shields, swords, button-on-bow fibulae

and belt equipment, etc. These raven eyes are here suggested to represent Odin's all-seeing ability.

The authors take a closer look at the archaeological material, iconography and eye symbolism and also draw on Old Norse mythology and names related to eyes and ravens. Seeing the raven as a messenger between God and humans, the raven eyes are interpreted as stylistic traits that were a part of a power symbolism of the elite.

It is not new information that the animal styles can be linked to parts of Old Norse mythology. However, the imitated raven eyes give us a glimpse of the imaginary world that belonged to the elite, strengthening the assumption that the Odin cult was indeed closely connected with the aristocracy of the time. At the same time, it is clear that contemporary craftsmen were aware of symbolism and mythology, and surrounded by a consensus of knowledge concerning the design of status objects for a special social group.

VIKING MAN, VIKING WOMEN: THE IOM 2018 OVAL BROOCHES AND THE END OF THE MYTH OF MEN-ONLY GROUPS OF WARRIORS SETTLING IN THE ISLE OF MAN

Dirk H. Steinforth (Göttingen)

Oval brooches are considered one of the most distinctive elements of female Viking costume, and they frequently are used to indicate the presence of Scandinavian women in their settlements abroad, supporting the idea that the Viking seafarers were accompanied by their womenfolk when they settled new lands. But while they were known in virtually every other area of Scandinavian settlement in the British Isles, they were missing entirely in the Isle of Man, which presumably was conquered and settled by Hiberno-Vikings after about 870. Their conspicuous absence – and general lack of securely sexed female burials among the Viking graves in Man – gave rise to the notion that those settlers were all-male groups of warriors who subsequently married local Christian women, and this assumption formed the basis for far-reaching conclusions regarding the early Viking settlement in the Island.

This long-lived notion has been challenged in 2015 on statistical grounds, but in December 2018, the discovery of two oval brooches in the Isle of Man proved that Scandinavian women, too, came to the Isle of Man after all. This confirmed the doubts about the previous conclusions regarding the nature of interethnic social contact on the Island in the late ninth century and demonstrates why 'negative proof' is a shaky ground to found hypotheses on.

This paper is going to present the currently unpublished Manx oval brooches, reconstruct the now-obsolete former interpretations and the objections to them, and discuss the impact this single new discovery must have on the scholarly perception of the early Viking Age in the Isle of Man.

SHIP STEM MODELS: NOT MERELY CHILDREN'S TOYS. AN EXAMPLE OF LEARNING AND IDENTITY CONSTRUCTION IN NORSE SETTLEMENTS

Massimiliano Ditta (University of Stavanger)

This paper aims to revisit a specific class of maritime material culture from Norse settlements under the lens of Situated Learning and Community of Practice. The study highlights that even playthings crafted by children can represent a learning and skill acquisition experience and reveal information about their social and technological contexts and children's socialisation processes within a culture. The objects discussed here are miniature wooden models of stem posts of boats and ships found in Norway and Greenland, dating from the Late Viking Age to the Early Medieval period, and classified in archaeological literature as simply playthings but never looked at beyond this point of view.

Following an archaeological analysis of their contexts and craftsmanship, together with a historical framing and an example from ethnographic observation, the idea is that children crafted these models as peripheral participants in a community of practice and, simultaneously, as a reification of ambition and construction of a social persona. The paper draws attention to children's play/crafting as an integral component in creating and transmitting knowledge and skills within the community of practice and society and the significance of studying child-related objects in archaeological contexts to gain insights into technology, learning and socialisation processes embedded in both social and physical contexts.

FROM HÅLOGALAND TO ROGALAND AND BEYOND AD 180–400

Dagfinn Skre (University of Oslo)

Since the start of research on 2nd–6th century Norway, Rogaland has attracted particular attention due to the region's many spectacular monuments and finds – just to mention three: the unique concentration of courtyard sites, the enigmatic beach cemeteries, and the exquisite furnishings in the 3rd–4th-century burials in Flaghaug at Avaldsnes. All three have been involved in quite diverse lines of arguments, but the most heated debate is likely that instigated by Guttorm Gjessing in 1929 and substantiated by Thorleif Sjøvold in 1963. They argued that, starting c. AD 200, Hålogaland was first settled by Iron Age agriculturalists through large-scale migrations from Rogaland. When such explanations fell out of fashion in the processual archaeology of the 1970s and 80s, their theory received heavy criticism. Since then, the question of why the two regions, separated by an 800–1,400-kilometre sea journey, display evident similarities has been addressed only hesitantly. In later years, the migration theory appears to have received its fatal blow from pollen analyses and excavations in Hålogaland; they have thoroughly demonstrated that agriculturalists lived there since the 3rd century BC.

Large-scale migrations off the table, how should the many similarities between two regions be explained? A closer look at the evidence suggests that the range of resemblances between them is even wider and deeper than hitherto assumed. To explain them, however, one must look beyond. The activities of the Sámi population living north and east of the Germanic-speaking agriculturalists' settlements on the outer Hålogaland coast is pivotal, and

so are the opportunities since c. 200 to sell northern commodities and obtain copper-alloy ornaments, glass beads, and other items in South-Scandinavian markets like Lundeberg in Funen. In this paper, I argue that what triggers these developments is the arrival in late 2nd-century Scandinavia of veteran warriors from the Continental wars in the 160's and 70s. They settled in Scandinavia's lush regions, instigated production in remote areas, and traded their produce far and wide.

KNOWLEDGESCAPES OF PRE-CHRISTIAN RELIGION ON IRON AGE BORNHOLM

Laurine Albris (National Museum of Denmark)

In Old Norse myths and sagas, knowledge and wisdom play a central part. Insights into how the world is structured and about how to correctly perform rituals are essential sources of power for both gods and men.

But how was cosmological knowledge and know-how about the workings of rituals passed on and developed in the predominately oral Scandinavian pre-Christian communities? Common knowledge could be communicated through shared narratives and material expressions, while a level of esoteric knowledge may only have been shared in narrow circles.

This paper sees the landscape of pre-Christian religious beliefs and practices on Iron Age Bornholm from the perspective of knowledgescapes. Knowledge is seen in its widest sense, as a culturally specific view of the world, wherein lies a community's understanding of its own history and identity. The knowledgescape is seen as a dynamic socially constructed landscape, characterised by shared knowledge, skills and practices embedded in a temporal and spatial context.

On Bornholm, the large central settlement complex Sorte Muld stands out as a major ritual center, and key to exchange of both practical, theoretical, exoteric and esoteric knowledge. Yet the island has other settlements associated with ritual such as Smørenge in Vestermarie and Agerbygård in Østerlars. Other facets of the religious knowledgescape are reflected in sacral place names, in wetland sites with ritual deposits and in the landscape of burial monuments. Through the concept of knowledgescapes, the paper specifically asks if we can trace transmissions of or relations between ritual knowledge through time and space or even find innovations in ritual practices.

METALWORKING AND ANIMAL ART AD 400-800 IN NÄRKE PROVINCE, SWEDEN

Martin Rundkvist (University of Łódź)

Närke province around what is now the city of Örebro is an inland part of agricultural Sweden with a fluid ethnopolitical allegiance in the 1st millennium. It sat balanced between the Swedes, the Götar, the Norwegians and the southernmost Sámi. The province's economic topography varies dramatically with fertile districts, water-borne communication routes, metal ores and woodland resources.

Närke's archaeological record for metalworking and animal art in AD 400-800 is not enormously large. But it holds high quality, and it has recently grown considerably in size. The

present contribution aims to present and evaluate the evidence as it stands in 2023. The growth of the material is due to major metal detector surveys organised jointly by Örebro County Museum and the Swedish Metal Detector Association. This fieldwork commonly sees 35 detectorists working for three days straight on one site.

THE EARLY MEDIEVAL CEMETERY OF KEITUM ON SYLT, NORTH FRISIA: THOUGHTS ABOUT COMPLEXITY AND HERITAGE IN A CULTURAL ZONE BETWEEN FRISIANS AND DANES

Bente Sven Majchczack (Kiel University) and Nelleke Ijssenagger-van der Pluijm (Fryske Akademy)

The North Frisian Islands on the German Wadden Sea Coast are the northernmost part of a cultural zone, which is attributed as Frisian since the Early Middle Ages. Reaching back to the Roman Iron Age, the inhabitants of the area were strongly engaged in seafaring, mobility and trade, leading to a material culture with cultural ties along the entire North Sea coast and influences from neighboring areas. A key aim in archaeological research of the past was to identify and separate the cultural traits and development of this Frisian population in contrast to the neighboring Danes and Saxons. This was mostly based on the mortuary practice and material culture, especially on certain classes of objects such as oval brooches, regarded as markers for Scandinavian influence and the concept of a mixed population of Frisians and Danes.

Recent research collaboration laid focus on the entire Frisian Wadden Sea coast between Belgium and Denmark, aiming to understand the Early-medieval and Viking Age maritime mortuary landscape in light of 'Frisianness' and the interactions with the Nordic region. From the strong connections between the southern North Sea coast and the Continental, Nordic, Insular and Baltic areas, displaying regional diversities and complexities, the concept of a cultural continuum, facilitated by the maritime landscape, is put forward.

The North Frisian Islands, situated in cultural and political border zone, witness a boom in settlements and economic activities shortly after onset of re-settlement in the mid-7th century. The emporium of Ribe certainly was the focal point of interactions between the North Frisians and the Danes in the 8th-9th centuries. In the light of recent finds from trading sites, the interpretation of North Frisian assemblages of grave goods is re-evaluated. Closed finds from the cemetery at Nebel-Steenodde on Amrum, often regarded as indicators for a Frisian-Scandinavian population, draw a much more complex picture of manifold cultural influences from the entire coastal zone.

Found in 2002 during road construction, a cemetery of 20+ cremation graves from Keitum on the island of Sylt, will be presented in detail. Starting as early as the 7th century, the graves contain imported goods from the North Sea Coastal, the Rhineland and the Baltic. A grave with an outstanding variety and richness of goods displays a social elite, which appears to use inherited objects from before the Migration Period hiatus to symbolize their leading position which may have been long rooted in the area. The assemblages will be discussed for their cultural connections and meaning for the idea of a Frisian settlement of the islands. However, quite specific finds also demonstrate possible early migration from the Baltic to North Frisia, adding a further layer of complexity to the finds. Based on the old and recent burial finds,

the paper discusses how the maritime networks add influences and people from the entire North Sea coast to the cultural continuum, which may be seen as defining the Frisian area.

REINVESTIGATING WORKSHOP TRADITIONS ALONG THE NORWEGIAN WEST COAST: CREATIVITY AND COPYING

Elna Siv Kristoffersen (University of Stavanger) and Unn Pedersen (University of Oslo)

In this paper, we will reinvestigate how to encircle workshops for relief brooches in an area where workshop waste is absent or sparse. Based on similarities in shape and decoration, Eva Nissen Meyer postulated distinct local workshop traditions in various parts of Migration Period Scandinavia already in 1935. Since then, excavated workshop waste has added substantial to the understanding of the techniques mastered and the range of products manufactured within specific workshops. Drawing on the updated knowledge and emphasizing the interaction of ornamentation and technology, we will turn to core areas for high quality crafted items along the Norwegian west coast. Through detailed investigations of relief brooches, we will explore how and to what a degree craftspeople influenced each other, shared knowledge, picked up motives, shapes or techniques. Scrutinizing similarities and differences, conscious and unconscious distinctive stamps, we aim to shed light on creativity and copying and the degree of cooperation. The overall goal is to come closer to the complex human and material networks involved in the production of masterpieces and less elaborate items.

ON 'UTILITY GOLD' AND USES OF GOLD IN THE NORWEGIAN MIGRATION PERIOD

Marie D. Amundsen (University of Oslo)

In this paper I will explore the intricate and multifaceted relationship between materials and technology within the context of social organization, through a study of gold- and gilded artefacts. Using a relational approach and drawing on Manuel DeLanda's concepts of properties and capacities, I introduce 'utility gold' as a concept to showcase how gold can be regarded as both accumulative and prospective, bound and unbound in the Migration Period. The findings are predominately from a recent study where I investigated Migration Period gold from the Norwegian counties Rogaland, Vestfold, and Østfold. The project included the many diverse forms of gold present in the archaeological record primarily found in graves or depositions. The distinctive properties of gold make it an insightful material, providing glimpses into both the visual, technological, and social worlds of the Migration Period.

FINE METALWORK AND LOCAL SOCIAL STRATEGIES: THE JEWELRY FROM THE BURIAL GROUND AT GRØNHØJGAARD, NORTHERN JUTLAND, IN A REGIONAL PERSPECTIVE

Torben Trier Christiansen (Nordjyske Museer)

In 2018 the finds of a local detectorist led to the recovery of a complex of burial grounds near the village of Vaarst 15 km southeast of Aalborg. During the past four years the Historical

Museum of Northern Jutland has excavated large parts of one of the three closely located burial grounds which were in use from c. 200-550 AD. Both the graves, their content, and the general character of the site stand out from the rich record of contemporary burial grounds of the region. The burial ground is situated on a small ridge, and in the northern most elevated part the largest and most well-equipped graves had been placed around a three-aisled building. Cultural layers characterized by large numbers of animal bones and fire-cracked stones found nearby indicate intense ritual activity in the area, and the special character of the site has furthermore been underlined by the recovery of a series of small gold and silver objects deposited in and right around the burial ground.

The majority of the 110 graves that have been excavated shows signs of reopening, and many grave goods have probably been removed by the intruders. Despite of this, the recorded inventories from the graves still include a broad variety of both local and imported objects – in terms of quality and variation a find material unprecedented in western Denmark.

This paper presents a selection of jewelry from the graves and the results of comparative studies of fine metalwork from the aristocratic burials of the region: studies aimed at illuminating details of production and strategic use of the lavish ornaments in a complex social landscape.

CREATING RELATIONS – CRAFTING COMMUNITIES

Mari Østmo (University of Oslo)

Studies of personhood and the co-constitutional nature of people and things have opened for more complex understanding of identities on multiple scales (Back Danielsson 2016; Fowler 2010; Fowler 2013; Gosden and Marshall 1999; Lucas 2012). Burials provide a platform for investigating both the careful selection of artefacts and treatment and staging of bodies in individual graves, and how such ritualized activities are part of shared practices within smaller and larger communities and networks. Lund and Arwill-Nordbladh (2016:422) argue that the construction and preservation of monuments were crucial for creating and maintaining the memory of the deceased, beyond marking rank or position. By understanding identities as contextually dependent, performed and relational, and created through interaction with social and physical surroundings (Brück 2006; Brück 2004; Butler 1988; Fowler 2013), this paper will explore burials as part of a social technology that enables the creating of materialised memories, temporal connections in the landscape and lasting relations within communities.

The physical appearance of burial monuments and their location in the landscape is visible to all, while the inner details of each burial are covered and hidden (cf. Cannell 2021), primarily only known to those present at the funeral. A previous study of monument construction, body treatment and deposition of dress accessories in Southwest- Norway, has identified practises bound to particular landscapes (Østmo 2020), indication a transmission of know-how regarding both monument construction and production and active use of symbolic expressions. Expanding on this study of Southwest Norway, this paper explore the unfolding of shared practises whether related to deposition of artefacts, monument construction or crafting as integral in creating social relations and communities.

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TECHNOLOGIES AT DISPLAY. THE STORHAUG SHIP BURIAL

Håkon Reiersen (University of Stavanger)

The paper examines evidence of a range of different technologies, crafts, production tools, and resources present in the Storhaug ship burial in Rogaland, CE 779. Imported objects like gaming pieces of glass and amber represent foreign technologies, raw materials, and long-distance networks. Fine metalwork is represented by a decorated gold arm ring. There are objects directly related to production, such as smith tools and tools for food production. The preserved weapons, including swords, spears and a quiver represent the military technology of the time. A prominent element of the ship burial is the integration of transport related technology, including a ship, two boats and a sled. Sailing ships were the technologically most advanced and costly objects produced in this era. Several wooden parts in the burial have carved decorations, and there are bowls of wood, both representing wood handicraft. All these objects were covered by a mound of some 50 metres in diameter, built of materials brought from a distance. The mound construction included the use of vertical wooden poles, stone slabs for stabilising the ship, and the construction of a large wooden chamber with stone wall foundations. The objects were all set within a context of the ritual technology and knowledge of how to stage a proper royal ship burial. This ritual technology is concretised by thick layers of charcoal representing bonfires, and by a large, circular stone altar, presumably related to animal sacrifices.

TECHNOLOGY – ART – IDENTITY. ZOOMORPHIC SPURS IN THE LIGHT OF METALLOGRAPHIC ANALYSIS

Paweł Szczepanik (Nicolaus Copernicus University in Toruń) and Sławomir Wadył (University of Warsaw)

Zoomorphic spurs are elite, horse riders' attributes. Such objects made of copper alloys from grave 42/2009 from an early medieval cemetery at Ciepłe (Tczew district, Poland) are the best preserved example of such artefacts from Central Europe. Further specimens have been discovered in Lutomiersk (Pabianice district, Poland), Cerkiewnik (Olsztyn district, Poland), Wrocław - Ostrów Tumski (Wrocław district, Poland), Lubniewice (Sulęcín district, Poland), Kumachevo (Zelenogradsky District, Russia), Skerige (Skåne, Sweden). Analysed examples come from cemetery contexts from the graves at Ciepłe, Lutomiersk and others. They were first discovered in Lutomiersk, which is why they were referred to as Lutomiersk-type spurs.

A comparative analysis of the elemental composition of these two sets of artefacts will be the basis for the considerations proposed in the paper. Fragments of spurs discovered at other sites show distant, formal similarity, which allows us to assume that they were created in one place for a narrow, elite circle of recipients. These spurs are unique items and were a form of identifier of individuals belonging to the early medieval elite. Based on the spurs' discovery sites and their fragments, we can assume that they are made on West Slavic territory. The discoveries in neighbouring areas are extremely interesting. Perhaps they are evidence of penetration of these areas by members of Slavic elites?

The rich zoomorphic ornamentation of the spurs in the form of serpent/dragon and horse/cattle imagery relates to reconstructed Slavic cosmological and perhaps eschatological beliefs. However, it should be noted, that these depictions also have confirmation in Scandinavian and Baltic mythological reality. The zoomorphic spurs are a perfect example of crafts connected with technology, mythological symbolism and art, and these aspects will be the main topic of our presentation.

SESSION III: SUSTAINABILITY

CLIMATE CHANGES AS DRIVING FORCES FOR THE DEVELOPMENT OF SOCIETIES, ECONOMIES AND ENVIRONMENTS IN THE NORTH SEA AND BALTIC SEA REGIONS DURING THE LAST 2000 YEARS? – REFLECTIONS ON THE STATE OF RESEARCH IN NORTHERN CENTRAL EUROPE AND SCANDINAVIA

Daniel Hepp and Hauke Jöns (Lower Saxony Institute for Historical Coastal Research)

The living conditions of human societies were and are highly dependent on the respective climatic conditions at all times. Although this fact may be considered as common sense since the 1970s at the latest, until the 1st decade of the 3rd millennium the influence of climate development on social and economic changes played no important role in archaeological research. This only changed when new climate data from the Greenland ice cores and

dendrochronological studies stimulated new research, especially on the influence of radical climate changes on the affected societies. Nevertheless, societal changes cannot automatically be explained monocausally by climate change. Depending on their economic, social and political preconditions, societies in different regions react differently to climate changes. Adaptation, resilience or migration as consequences of climate change are difficult to demonstrate in detail in archaeological data and climate archives. Attempts to synchronise archaeological data with climate indicators are methodologically imprecise and can lead to hasty conclusions. In recent years, a number of settlement analyses especially from southern Scandinavia, with high chronological and spatial resolution have proved to be a promising approach to synchronise specific changes in archaeological records with regional and supra-regional climate indicators or historical records, while delimiting other influencing factors. The project presented in our presentation, aims to collect archaeological, scientific and historical records on the climate history of the last 2000 years in the North Sea and Baltic Sea regions in a metadatabase to provide a basis for identifying regions in the research area that are suitable for detailed analyses on the dependence of climate and settlement development. The overarching goals are to sensitise archaeologists, natural scientists and humanities scholars to the methodological possibilities and limitations of the other disciplines and to jointly develop strategies to better understand the consequences of climatic changes on prehistoric societies.

ARABLE FARMING AND ANIMAL GRAZING AT HULJE, ÖSTERGÖTLAND

Maria Petersson (The Archaeologists, Statens historiska museer)

Arable farming and the grazing of domestic animals are, on a larger scale, two very important factors in the transformation of the pre-historic landscape. At Hulje grazing and arable farming have altered over time in areas near a small stream. Tilling and manuring represents a large input of labour every year and this has led to the creation of thick layers of fertile plough-soil, situated in close proximity to the farm-houses. When these fossil layers (fields) were excavated we could determine that the fields were fixed in position for long periods of time. It seems that the farm-buildings could be moved to new positions close to the fields, rather than the fields being moved. During the Late Roman Iron Age decline and the crisis starting 536 the majority of farms were deserted and the fields turned over to grazing. When a farm was established near the village toft in the Vendel-/Vikingperiod, cultivation of the same areas were renewed and this later constituted the medieval infields. Conditions created in a distant past, thus influenced the land-use of much later periods. My presentation will deal with this changing landscape and methods to approach it.

EFFECTIVE HOUSES. PROPERTY RIGHTS AND SETTLEMENT IN IRON AGE EASTERN NORWAY

Lars Erik Gjerpe (University of Oslo)

The three-aisled houses with dug-down posts were the choice of farmers in Iron Age Scandinavia. From a modern, functionalist point of view the buildings are far from perfect, as they are short-lived, smoke-filled, cold, draughty, and as alternative building techniques were

available, such houses much have been a preference. I suggest building techniques reflected and were reflected in a society where impermanent settlement were wanted as well as necessary due to the organization of land rights in the Early Iron Age (500 BC–AD 550). Further, I suggest increasing settlement stability and life expectancy of houses echoes development of property rights, until the farm structure known from Medieval sources are developed in the Late Iron Age (AD 550–1050).

HOUSEHOLD ECOLOGY, GENDER AND FUNERARY RITES: THE TUNE INSCRIPTION

John Hines (Cardiff University)

The memorial runestone first recorded at the church of Tune in Østfold, Norway, in the 1620s carries an inscription which has been interpreted in several different ways. It is certain, nonetheless, that it refers to succession and inheritance following a death, and reflects social status in an agrarian community and its kinship relations. It can only be dated on runological grounds, from the form of the monument and the character of the language, and is cautiously assigned to the 5th century AD, the first half of the archaeological Migration Period.

This presentation will briefly explain and discuss key points of the inscription: the title ‘keeper of the loaf’, and its references to ‘three daughters’ as ‘heirs’ and to the funeral rite itself. Drawing on new, large-scale models of later Iron Age historical development in Norway produced by Ingunn M. Røstad and Lars Erik Gjerpe, it can be proposed that we are now better able to perceive and comprehend a system of social ecology in eastern Norway that complements the more conspicuous depositional and artefactual record of the South and West. A longer-term perspective may also suggest that this was a way of life better adapted to evolve through the following centuries of the second half of the 1st millennium, with key values that remained firmly embedded in the Viking Period.

DAS DARK EARTH PHÄNOMEN - EIN HINWEIS AUF NACHHALTIGES WIRTSCHAFTEN? / THE DARK EARTH PHENOMENON - AN INDICATION OF SUSTAINABLE MANAGEMENT?

Jens Schneeweiß (Kiel University / Centre for Baltic and Scandinavian Archaeology)

Since the 1980s, research has become aware of the phenomenon of thick and homogeneous dark anthropogenic soil layers with little evidence of stratification. These soils are rich in organic material and charcoal, which gives them a characteristic dark colour. They were first studied particularly in the late ancient Roman cities of Britain. In the course of Late Antiquity, there was a profound transformation and conversion of built space in numerous cities in the Northwest Provinces of the Roman Empire. Through a variety of processes, such thick cultural layers were formed here in many cases, which, as Roman Dark Earth, were attributed to a changed mode of settlement and economy of the subsequent Germanic settlers in the ancient Roman cities. Despite decades of research, the exact genesis of these soils is not yet fully understood. It is very likely that various uses such as manufacturing crafts, waste layers or kitchen gardens may have contributed to their formation. Moreover, it has long been known that such soils occur in many chronological and geographical contexts. Since the first description of Roman Dark Earth,

the development of research, especially in the field of geoarchaeological analysis, has revealed a great variety of possible origins of anthropogenic Dark Earth. They are an archive of information on ecological and social change, subsistence and resilience strategies. Current efforts in Kiel are directed towards development of a coherent interdisciplinary research methodology for the analysis of samples and interpretations in social and ecological contexts. The comprehensive understanding of the Dark Earth phenomenon not only gives us deep insights into the past, but also links directly to highly topical issues of sustainability and alternative economies.

SUSTAINABLE ENERGY AND ARCHAEOLOGY

Pernille Kruse (Museum Sønderjylland)

The political wish to support the development of sustainable energy has led to a large number of projects involving solar and wind energy, biofuels etc. The energy crisis resulting from the Russian-Ukrainian war has accelerated the process away from fossil fuel sources towards sustainable alternatives.

During the last few years, Museum Sønderjylland has been involved in an increasing number of projects involving in particular large-scale solar parks and underground power cables. But what are the consequences of such projects for archaeology? Is it at all worth our while to follow closely these time-consuming projects? And how do we compare the results with those from regular, systematically examined areas? To analyse these questions, I have chosen southern Jutland and the projects carried out here during the last five years as a case study.

CRAFTED WORLDS, IMAGINED PASTS: FANTASY, GAMING AND ARCHAEOLOGY

Andrew Richardson (Isle Heritage CIC) and Julia Rawcliffe

Since the 1970s, fantasy gaming has grown from a small niche hobby to a global multi-billion-dollar industry. Whether played around a tabletop or online, millions of people, including many archaeologists, immerse themselves in imagined worlds or pasts during their spare time. There is no doubt such games provide much-needed enjoyment and escapism for their players. But do some of them also hold the potential to yield real insights into past societies, and can they help us get just a little closer to the lived experiences of our ancestors and the societies and worlds they inhabited? The modern gaming hobby and industry may be a modern phenomenon, but the human imagination, and mythologies and cosmologies that include the fantastic, are ancient aspects of the human condition; does the fantasy genre, and roleplaying games specifically, have the potential to provide genuine insights into the past?

This paper will explore such questions. It will consider both the value of gaming for those already engaged in the serious study of the past, as well as the potential that the hobby offers as a gateway to an interest in archaeology and history for the millions of gamers worldwide.



Posters

AMBER WORKSHOPS IN CENTRAL POLAND DURING THE ROMAN PERIOD

Adam Cieśliński (University of Warsaw) and Marcin Woźniak (Museum of Ancient Mazovian Metallurgy in Pruszków)

Archaeological research carried out since the 1960s in the central part of Poland (Mazovia), to the west of Warsaw, has made it possible to discover an extensive iron production centre from Late Antiquity. It was created by the people of the Przeworsk culture, who inhabited vast areas of southern and central Poland from the 2nd century BC to the middle of the 5th century AD. However, iron production was not the only branch of the local economy. Relics of amber workshops have been recorded on several settlements. Within them, remains of all stages of amber processing have been discovered - from lumps of raw material, through semi-finished products, to finished products (mainly beads). The largest collection of amber artefacts was found in Biskupice, about 20 km west of Warsaw. It numbers several thousand fragments weighing about 4.5 kg. The presence of amber workshops in western Mazovia is somewhat surprising, as amber does not occur naturally in this part of Poland. Its influx could have been linked to long-distance exchange, including iron produced in the region.

NEW RESEARCH RESULTS FROM THE VIKING-AGE STRONGHOLD BORGSUMBURG ON THE NORTH FRISIAN ISLAND OF FÖHR

Martin Segschneider (Wilhelmshaven)

Located about 1 km north of the village Borgsum on a moderate raised moraine crest, a circular rampart, visible from afar, still bears witness to the monument preserved above ground. The Borgsumburg on the North Frisian Island Föhr has a height of nearly 8 m and an inner diameter of almost 100 m. Excavations in the 1950s uncovered parts of several well-preserved buildings with sod walls in the inner area, which can be dated to the period from the 9th to the 11th century. Geomagnetic and -radar surveys in 2001 and 2003 revealed further remains of numerous closely spaced sod buildings along the inside of the circular fortification.

Both dating and use still raise many questions. Since June 2021, a project funded by the Frederik Paulsen Foundation investigates the interior of the Borgsumburg according to current questions based on archaeological excavations, pedological investigations and botanical analyses. Summerly excavations have revealed many new insights. The youngest of the four settlement phases is dated dendrochronologically to the years of around 980 AD. This is the time of the Harald Bluetooth's Trelleborgen, indicating that there is some sort of connection, i.e., it seems that the refurbishment of an already existing circular rampart was favored over building a new one.

HANDICRAFT ARCHAEOLOGY BASED ON INTELLIGENT TECHNOLOGY (HABIT)

Michael Neiß (Lund University / Aarhus University)

Thanks to new possibilities in natural and digital sciences, Viking Age scholarship is experiencing an unparalleled renaissance in material research. But when it comes to the question of cultural transformation, some important aspects of ancient metal crafting remain to be explored. The Viking Age saw many “tribal” societies transform into heterogeneous Christian realms with urban centres which sometimes would grow further on into medieval towns. This transformation can be likened to interlocking chains of events that involved a plenitude of agents with different incentives. But the key contributions of the craftspeople to this ideological transformation have long been bound to eschew our grasp – due to some outdated dichotomies that need to be overcome! Although, the scholarly debate on the Viking Era urbanisation process is gravitating towards the significance of different groups of craftspeople, it still remains to be connected with the similarly important debate on urban centres as meeting points for ideologies and religions. What sets Viking Age towns apart from antedating central places is the ever increasing output in standardized utility goods that conveyed pictorial messages. Nowadays, artisans are envisioned as active creators of the cultural universe they inhabit. Many choices within the manufacturing process are culturally conditioned and express a mentality. Thus, an analysis of operational sequences might offer a key to the inner workings of Viking Period society. Certain changes in the artisan habitus that facilitated standardization were not likely caused by new selling opportunities alone, but also by the very gradual mental shifts that contributed to the emergence of a novel ideological superstructure that transformed Scandinavia into Christian realms. It is therefore imperative to analyze the interplay between this cultural change and the habitus of Viking Period artisans, their pictorial messages and how their output was received at different stages of the process.

THE EARLY MEDIEVAL SETTLEMENT COMPLEX AT CIEPŁE: THE PIAST DYNASTY'S KEY TO EASTERN POMERANIA

Sławomir Wadył (University of Warsaw) and Paweł Szczepanik (Nicolaus Copernicus University in Toruń)

The early medieval complex at Ciepłe is one of the most important sites in Eastern Pomerania. Until recently Ciepłe was best known for the chance discovery in 1900 of a remarkable cemetery, and for the extraordinary cluster of three strongholds located a short distance from it. New excavations carried out at the cemetery during 2004–2014 revealed further chamber graves and confirmed that this is an exceptional site.

Archaeologists had previously focused on the discoveries made at the cemetery. However, this necropolis is only one part of an extensive complex comprising three strongholds, several settlements and two burial grounds. The discoveries to date have provided premises indicating that Ciepłe may have been the key to Pomerania for the Piast dynasty.

Despite numerous indications that this was an extremely significant site, the settlement complex at Ciepłe has never received the attention it deserves. The planned research will be conducted on two levels. The first will involve a narrowly focused multidisciplinary study of the settlement complex at Ciepłe, while the second will have a broader focus, examining the

importance of this site in the process of incorporating Pomerania into the early Piast state. The research will address essential questions about the shape and position of Eastern Pomerania within the early Piast monarchy (examining issues such as the significance of the complex at Cieple, the early stages of Christianisation, the appearance of richly furnished graves, and the transformation of this area culminating in its incorporation into the Piast state). Both levels of research will feature a number of innovative approaches. As well as traditional archaeological procedures, the project will encompass palaeoenvironmental and bioarchaeological studies (including ancient DNA analysis, and analysis of stable isotopes of strontium, carbon, nitrogen and sulfur). Assessment of materials from previous archaeological fieldwork, and fresh excavation of various parts of the complex will also be pivotal to this research.

Recently a new research project was launched. It seeks to resolve a number of key issues concerning a critical period of cultural change in Eastern Pomerania.

THE CULTURAL LANDSCAPE AROUND THE GOLDEN HORNS FROM GALLEHUS, DENMARK. OLD FARMSTEADS IN A NEW SUBURB IN ROSINFELT BY TØNDER

Lene Heidemann Lutz (Museum Sønderjylland Arkæologi)

The area west of Tønder in Southern Denmark is primarily known as the find spot of the well known golden horns of Gallehus, two large gold objects with a total weight of 7 kilograms. The objects were found in the 17th and 18th Century and are mostly dated to the Migration Period (ældre germansk jernalder). Apart from private surveys with metal detector, the area around Gallehus has since then been scarcely investigated, as the land is used for agriculture, wetland and forest. However, in 2016 and 2022 a large area in the vicinity of Tønder, only 2 km east of Gallehus, was excavated prior to the establishment of a new suburb, called Rosinfelt. Four well preserved farmsteads from appr. 250-450 AD turned up. Only a part of the settlement is investigated, but so far the layout of the farms, the stratigraphy of the many fences surrounding the individual farmsteads - and the C14-datings - suggest that the four farms were either contemporary, partly contemporary – or successively built and inhabited. Each farm was in use over quite some time and the farmsize variable, documented by renewals of both buildings and fences. Two special buildings (“halls”) suggest a need of gathering on certain farms, which might indicate that some families held special positions in society in addition to being farmers. Different types of architecture of the longhouses may reflect different cultural backgrounds of the farmers, and if so thus signaling a certain cultural diversity and dynamic, maybe including movements of people(s), in the area north of the Vidå-River within the time span in question. This situation is also observed on other sites in the area.

The poster also lines up the possibility that the inhabitants of the Rosinfelt-settlement took an active part in the deposition of the valuable golden horns, possibly in a wetland area in or by Gallehus. So far the datings of the settlement correspond to any suggested date of the making of the golden horns. Even though we do not know the when the deposit took place, connecting the two sites in one complex seems obvious. Following this thought, we would need to change perspective and consider Gallehus as a sacrificing place in the vicinity of the territory and resource area of the well-established Rosinfelt-society. Future excavations in Rosinfelt might reveal more arguments for this theory.

A NEW VIKING-AGE SWORD GRIP FROM JÅTTÅ, ROGALAND CO., SW-NORWAY

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In 2022, the remains of a richly decorated sword grip were found by metal detecting. The find fitted with a small item recovered by metal detecting the previous year, and a complete grip could be re-assembled. In the spring of 2023, the find underwent comprehensive cleaning and conservation, facilitating further studies of its manufacture and ornamentation. The grip is made of copper alloy with a gilded surface, combined with bands and geometric fields in silver, with niello. The decoration includes chip-carved animal style motifs as well as geometric patterns, and skeuomorphs of rows of boss-capped rivets on the upper and lower part of the grip. Furthermore, the lower hilt has expanded 3D-terminals in the form of stylized anthropomorphic heads with glass eyes. The sword appears as a unique, cosmopolitan piece presenting an amalgam of stylistic influences.

The sword grip provides further evidence that in the ninth century, the Jåttå-Gausel area in Rogaland served as the center of an elite milieu with particularly strong links to the British Isles. Several significant finds of insular artefacts have previously been made in the area, including items in the burial of an exceptionally high-status woman known as the "Gausel Queen" (Bakka 1993). As an idiosyncratic item it has no clear counterparts, although the different stylistic elements can be recognized in other high-quality items, and it can be speculated that it was manufactured in a craft environment combining Anglo-Saxon, Carolingian and Scandinavian styles and techniques. While insular items found in Norway are frequently seen as Viking loot, the sword's unique quality and stylistic complexity imply that it may have been obtained in another way, such as a diplomatic gift. It is hoped that further research into the sword will expand our understanding of the scope and significance of elite networks, and elite craftsmanship, in Scandinavia during the 9th century.