

**OREA 2019**

# **OREA ANNUAL REPORT 2019**

**BARBARA HOREJS (ED.)**



# **OREA**

# **Annual Report 2019**

Barbara Horejs (ed.)



Fig. 1 Current research projects at OREA (2019)

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## OREA Mission Statement and Short Description

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The Institute for Oriental and European Archaeology (OREA), founded by uniting three commissions partly going back to 1878, covers essential prehistoric and early historical cultural developments from the Orient to Europe. This mission is reflected in research ranging from Europe, North Africa, as well as the Middle East in the context of World Archaeology. The Orient and Occident are frequently understood as counterpoints in different worlds and explored separately. In this research institute, these areas are deliberately considered a common cultural bracket for crucial advances of human (pre)history and are therefore explored together. The focus of basic research lies in the time horizon from the Quaternary, about 2.6 million years ago, to the transformation of societies into historical epochs in the first millennium BC.

Research methods include archaeological field work (excavations and surveys), material culture studies with diverse archaeometric methods, and interdisciplinary cooperations with a range of different disciplines, including archaeozoology, archaeobotanics, anthracology, biological anthropology, palaeogenetics, climatology, geoarchaeology and landscape modelling. The basic analysis and interpretation of early cultures lies at the core of research efforts, which aim to include all possible sources. The study of chronologies, art and early writing as well as a broad socio-cultural spectrum including religion, ideologies, economies and identities complement research at the institute.

OREA focuses on the following research topics:

- Prehistory in the Orient & Europe
- Archaeology from the Pleistocene to Early State Societies
- Environments & Economies, Digital Archaeology
- Interdisciplinary Studies of Resources & Identities

OREA researchers cover a wide range of disciplines from prehistoric archaeology, Egyptology, Sudanese archaeology, Near/Middle Eastern and early Greek archaeology to various philologies, anthropology and raw material studies. In 2019, about 70 OREA scientists were active in 17 countries on three continents conducting field work at sites spanning from the Palaeolithic to the Bronze Age (Figs. 1, 2).



Fig. 2 Main scientific expertise at OREA (© OREA)

Targeted research on different priorities is concentrated in research groups spanning broad regions and designed to be trans-regional and diachronic. Research groups are being initiated and developed to pick up new trends in the research landscape and provide new impetus.

For ongoing national and international quality assurance as well as additional research funding, the institute strives for success in competitive third party funding. Current financial support is provided by the Austrian Research Fund (FWF), the European Research Council (ERC), the Marie Skłodowska-Curie programme and INSTAP, as well as by the Austrian National Bank (ÖNB), the White Levy Fund, the City of Vienna, the County of Lower Austria and various private foundations. Altogether four ERC Grants (3 Starting, 1 Advanced) and four FWF START prizes mark OREA as one of the leading institutes in the international field of archaeology.

The institute publishes five publication series and two international journals. The publications reflect the core research areas and comply with the highest scientific standards through international evaluation procedures and advisory boards.

### OREA Archaeology in Austria

Many different OREA projects are located in Austria itself. The tradition of prehistoric archaeology at the Austrian Academy of Sciences is reaching back to the late 19<sup>th</sup> century.

OREA archaeologists are actively involved in long-term publication projects dealing with extensive material analyses, large-scale and cross-regional studies as well as the (re)assessment of older excavation materials. Fieldwork (e.g. in Lower Austria, Styria, Vienna) and material studies concentrate on more than 30 archaeological sites in Austria (Fig. 3).

All these studies and projects are embedded in the traditionally well-established cooperations with the federal authorities and their representatives as well as Austrian museums.

Furthermore, OREA researchers support and supervise academic theses dealing with Austrian issues and core themes, (co-)organise exhibitions at state- and national level whilst being actively engaged in national committees.

New state-of-the-art studies are prepared, initiated, accomplished and published continuously, the journal *Archaeologia Austriaca* being the core medium for online- and hardcopy scientific publications. The prestigious MPK series serves as platform for extensive monographs and Austria related edited volumes (see below, Publication strategy).

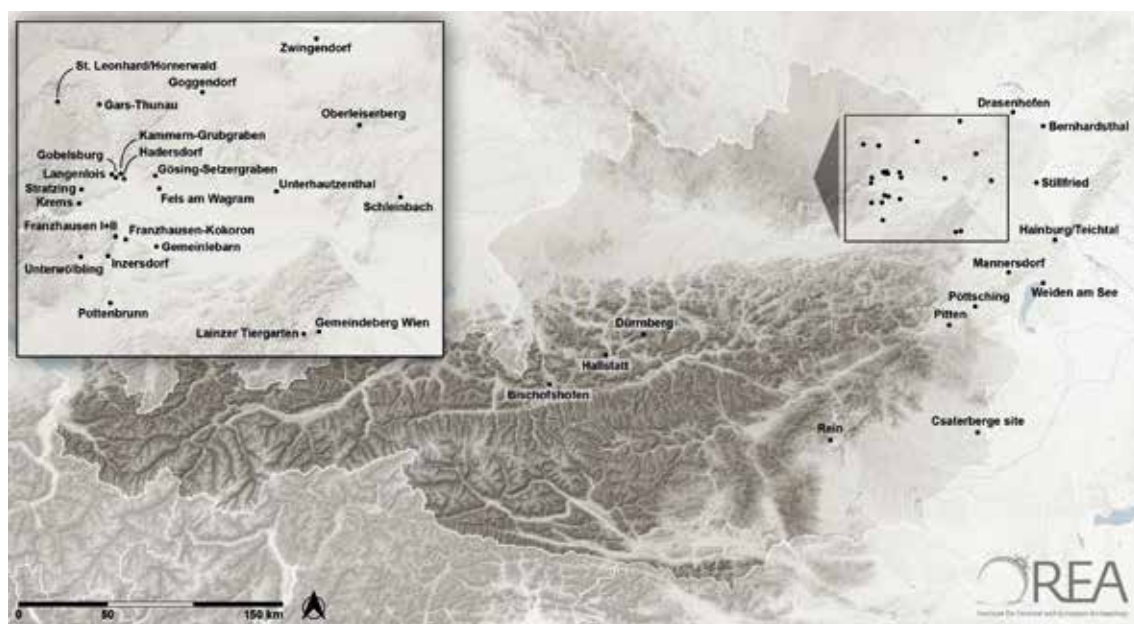


Fig. 3 OREA's archaeological activity areas in Austria (graphics: M. Börner/© OREA)



### The Cluster ‘Archaeology and Classics’ – CLAC

OREA is part of the Cluster for Archaeology and Classics of the Austrian Academy of Sciences which was founded with the aim of consolidating the already existing research excellence in these professional disciplines, and of increasing potential for innovation (<https://www.oeaw.ac.at/clac/>). CLAC constitutes the parent organisation for the Institute for the Study of Antient Culture (IKAnt), the Institute for Oriental and European Archaeology (OREA), as well as the Austrian Archaeological Institute (OeAI). These institutes, with significant strategic priorities, cover the entire curriculum and the diversity of methods of their disciplines. The chronological range of the expertise extends from the Quaternary period up until the modern era.

The Cluster was promoted by the publication of an image brochure (Fig. 4) that can be found under <https://www.oeaw.ac.at/fileadmin/Institute/OEAI/img/CLAC/CLAC-Broschuere.pdf>.

With the foundation of the cluster, joint actions such as *summer schools* at various locations were and will be held. The first CLAC summer school was located at Ephesos and dealt with ‘Transformations from Prehistory to History in the Lower Kaystros valley/Turkey’ (for more details see below).

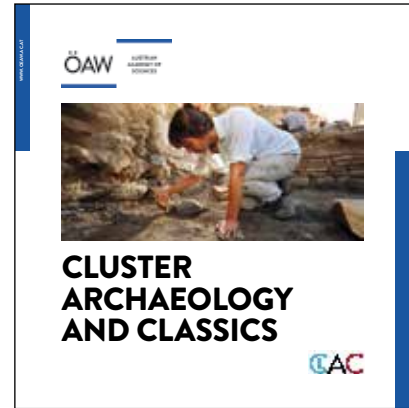


Fig. 4 CLAC image brochure published in 2019

### OREA Management

Since spring 2018 Mario Gavranović acts as deputy director of OREA. Administrative support in 2019 was additionally provided by Bibiana Dernec, Valentin Jovanovic and Natalie Savic.

Research initiatives within OREA are organised in *research groups* and *laboratories* (Fig. 5):

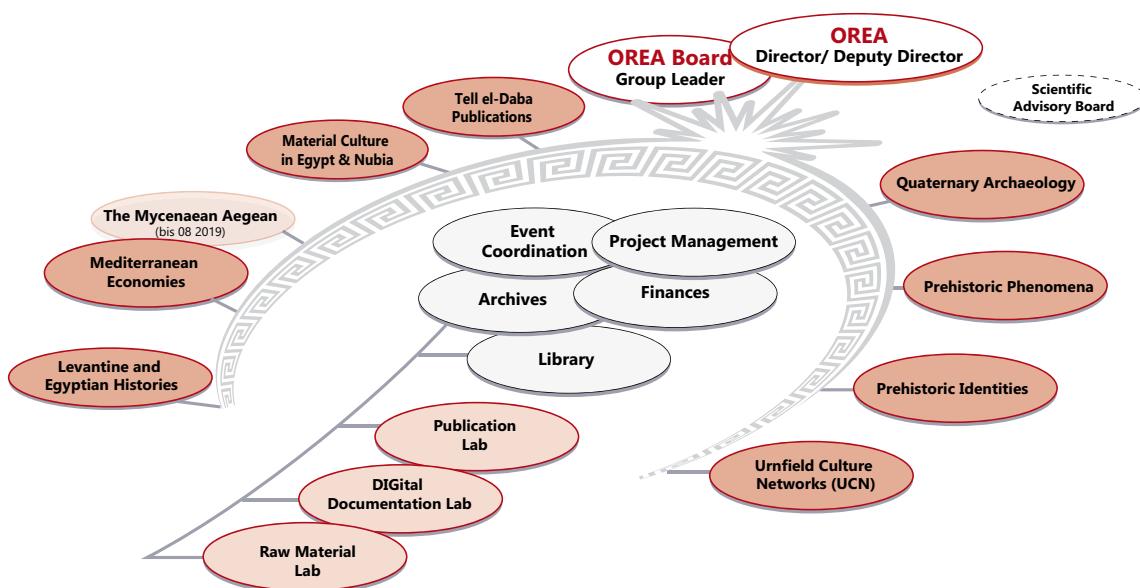


Fig. 5 Organigram of OREA institute 2019

### Research groups

OREA research groups act period independently/diachronically – according to the respective topic. In 2019 eight research groups and three laboratories formed the backbone of OREA (Fig. 6). For detailed activities see the individual reports below. The research groups are:

- *Quaternary Archaeology* (research group leader: Thomas Einwögerer),
- *Prehistoric Phenomena* (research group leader: Barbara Horejs),
- *Prehistoric Identities* (research group leader: Katharina Rebay-Salisbury)
- *Levantine and Egyptian Histories* (research group leaders: Felix Höflmayer & Roman Gundacker)
- *Material Culture in Egypt and Nubia* (research group leader: Bettina Bader)
- *Tell el-Daba Publications* (coordination: Vera Müller)
- *Mediterranean Economies* (research group leader: Reinhard Jung)
- *Urnfield Culture Networks* (research group leader: Mario Gavranović)

### Laboratories

Three laboratories are now supporting the research activities at OREA. They have been established as an analytical and documentation service and public outreach service devices. Their activities are reported in detail further below.



Fig. 6 OREA research group leaders 2019 (© OREA)

- The *Raw Material Lab* (Michael Brandl) interacts with all research programmes dealing with raw material sources, economic development and trade routes, and helps to trace and identify their sources and distribution routes.
- The *DIGital Documentation Lab* (Mario Börner) focuses on all the digital support archaeological research might need – professional excavation engineering and provision of computer-assisted methods for capturing, processing and preparing research data. The lab also works together with all research groups at OREA and the Austrian Centre for Digital Humanities of the Austrian Academy of Sciences.
- The *Publication Lab* (Ulrike Schuh) has been established for all OREA publication-related activities concerning research output as well as for public relation tasks – i.e. the permanent updating and maintenance of the OREA website.

### The OREA Archives

Detailed information on the archives can be found in the Annual Report 2017 ([https://www.orea.oeaw.ac.at/fileadmin/Institute/OREA/pdf/Publikationen/OREA\\_AnnualReport\\_2017.pdf](https://www.orea.oeaw.ac.at/fileadmin/Institute/OREA/pdf/Publikationen/OREA_AnnualReport_2017.pdf)).

The following archives are accessible at OREA:

- The *lithic raw material* collection at OREA (person responsible: Michael Brandl) detailed information in the Annual Report 2017, 13–14.
- The *Urnfield Culture archive* (person responsible: Mario Gavranović) includes documentation of excavations at Franzhausen-Kokoron, Inzersdorf ob der Traisen, Gars/Thunau; detailed information in the Annual Report 2017, 15.
- Archive of the *Fritz Schachermeyr Collection* (person responsible: Michaela Zavadil) detailed information in the Annual Report 2017, 15.
- The *Egyptian excavations' archive* (person responsible: Karin Kopetzky) includes documentation of excavations at Tell el-Daba, the Assasif and Sayala; detailed information in the Annual Report 2017, 15–16.

### Publication strategy

OREA aims to make research results nationally and internationally visible and accessible to the scientific community. Therefore, OREA edits and publishes five monographic series that cover the institute's main research focus. In addition to the renowned series *Mitteilungen der Prähistorischen Kommission* (MPK), *Mykenische Studien* (MykSt) and *Untersuchungen der Zweigstelle Kairo des ÖAI* (UZK, edited in cooperation with the Austrian Archaeological Institute), the series *Oriental and European Archaeology* has been established in the last five years.

In 2019, the new publication series *Archaeology of Egypt, Sudan and the Levant*, edited by Julia Budka, Felix Höflmayer and Barbara Horejs, was founded within the framework of the Austrian Academy of Sciences Press. The series' main focus lies on current archaeological research in the Levant, Egypt and Sudan, with a special emphasis on the multifaceted interconnections between these cultural spheres. The series is planned to represent the research of the OREA institute and its associated cooperation partners in that area. The first volume has already been published in early 2020, further volumes are in preparation.

The two prestigious journals *Archaeologia Austriaca* and *Ägypten und Levante / Egypt and the Levant* – both indexed in international publication rankings such as ERIHPlus or Scopus – complete OREA's publication portfolio.

All series and journals edited and published by OREA are internationally peer-reviewed and follow the high state-of-the-art standards of scientific publications as well as the rules for good scientific practice.

From 2020, the newly established Publication Lab will coordinate editing, proofreading and book production of all journals and publication series published by OREA. Furthermore, it will support authors in the preparation of manuscripts, both in administrative matters and in the acquisition of funding. In close cooperation with the respective publishing houses, the Lab thus ensures an efficient production process.

#### Journals:

- *Archaeologia Austriaca*. Zeitschrift zur Archäologie Europas / Journal on the Archaeology of Europe
- *Ägypten und Levante* / Egypt and the Levant. Internationale Zeitschrift für ägyptische Archäologie und deren Nachbargebiete / International Journal of Egyptian Archaeology and Related Disciplines

#### Series:

- *Mitteilungen der Prähistorischen Kommission (MPK)*
- *Oriental and European Archaeology (OREA)*
- *Mykenische Studien (MykSt)*
- *Archaeology of Egypt, Sudan and the Levant (AESL)*
- *Untersuchungen der Zweigstelle Kairo des ÖAI (UZK)*

#### Publications 2019 (Fig. 7)

- Jörg Becker – Claudia Beuger – Bernd Müller-Neuhof (Eds.), *Human Iconography and Symbolic Meaning in Near Eastern Prehistory*. Proceedings of the Workshop held at 10<sup>th</sup> ICAANE in Vienna, April 2016, *Oriental and European Archaeology* 11 (Vienna 2019).
- Maxime Bami – Barbara Horejs (Eds.), *The Central/Western Anatolian Farming Frontier*. Proceedings of the Neolithic Workshop held at 10<sup>th</sup> ICAANE in Vienna, April 2016, *Oriental and European Archaeology* 12 (Vienna 2019).
- Thomas Einwögerer, *Die jungpaläolithischen Stationen in der Ziegelei Kargl in Langenlois, Niederösterreich. Die Ausgrabungen von 1961 bis 1963*, *Mitteilungen der Prähistorischen Kommission* 88 (Vienna 2019).



Fig. 7 OREA's journals and series in 2019

### Promotion of young researchers, career development, gender and diversity in 2019

Teresa Bürge was awarded an APART-GSK scholarship for her project *Ritual or Refuse?* in December 2019 and will start her research at OREA in March 2020. Christoph Schwall was able to secure funding for the first field work in the United Arab Emirates to investigate *Trading Networks in the Early Bronze Age Gulf Region* in cooperation with the Archaeological Authority of the Emirate of Sharjah and the Austrian Embassy in Abu Dhabi. Aaron de Souza joined OREA with his grant *INBETWEEN* by the Marie-Skłodowska-Curie Actions in 2019. Gabriela Ruß-Popa continued her Herta and Paul Amirian Post-Doc project *SKIN: Ressourcen und Technologien* with study trips to Switzerland and Germany. Benedikt Biederer continued his DOC scholarship project *Herausforderung Vorratshaltung. Essentielle Strategien im urgeschichtlichen Europa vom Neolithikum bis in die Eisenzeit* and Mohamad Mustafa his DOC scholarship project on *Burial Practices in the Southern Pre-Pottery Neolithic Levant*. These young scholars as well as the young scientists working for the various OREA projects were especially encouraged to present posters of their research to the OREA Scientific Advisory Board during its visit in December 2019 to obtain high profile feedback for their research from leading experts in the field. Several projects ended successfully in 2019. The DOC Team *The Role of Households at the Dawn of the Bronze Age – Contextualizing Social Organization* of Maria Röcklinger, Constanze Moser, Stephanie Emra and Sabina Cveček successfully ended mid-2019 and Elisa Perego's Marie-Skłodowska-Curie Project *CoPower* lasted until Summer 2019.

In cooperation with the University of Vienna an excursion to Serbia and Bosnia-Herzegovina was organised by the directors of OREA in June 2019 to stimulate the interest of young scholars in Balkan archaeology with a focus on recent archaeological work in southeastern Europe (for a full report see below).

In the framework of the Cluster Archaeology and Classics (CLAC) the first CLAC summer school for students was organised by the Çukuriçi Höyük team in collaboration with the excavation teams of Neolithic Çatalhöyük and Ekşi Höyük in July 2019 (for a full report see below).

The Austrian Academy of Sciences and the Austrian Science Fund (FWF) organised a round-table discussion on 8<sup>th</sup> March 2019 – International Women's Day – to analyse and investigate why only very few female scientists can be found at the top of the academic career ladder in Austria. It was co-organised by Barbara Horejs with a lecture by Katharina Rebay-Salisbury.

In 2019, as part of the initiative *young science@OREA*, class 2B from BG/BRG Rainergasse visited the OREA Raw Material lab for a hands-on study day on prehistoric lithics and skin, leather and fur technologies with the OREA experts Gabriela Ruß-Popa and Michael Brandl.

A new collaboration with the programme management of the Volkshochschule Simmering to present OREA's scientific research to the interested public in the form of lecture series and workshops started in 2019. The first initiatives will start in 2020.

Within the framework of the mentoring programme of the Austrian Academy of Sciences, OREA was most active participating with mentors and mentees. Senior researchers and group leaders as well as young scientists took the opportunity of guiding and guidance to develop the future careers of excellent young researchers.

### Encouraging young scholars in Balkan Archaeology

In cooperation with the Institute for Prehistoric and Historical Archaeology, University of Vienna, B. Horejs and M. Gavranović organised an excursion to southeastern Europe, specifically to the Republic of Serbia and to Bosnia and Herzegovina. Based on the seminar *Construction*





Fig. 8 National Museum of Bosnia and Herzegovina, Sarajevo (photo: L. Burkhardt)



Fig. 9 Jajce fortress, Bosnia and Herzegovina (photo: L. Burkhardt)



Fig. 10 Feudvar on Titel Plateau, Serbia (photo: OREA)

*and Reflection of Archaeological Cultures of the Prehistoric Balkans* in June 2019, the excursion visited a range of sites, museums and depots in Bosnia and Herzegovina and Serbia. Particular attention was paid to developments from the early Holocene to the Iron Age dealing with Neolithic, Chalcolithic and Bronze Age cultures. Concrete cultural horizons and their archaeological sources were discussed in the context of their spatial and political origin and definition. Sedentarism and settlement systems, burial and deposition customs, technologies and material cultures formed the framework for the critical examination of prehistory in Croatia, Bosnia, Serbia, North Macedonia and Bulgaria. Cross-national and cross-lingual topics were used to examine prehistoric cultural phenomena interregionally. Current debates such as migrations, aDNA and population genetics were used as case studies in the examination of the latest findings.

In consideration of the archaeological material culture, the knowledge acquired in the seminar was directly increased on-site. The introduction by local experts such as Jovan Koledin (Museum of Vojvodina), Nenad Tasić (University of Belgrade) and Slaviša Perić (Archaeological Institute Belgrade), and the visit to different regional and national museums enabled an examination of the prehistoric Balkans and different presentation methods of archaeological cultures (Figs. 8, 9). A special focus was on current research and excavations, the latest results of which were discussed on-site (Fig. 10).

### **Supporting women in science – it works!**

The OREA institute has focused on supporting female scientists from the day of its formation in 2013 onwards. Career mentoring for senior scientists and strategies to promote young scholars have been established as systematic management tools and gender relevant actions have been introduced throughout the last five years. Continuous engagement and employment in excel-





Fig. 11 OREA Women in science (© OREA)

lence grants and renowned scholarships have already had a strong impact on female archaeologists' visibility and scholarly careers at OREA. A substantial number of highly competitive grants based at OREA were awarded to female researchers (3 out of 4 Start Prizes by the FWF, the Austrian Science Fund, and 3 out of 5 ERC grants). Additionally, gender-balanced boards were successfully installed, including the institute's group leaders, the institute's Scientific Advisory Board and the board of the journal 'Archaeologia Austriaca'.

The 5-year programme of promoting female scientists has resulted in 49 female employees in the 2019 OREA team (Fig. 11). OREA is proud to report that continuous efforts and dedication, as well as strategic actions, have been successful, evident from the 2019 gender balance of more than 60% female employees in the OREA team!

### **Projects, international perspectives and co-operations**

In 2019 the role of OREA as the centre for Balkan archaeology has been boosted by two new FWF stand-alone projects. Barbara Horejs received funding for *NEOTECH: Neolithic technological*





Fig. 12 Official meeting and signing the cooperation contract with Sharjah, UAE (photo: M. Börner)

*trajectories in the Balkans* and Mario Gavranović for *New insights in Bronze Age metal producing societies in the central and western Balkans. An interdisciplinary study on the social impact of metallurgy and exchange networks*. Both projects started with field and study seasons and in synergy with the already advanced *Vizualizing the unknown Balkans* project. The outcome of the projects will be presented in the framework of regular lecture series at the Austrian Embassies and cultural institutes in Sarajevo and Belgrade.

Reinhard Jung secured funding for his project, *Kontopigado. A Mycenaen Industrial Area South of Athens*, and Thomas Einwögerer for his DFG /DACH project, *Success, limits and failure of subsistence strategies in eastern Central Europe during the early Gravettian and the Last Glacial Maximum*.

K. Rebay-Salisbury was awarded a grant from the Austrian Agency for International Cooperation in Education and Research (OeAD-GmbH) for her project *Together in life – together in death: adults and children in Bronze Age graves*, which will be conducted in collaboration with colleagues from the Czech Republic.

The year 2019 saw the preparation of several proposals for the excellence programmes of the FWF and ERC. Decisions are expected for 2020.

A framework agreement has been signed with the Vrije Universiteit Brussel (VUB) concerning analyses of animal and human remains from archaeological contexts, the Karl Landsteiner Privatuniversität für Gesundheitswissenschaften and the Donau-Universität Krems concerning the digital reconstruction of archaeological findings in view of the double burial of newborns from Krems-Wachtberg.

A co-operation contract between OREA and the Sharjah Archaeology Authority (SAA), Emirate of Sharjah, United Arab Emirates, was signed in January 2019 (Fig. 12). This paved the way for the beginning of the first ever joint research project at the site of *Kalba* between Austrian scientists and the Emirate of Sharjah, United Arab Emirates (Fig. 13).

A framework agreement between the Kunsthistorische Museum, Wien (KHM), and the Austrian Academy of Sciences (OeAW) was signed in December 2019 to foster closer contacts concerning digitisation and visualisation of objects from the KHM and their use for joint publications.

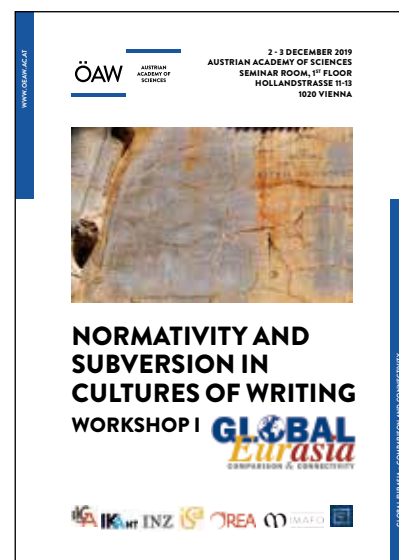


Fig. 13 Presentation of first research results on the occasion of signing the cooperation contract (photos: M. Börner)

### Global Eurasia – initiatives and perspectives

The official AAS Platform *Global Eurasia* was founded in 2018 (see OREA Annual Report 2018, 13, Doi: 10.15661/OREA/annualreport/2018). A strategic focus workshop was held on 19<sup>th</sup> June 2019, entitled *Global Eurasia – Comparison and Connectivity* (Fig. 14). Three study groups, focusing on a) *agency, networks and transregional contexts*; b) *cultures of transmission and practices of writing*; and c) *diffusion of knowledge and transformations of spaces of knowledge*, worked on developing further research strategies. New input to this joint research initiative will be triggered by short term grants, a programme that will be developed and put into action in early 2020.

Fig. 14 Programm of the first Global Eurasia strategic focus workshop



### Guest Scientists in 2019

- *Uroš Matić* (University of Münster) stayed at OREA until January 2019 during his post-doc project *Beautiful Kush: Cosmetic substances and utensils in New Kingdom Nubia* as part of the DAAD P.R.I.M.E programme. He collaborated closely with Bettina Bader's research group *Material Culture in Egypt and Nubia*, in terms of theoretical approaches, as well as on object-specific questions.
- *Annalisa Rumolo* (funded by the Gerda-Henkel-Stiftung) is co-operating with the *Mediterranean Economies* group of R. Jung and is currently writing her PhD thesis at OREA with the main focus on the reconstruction of the diet and mobility of targeted individuals at the cemetery of Portes in Achaea (northwestern Peloponnese) and a general reassessment of published isotopic and archaeological evidence from coeval Mycenaean sites.
- *Michele Massa* received an H2020 Incoming Fellowship from the Austrian Academy of Sciences to develop a MSCA proposal and several other project ideas and spent the time from 4<sup>th</sup> March to 2<sup>nd</sup> April 2019 at OREA to work in close contact with the OREA scientists from the *Prehistoric Phenomena* research group.
- *Daria Ložnjak Dizdar* from the Institute of Archaeology in Zagreb, principal investigator for Croatian part in bilateral project Austria-Croatia (MSE – OeAD) *South connection: Spreading of Urnfield phenomena and mobility in Bronze Age*, was able to spend two months (mid-January – mid-March 2019) at the OREA Institute. The team members worked on the finalisation of the publication regarding joint investigations in Dolina and on development of future publication and research strategies. M. Gavranović and D. Ložnjak Dizdar presented some aspects of the results obtained in a public lecture at the OREA Institute (27.02.2019) – see also the Urnfield Culture Networks report below.
- *Veronika Dubcova*, was awarded a six-month grant by the Aktion Österreich-Slowakei, AÖSK-Stipendien for Postdocs. The 'Aktionen' between Austria and Slovakia enable scientific exchange and support the learning of each other's language. Different scholarships for students, lecturers and researchers as well as project funding support bilateral cooperation with the aim of creating sustainable relationships. Veronika Dubcova is part of the research group *Material Cultures* of B. Bader and is working on the archaeology of *Tell el-Retaba – An 18<sup>th</sup> Dynasty Settlement in the Eastern Nile Delta*.

## High Impact National and International Outreach in 2019

### Interdisciplinary platform ‘Natural Sciences and Archaeology’

The current challenges in interdisciplinary archaeology are the focus of the new thematic platform at the Austrian Academy of Sciences, which is also intended to provide a framework for the discussion of future concepts and scientific perspectives on natural sciences & archaeology in the 21<sup>st</sup> century.

The interdisciplinary research approach in archaeology, which is traditionally strongly anchored in Vienna, offers optimal conditions for discussing possible scientific scenarios for the future. The large number and variety of archaeometric methods, the opening of new fields of research within transdisciplinary areas, and currently postulated potential paradigm shifts invite a critical-constructive discussion. Focused actions in the period 2019–2020 should, on the one hand, promote networking and interdisciplinary discussion, and on the other hand, generate concrete ideas for new, joint projects.

Within a kick-off event on 10<sup>th</sup> May 2019, the thematic platform, organised in cooperation with the Cluster Archaeology and Classics (CLAC), started with a deliberate reflection by non-archaeologists (Fig. 15). Researchers from the natural and life sciences spoke about their understanding of archaeology and their future visions of interdisciplinary cooperation. Representatives of the archaeological disciplines contributed as respondents. This ‘change of perspective’ is expected to result in a first concrete assessment of the currently most important topics of the platform, which will be oriented towards the needs of all participants.



Fig. 15 Kick off ‘Natural Sciences and Archaeology’

### Archaeology and Republic. Reflections on Archaeology in Austria in the First and Second Republic

The national identity crisis that arose in the newly founded *Republik (Deutsch-)Österreich* after the First World War also had an impact on the archaeological disciplines as well as on the intellectual climate. The infiltration of nationalistic, ethnic and racist ideas into academic discourse was also reflected in archaeology. The individual subjects lost or gained social relevance, or had to redefine their role.

In contrast, the period after 1945 is characterised by a sharp refusal to deal with the history of the respective discipline. The aberrations of the past (both during and before the Nazi era) are regarded as scientifically outdated theses and are therefore left to be slowly forgotten; continuities in content and personnel are encountered as well as sharp breaks.

A conference on the interaction between the public and archaeology (Fig. 16), on the public’s perception of



Fig. 16 Archaeology and Republic

archaeological disciplines in the context of the research landscape and the intellectual currents behind it was held on 31<sup>st</sup> January and 1<sup>st</sup> February 2019 at the OREA Institute and was organised by M. Zavadil and E. Czerny. The conference also focused on the large, long-term undertakings in Germany and abroad that are recognised as having an identity-building effect both in the public's consciousness and for the discipline in question. Excavations at most of these iconic sites were already begun in the Monarchy, and few were added during the Republic. The change in the self-image of these undertakings, the changing questions and perspectives were examined. The publication of the conference proceedings is underway and will be published in one of the OREA series. The workshop boasted the key note-lecture by Charlotte Trümpler (Frankfurt am Main): 'Die Orientforscherin Gertrude Bell – Archäologin, Agentin, Autorin' (Fig. 17).



Fig. 17 Key note lecture on the occasion of 'Archaeology and Republic'

## Documenting Material Culture

Recording material culture is at the core of archaeological work, whether the material is pottery, stone tools, textiles, jewellery, or a myriad of other object classes. The main aim of the study day on 12<sup>th</sup> June 2019, organised by B. Bader, was to look behind our interpretational frameworks concerning the documentation of material culture and how our methods influence the information we hope to gain (and vice versa).

The wide variety of research subjects in the Institute of Oriental and European Archaeology makes it an ideal place to look beyond the border of one's own discipline. This study day provided an opportunity to learn more about why and how objects in the widest sense are recorded in different archaeological fields, since these methods and motivations can differ widely (even for the same object type) in world archaeology. Participants were encouraged to engage in a comparative discussion of recording methods, both traditional and digital, of objects and the intrinsic motivation behind our methodological choices (Fig. 18).

Additionally, we looked behind these methodologies and also focused on the types of questions we ask of material culture and the answers we expect to gain. In working with material culture, the researcher faces various restrictions that make it impossible to give attention to all finds equally. In light of these limitations, speakers and participants were invited to highlight strategies for formulating research questions and choosing objects to be analysed, since these choices are crucial for obtaining reliable data against which our interpretational frameworks can be tested.

The ultimate goal of this study day was to raise awareness of the importance of methods of documentation of material culture, as these methods are often overlooked in publications. The stories that these objects can tell are the ultimate building blocks for our interpretation of past societies.



Fig. 18 Study day on documenting material culture



### Summer School 2019

In cooperation with the Cluster Archaeology and Classics (CLAC), the Çukuriçi Höyük team organised a summer school with experts and students from the excavation teams of Neolithic Çatalhöyük and Ekşi Höyük (Fig. 19). The event *Transformations from Prehistory to History in the Lower Kaystros valley/Turkey*, held in the Ephesos excavation house (OeAI, AAS) in Selçuk/Turkey, took place on the weekend of 12<sup>th</sup>–15<sup>th</sup> July and was the first in a series of planned CLAC summer schools. The focus was mainly on the oldest settlement activities in and around Ephesos and thus mostly on the prehistoric settlements of Çukuriçi Höyük. The aim of this year's event was to give the participants an insight into current debates and models of Neolithisation. This was discussed with the respective experts based on current material studies and already achieved results, as well as the examination of the material itself. A further aim was to work out and consider, in view of current discussions, joint cross-epochal questions on the use of resources (zoology and botany), innovation (ceramic studies: technology, etc.) and technology (lithics) as well as the history of the settlements itself (Fig. 20). A further contribution dealt with the earliest electron coins, including current theories on the origin of coinage. Besides many other contributions to the discussion, possible prehistoric forerunners such as copper and bronze ingots were the subject of lively debate. In the afternoon, excursions to Ephesos and Artemision were offered to the participants.



Fig. 19 Participants of the CLAC Summer School (photo: F. Ostmann/OREA)



Fig. 20 Barbara Horejs lecturing at the CLAC Summer School (photo: F. Ostmann/OREA)

## Open Excavation Day at Kammern-Grubgraben

On 26<sup>th</sup> September, the excavation team of palaeolithic Kammern-Grubgraben invited interested parties to an *Open Excavation Day*. The team, led by Th. Einwögerer, welcomed guests from OREA, local associations, students as well as interested non-professionals to spend a day on-site (Fig. 21). The event was also visited by local news and initiatives such as RuGuS – Institut für Regionalraumkultur und Geschichte um Schillern (Fig. 23). Students of the Karl Landsteiner Privatuniversität für Gesundheitswissenschaften, co-operating in the *Wachtberg* project, used the visit to extend their archaeological experience.

After an introduction to the geography, the geology and the history of research, the excavators provided an insight into their new results and latest finds. Impressive new insights into past life were given by explaining a special feature interpreted as a possible ‘meat cache’ and the unique opportunity to see such a structure at first hand and in situ (Fig. 22).



Fig. 21 Studying finds on the site of Kammern Grubgraben (photo: F. Ostmann/OREA)



Fig. 22 The meat cache September 2019 (photo: F. Ostmann/OREA)



Fig. 23 Local press reporting on the newest archaeological investigations at Kammern-Grubgraben

### Public Lecture at the Lachish Expedition and W.F. Albright Institute for Archaeological Research

The Austrian-Israeli Expedition to Lachish hosted an Open Day during the excavations on 7 August 2019 at the site. Guests included the Austrian Ambassador Mag. Martin Weiss, the Austrian Cultural Attaché Mag. Arno Mitterdorfer and Consul Mag. Johannes Korherr, as well as guests from Moshav Lachish and interested people from all over Israel (Fig. 24).

On 31 October 2019, first results after three seasons of excavation were presented at the W.F. Albright Institute of Archaeological Research in Jerusalem by Felix Höflmayer, Katharina Streit and Lyndelle Webster. Guests included the Austrian Cultural Attaché Arno Mitterdorfer and members of the Austrian community in Israel (Fig. 25).



Fig. 24 Public lecture at the Lachish Expedition



Fig. 25 Invitation to the lecture at the W.F. Albright Institute for Archaeological Research

### Female Pelvic Features

The aim of the workshop organised by K. Rebay-Salisbury in the Naturhistorisches Museum Wien was to bring together national and international experts in the field of pelvis research from different professional backgrounds for presentations, discussions and object demonstrations (for details, see below, report Prehistoric Identities) (Fig. 26).



Fig. 26 Female Pelvic Features, conference held at the premises of the Natural History Museum, Vienna



### International Workshop UK Gespräche ‘Bronze Age Metallurgy. Production – Consumption – Exchange’

The annual panel *UK-Gespräche* – ‘Get Together’, held on 23<sup>rd</sup>–24<sup>th</sup> May 2019, focused on the metallurgy of the Middle and Late Bronze Age in the area of the Urnfield Culture and contemporary cultural phenomena in Europe. Starting from the ongoing project *New Insights in Bronze Age Metal Producing Societies in the Western and Central Balkans* of the host institute OREA in cooperation with the Institute for Archaeological Science (VIAS) of the University of Vienna (Fig. 27). The aim of the workshop was to pool experts working on different aspects of copper mining and copper metallurgy, including ore processing, casting, distribution of raw metals and ingots as well as the use and function of the metal objects. There was special interest in the social and environmental impact of metallurgical activities. Furthermore, there was a focus on the establishment of relations between Bronze Age communities based on the exchange of raw material and metal products.

The programme of the workshop included a wide range of regional studies as well as region-spanning contributions dealing with specific topics. The final objective was to gain a better understanding of the technological and social processes that led to the interweaving of the metallurgical know-how across the different Urnfield Culture societies in Europe.



Fig. 27 *UK-Gespräche* 2019

### Eva Alram-Stern and her Research at the Austrian Academy of Sciences: an Hommage on the Occasion of the Retirement of c.M. Eva Alram-Stern

To celebrate the academic achievements of Eva Alram-Stern at the Austrian Academy of Sciences on the occasion of her retirement, a festive lecture by Josef Maran in appreciation of her scientific achievements on the Neolithic Aegean was held on 28<sup>th</sup> June 2019 (Fig. 28). Eva Alram-Stern worked for the former Mycenaean Commission of the Austrian Academy of Sciences since 1983 and has been deputy director of OREA from 2016 to 2018. Being still a highly valued member of the OREA research groups *The Mycenaean Aegean* and *Prehistoric Phenomena*, her scientific output boasts numerous publications. Her multiple achievements were also praised by OREA's director Barbara Horejs within the framework of the event.



Fig. 28 Festive lecture given by Josef Maran on the occasion of the retirement of Eva Alram-Stern (photo: F. Ostmann/OREA)

## OREA Excavations 2019: Highlights from the Palaeolithic to the Iron Age

Within this event on 11<sup>th</sup> December 2019, forays led through the current results of this year's excavations by the Institute of Oriental and European Archaeology (Fig. 29).

The range of the excavations spanned from the Palaeolithic to the Iron Age and covered a geographical area from the Middle East via the Balkans to central Europe.

In short presentations, the excavators gave an overview of their current field research in Austria, Romania, Serbia, Bosnia and Herzegovina, the United Arab Emirates, Cyprus, Lebanon and Israel. The presentation was open to the wider public and a wine reception was hosted after the official part of the lectures.



Fig. 29 Lecture day *OREA Excavations 2019*

## Establishing International Bilateral Contacts

### Republic of Serbia

#### Archaeology of the Modern Era. Lecture Series

The series of lectures of the Austrian Embassy in Belgrade in cooperation with the Austrian Academy of Sciences and notable scientists and researchers from Austria and Serbia will explore the complex relations between Austria, Serbia, Europe, the Balkans, Anatolia and the Orient – which have been in contact since prehistoric times and have exchanged cultural techniques (Figs. 30, 31).

Since prehistoric times, among the most important challenges have been those related to climate, settle-



Fig. 30 Invitation of the Austrian Embassy in Belgrade, on the occasion of the new lecture series on complex bi- and multi-lateral relations



Fig. 31 Sabine Kroissenbrunner (Deputy Head of Mission, Austrian Embassy in Belgrade), Barbara Horejs and Sofija Stefanović (Bio-sense Institute, University of Novi Sad / Department of Archaeology, Faculty of Philosophy, University of Belgrade) at the opening event of the new lecture series *Archaeology of the Modern Era*

ment, demography, migration, infrastructure, trade routes, economy, communities, state, language, religion and identities.

As far as the transfer of knowledge and culture and the proliferation of techniques and know-how are concerned, much has been achieved over the years to date, but much has also failed.

Considering such a giant bridging in time and space, what are the lessons to be learned for our co-operation in the context of globalisation and with a view to the accession of Serbia, the western Balkans and southeastern Europe to the European Union?

The purpose of this series is to raise awareness and provide a better understanding for our interconnectedness, mutual dependence and for the urgency with which we need to seek peaceful and sustainable political, economic and social strategies for Europe and the Balkans.

The lecture series at the Austrian Embassy in Belgrade had its kick-off in September 2019 with a lecture by Barbara Horejs and Sofija Stevanović (Biosense Institute, University of Novi Sad / Department of Archaeology, Faculty of Philosophy, University of Belgrade) on 'The Beginning of History – The Balkans as a Pre-Historic Bridge Between Asia Minor and Europe'.

### *State of Israel*

Within the framework of the presidential visit to the State of Israel, Barbara Horejs joined the Austrian Cultural and Scientific Delegation from 3<sup>rd</sup>–7<sup>th</sup> February 2019 (Figs. 32, 33). The traditionally strong contacts with the local scientific archaeology community and administrative authorities were successfully promoted and fully supported by the organising team of the Austrian presidential office. The visit included a presentation of the Austrian–Israeli excavations at Tel Lachish for the Cultural and Scientific Delegation on 5<sup>th</sup> February at the Hebrew University of Jerusalem) as well as visits to the Weitzmann Institute, Yad Vashem, the Austrian Hospice and the historic centre of Jerusalem. Again the visit strengthened the bilateral co-operations with scientists and archaeologists.



Fig. 32 The cultural and scientific delegation accompanying the President of the Federal Republic of Austria



Fig. 33 Barbara Horejs and Alexander Van der Bellen, President of the Federal Republic of Austria, official visit to the State of Israel 2019

### *Republic of Romania*

In January 2019, a new cooperation was launched between OREA and the Valahia University of Târgoviște in Romania in the field of Palaeolithic archaeology. Both OREA's *Quaternary Archaeology* research group and the Faculty of Humanities of Valahia University have long-lasting experience in the investigation of Upper Palaeolithic open-air sites. Cooperation aims at exploring interregional variability of cultural and natural factors during the most challenging phase of the



Fig. 34 First joint fieldwork campaign of OREA and Valahia University in the Ceahlău Basin (East Carpathians) in May 2019 (photo: OREA)

last glacial cycle. At OREA, the cooperation is embedded in the project *Comparing Upper Palaeolithic sequences across the Carpathians* of M. Händel. Joint fieldwork commenced in May 2019 with a core sampling campaign at the multi-occupation site Bistricioara-Lutărie III in the Ceahlău Basin (Fig. 34), and included not only archaeologists from the two cooperation partners, but also specialists from the Romanian Academies in Iași and Cluj-Napoca, as well as from the University of Bayreuth (Germany). First joint excavations were conducted in August 2019. Beside fieldwork, the cooperation also includes chert provenance studies carried out at OREA's Raw Material Lab (M. Brandl).

Barbara Horejs – Dagmar Melman – Maria Röcklinger – Ulrike Schuh – Angela Schwab



# Scientific Activity 2019

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## QUATERNARY ARCHAEOLOGY

(Research group leader: Thomas Einwögerer)

### Objectives

The *Quaternary Archaeology* research group focuses on the investigation of hunter-gatherer cultures of the Ice Ages. In this, the principle field of research targets open-air sites which are well preserved in the loess sediments of the large river systems in the Middle Danube region and east of the Carpathians. Ongoing fieldwork in Lower Austria and east Romania (Kammern-Grubgraben, several sites in Langenlois, Bistricioara-Lutârie), as well as concluded field investigations (e.g. Krems-Hundssteig, Krems-Wachtberg, Gösing-Setzergraben, Schiltern, Kamegg) provide a large database for a range of disciplines involved in Ice Age research. The occupation span, structure, and function of the individual sites are reconstructed on the basis of this data, in conjunction with interdisciplinary analyses (e.g. raw material studies, physical anthropology, ancient DNA) and comparison of regional and supra-regional cultural developments and climatic changes. The branch in Krems, located amid the best-known Palaeolithic sites of Lower Austria, functions as a research platform which provides enough space for material studies, in particular for refittings of the vast lithic inventories of Krems-Wachtberg and Kammern-Grubgraben.

### Current research

After ten years of field investigations from 2005 to 2015, the Gravettian open-air site Krems-Wachtberg still represents an important focus of the *Quaternary Archaeology* research group. Besides a large number of finds, including not only chipped stones, animal hard tissue remains, and charcoal, but also adornments and mobile art, the excavations documented spectacular and unique features. Most significant among these are a double burial of newborns and the single grave of a 3-4-month-old infant. Additionally, two hearths and a number of pits and postholes of various sizes have been documented. In particular, the burials established the international fame and significance of this Lower Austrian open-air locality as a key reference site for the investigation of Ice Age environmental and climate conditions in the Middle Danube region during the Upper Palaeolithic. State-of-the-art excavation standards, single artefact recording, and organisation of all datasets in one central database allow for addressing issues such as social structure, subsistence, procurement strategies, and mobility. In addition, questions addressing the production processes of different materials ranging from lithics to bone, ivory, and pigments, can be targeted. Post-excavation research is now directed towards analyses, evaluation, and publication of the data. At present, work is focusing on a comprehensive presentation of the lithic industry encompassing raw material procurement, artefact morphology, as well as the entire chaîne opératoire of both the flake industry and the cores. Extensive refittings carried out in the last years provided a crucial basis for the technological assessment, intra-site spatial assessment, and post-occupational site formation processes. Analyses and publication of finds and features of the Krems-Wachtberg excavations are receiving substantial financial support from the Federal State of Lower Austria. At the moment support is secured until 2021. This will result in a number of monographs beginning with a volume on the lithic industry which is scheduled for 2020; a subsequent volume is planned to focus on stratigraphy and features. Another important topic of investigation targets analyses and publication of the double burial of newborns. The extraordinarily well-preserved feature enables detailed anthropological assessment of stress events, age at death, as well as reconstruction of kinship and descent through human DNA. A manuscript has been

prepared in cooperation with Maria Teschler-Nicola (NHM, Natural History Museum Vienna, Dept. of Anthropology) and Ron Pinhasi (University of Vienna, Dept. of Anthropology).

Furthermore, a pilot study ‘Digitalisation as a chance for restoration and visualisation – A pilot study on the 30,000 year old double burial of newborns from Krems-Wachtberg’ in cooperation with Dieter Pahr (Karl Landsteiner University Krems), Maria Teschler-Nicola (NHM), and Anja Grebe (Danube University, Department for Arts and Cultural Studies) began in November 2018. The study is funded by the research, technology and innovation programme (FTI Call of the NÖ Forschungs- und Bildungsges.m.b.H. NFB) of the Federal State Government of Lower Austria and aims at a 3D reconstruction of the infants’ skeletal remains based on high-resolution micro-CT data. The method allows for a digital reconstruction of both the surface and internal microstructure of bone elements and teeth. Digitisation of the skeletal elements will thus enable future non-invasive investigations on the digital model. In addition, the project’s scope includes exploration regarding enhancement of 3D documentation and development of a state-of-the-art catalogue of criteria for long-term archiving of 3D data and creation of an open-source archive. In the first year research focused on the development of workflows and reconstruction of one of the hands. These first results have already been presented at anthropology meetings.

In August and September 2019, fieldwork resumed at the Epigravettian site of Kammern-Grubgraben where investigations by the research group have been carried out since 2015. Annual fieldwork campaigns between 2015 and 2019 documented a number of excavation trenches in different positions at this important site dating to the Last Glacial Maximum (around 23,000 years ago). Research is co-funded by the Federal State of Lower Austria, and field schools are conducted for the Institute of Prehistoric and Historical Archaeology of the University of Vienna. A first contract with the tenant of the plots concerned allowed for fieldwork until 2018. In consequence of the excellent results, in particular exposure of a highly complex stone structure (object 8; see below), it was possible to convince the tenant, with the help of the Federal Monuments Authority Austria (Bundesdenkmalamt), to approve an extension allowing for three more years of investigations until 2021. In 2015 and 2016, an extensive pavement of stone slabs was documented in a previously uninvestigated area on the site’s southern fringe. In 2016 and 2017, a stratigraphic sounding originally investigated by Paul Haesaerts in 1986 was reopened and extended. This trench (Trench ‘Paul’) documented a stone-slab pavement together with an extraordinarily high find density and a number of small anthropogenic pits, presumably postholes. The find layer most probably represents cultural layer sequence AL 2–4 as defined in 1985–1994 when previous excavations were carried out by Anta Montet-White and Friedrich Brandtner. In 2016, excavation commenced in a new 1 × 3m trench (Trench 1). Here, for the first time in the course of recent investigations, it was possible to capture an extensive part of layer AL 1, which had been recorded during the excavations from 1985–1994, and to collect dateable material. Here, unlike in the other trenches, not simply a pavement of one layer of stone slabs was recorded, but instead the remains of several courses of rising stone constructions with up to 5 stone slabs preserved atop each other (object 8). Structural stone collapse documented that the construction was originally larger and higher. First interpretations at the current stage of research suggest that object 8 could represent a collapsed meat cache, i.e. a stone structure built for storing surplus meat from hunting prey. The 2019 field campaign also saw an extension of a 10 × 1m north-south oriented search trench by ten more metres to the south (Trench 3, Fig. 35a). Excavation of this trench aims at connecting Trench 1 with the stone pavement discovered further south in 2015/2016. Trench 3 assesses a large, previously uninvestigated area, and has already provided remarkable results, as it substantiated the presence of stone structures along its entire length. The excavators of 1985–1994 assumed that there would not be any more stone structures in this area. In addition, first investigations applying ground penetrating radar (GPR) have been conducted to assess the extent of the stone structures to the east. Unfortunately, the results, which looked promising at first, were falsified by core soundings. It is however planned to conduct further geophysical prospections.

In order to analyse the enormous body of finds of the 1985–1994 excavations at Kammern-Grubgraben which were recently recorded in a database for comparison with the results



Fig. 35a Kammern-Grubgraben 2019, Trench 3, overview and detail (© OREA, Th. Einwögerer)



Fig. 35b Kammern-Grubgraben 2019, D-A-CH-project meeting at the site (© OREA, Th. Einwögerer)

from the ongoing investigations, a D-A-CH project proposal *Living on the edge – Success, limits and failure of adaptive strategies in eastern Central Europe during the Last Glacial Maximum* was submitted to the German Research Foundation (DFG) and the Austrian Science Fund (FWF) in cooperation with Kerstin Pasda, Andreas Maier, and Christoph Mayr (all Friedrich-Alexan-

der University, Erlangen-Nuremberg). In the meantime, the proposal has been accepted and the project is scheduled to commence in March 2020. The project focuses on a cluster of sites in Austria, Moravia (Czech Republic) and southern Poland which demonstrate that human populations south of 50°N did not break down during the unfavourable climatic conditions at the peak of the Last Glacial Maximum (LGM) 25,000 to 20,000 years ago. Hereby, the project addresses questions concerning specific regional environmental conditions and human adaptive strategies. A diachronic perspective is to be provided by comparison with the earlier Gravettian. Innovative aspects are provided by linking on-site archaeological and palaeo-environmental data for a Central European key region of the LGM, and diachronic analyses. The interdisciplinary approach aims at gaining a better understanding of the dynamics of human populations and adaptive strategies of hunter-gatherer societies (Fig. 35b).

In 2018, cooperation with the Faculty of Humanities, Valahia University of Târgoviște (Romania) was prepared with the aim of conducting joint research in the Ceahlău Basin of the East Carpathians with the principal focus on the Upper Palaeolithic site Bistricioara-Lutărie III and its surroundings. In 2019, the cooperation was embedded in a new project, *Comparing Upper Palaeolithic sequences across the Carpathians*, of the *Quaternary Archaeology* research group. The project aims at comparing the archaeological records and formation processes of two important Upper Palaeolithic find regions with similar chrono-stratigraphic and archaeological ranges located on either side of the Carpathian arc: the Krems area in northeast Austria, which hitherto represented the research group's focus, and the Ceahlău Basin in the Bistrița Valley in northeast Romania. Joint field investigations in 2019 were carried out in the form of two campaigns: core sampling at and around Bistricioara-Lutărie III in June, and joint excavations at Bistricioara-Lutărie III in August. Besides researchers from the Valahia University (Mircea Anghelinu, Loredana Niță, George Muratoreanu), specialists from the Institute of Archaeology, Romanian Academy Iași branch (Elena-Cristina Cordoș), the Institute of Speleology, Romanian Academy in Cluj-Napoca (Daniel Vereș), and the Department of Geomorphology, University of Bayreuth (Ulrich Hambach) are involved in fieldwork and analyses. The core sampling campaign provided a high-resolution sedimentary record for 13 sampling points with coring depths between 5m and 9m (Fig. 36). Analyses are still ongoing, but first results point to a much larger extent and greater chronological depth of the site than previously known. Excavations in August assessed the upper part of the sediment sequence and provided impressive evidence for multiple superimposed Gravettian and Epigravettian find layers (20,000 to 30,000 years ago), of which five display preserved evident anthropogenic structures, i.e. burnt surfaces, hearths and pits. In particular, the main Gravettian find layer reveals a sophisticated chipped stone industry with a high portion of retouched elements such as shouldered points, produced almost exclusively in non-local flint. Characterisation and provenance analyses of the flint are carried out at OREA's Raw Material Lab, aiming at a diachronic assessment of portions and varieties throughout the Gravettian to Epigravettian sequence.

Commissioned by the RuGuS Society (Institut für Regionalraumkultur und Geschichte um Schiltern) and financed by the Federal Monuments Authority Austria (Bundesdenkmalamt), the research group carried out investigations in Langenlois (Fig. 37). The main focus was the locality Langenlois-Weichselgraben where larger bones and charcoal were observed in the walls of a *Hohlweg*. A larger and several smaller profiles were created and documented a highly significant stratigraphy with two Upper Palaeolithic layers marked by charcoal, ash, and mammoth remains together with burnt sediment in a loess sequence on top of a sequence of Pleistocene palaeosoils. Charcoal and sediments were sampled, but the results are still pending. Charcoal samples for comparison were also collected from the nearby locality Langenlois-Gemeindeziegelei and sent for age determination. Langenlois is to become a major focus of the research group. Extensive survey of the *Hohlwege* and sampling of key profiles are planned in cooperation with Frank Lehmkuhl (Physical Geography and Geoecology, RWTH Aachen University) aiming at assessment of the Palaeolithic potential of the microregion.

A range of chipped stone assemblages owned by private collectors from a wide range of both previously known and unknown sites in Lower Austria have been examined and assessed in the





Fig. 36 Bistricioara-Lutărie III 2019, Gravettian and Epigravettian layers (© OREA, M. Händel)



Fig. 37 Langenlois-Weichselgraben 2019, profile 1 (© OREA, M. Händel)

course of 2019. Chronologically, these inventories range from the Middle to the Upper Palaeolithic, and to the Mesolithic.

Again, a number of courses on Palaeolithic topics were provided by members of the research group at the Institute of Prehistoric and Historical Archaeology of the University of Vienna (C. Neugebauer-Maresch, T. Einwögerer, M. Brandl). In addition, members of the research group are supervising a dissertation on biomolecular analyses in archaeology, and two master theses on current research topics, the chipped stone industry of the Gravettian site Gösing-Setzergraben, and virtual 3D reconstruction of object 8 of the recent Kammern-Grubgraben excavations.

### Highlights 2019

- Excavations at Kammern-Grubgraben provided evidence for not only extensive one-layer stone slab pavements, but also rising Upper Palaeolithic stone constructions. Investigations at the largest of these structures, object 8, suggest that it was a meat cache built for the storage of surplus hunting prey. For the time period, this is absolutely unique. The finding provided the decisive argument for convincing the landholder (Weingut Gobelsburg) to give permission for a further 3 years of field investigations at the site, until 2021. This provides the opportunity for an in-depth assessment and interpretation of the feature.
- Start of the new project *Comparing Upper Palaeolithic sequences across the Carpathians* which focuses on the archaeological records and formation processes of two important Upper Palaeolithic find regions with similar chrono-stratigraphic and archaeological ranges located on either side of the Carpathian arc: the Krems area in northeast Austria and the Ceahlău Basin in the Bistrița Valley in northeast Romania. First joint field investigations at Bistricioara-Lutărie III provided a wealth of new data. A considerably larger spatial extent and greater chronological depth was evidenced by core sampling. Excavation provided an impressive stratigraphy with five superimposed Gravettian and Epigravettian layers with preserved evident features (hearths and pits).
- First results of the pilot project *Digitalisation as a chance for restoration and visualisation – A pilot study on the 30,000 year old double burial of newborns from Krems-Wachtberg* in cooperation with Dieter Pahr (Karl Landsteiner University Krems), Maria Teschler-Nicola (NHM), and Anja Grebe (Danube University, Department for Arts and Cultural Studies) aiming at a 3D reconstruction of the infant remains based on high-resolution micro-CT data were presented at anthropology meetings. After the development of specific workflows, digitisation first targeted the reconstruction of one of the infants' hands.
- Investigations at the new site Langenlois-Weichselgraben included creating several profiles and conducting a core drilling. This documented a loess-palaeosol sequence with two Upper Palaeolithic find layers. Stratigraphic connections to the nearby locality Langenlois-Gemeindeziegelei are highly probable and are being explored. A proposal to extend the research to include the entire Loisbachtal microregion in Langenlois was accepted by the Federal Monuments Authority Austria (Bundesdenkmalamt), and will be targeted in 2020.

### Team

Thomas Einwögerer, Marc Händel, Ulrich Simon, Roswitha Thomas

Thomas Einwögerer – Marc Händel

## **PREHISTORIC PHENOMENA**

(Research group leader: Barbara Horejs)

### **Objectives**

From the Holocene to the beginning of the Metal Ages (c. 10<sup>th</sup> to 3<sup>rd</sup> millennium BC) crucial changes in human society and lifeways took place in the vast area extending from the Middle East to southeastern Europe. These developments include the profound and long-lasting change towards the first farming societies of the Neolithic period and the incipient shaping of the natural environment by humans associated with a fundamental change of communal organisational structures. This process of Neolithisation proceeds differently across different regions and starts between c. 9500 and 6000 calBC. The changes in socio-cultural structures of these early farming communities until the formation of early proto-urban communities during the Chalcolithic and Early Bronze Age period reflect a fundamental shift which is evidenced by the appearance of various, simultaneous innovations. The development and adoption of essential technologies is tightly connected with the management of resources whose use again varies regionally. The Metal Ages, defined by regional differences, are related to the phenomena of centralisation, specialisation and new dynamics of mobility, like the establishment of vast communication and exchange networks. These fundamental processes of the human history are investigated by an interdisciplinary methodological approach on a supra-regional level. The aim is the development of models on the basis of new, primary datasets which are gained by OREA field investigations.

### **Area of Investigation**

The phenomena of Neolithisation, centralisation, resource management, technologies, innovations, and communication and exchange networks are a key focus of a number of research projects. These are, moreover, regionally and supra-regionally contextualised in the framework of communication systems and networks. The so-called core zones of the Old World are the focus of the *Prehistoric Phenomena* group. The individual cultural regions include the Fertile Crescent (Iran, Turkey), the Levant (Lebanon), the Arabian Peninsula (UAE), the Aegean (Greece) and the Balkans (Serbia, North Macedonia). In addition to in-house field investigations in these regions, individual case studies are embedded in various co-operations within broad international research projects.

The range of methods includes excavations, surveys and landscape analysis as well as material studies combined with geoarchaeological disciplines (paleogeography, geophysics, and geology), radiocarbon dating, zoology, anthropology, botanics, anthracology, metallurgy, aDNA, petrography/mineralogy, geochemical analyses (i.e. NAA, pXRF, pLA-ICP-MS), and computer simulations/data modelling.

### **Current research**

#### *Process of Neolithisation (10<sup>th</sup>–7<sup>th</sup>/6<sup>th</sup> mill. BC)*

The focus on the earliest period within the research framework of *Prehistoric Phenomena* concerns the issues embedded in the understanding of the Neolithisation processes in the wide area between the Near East and southeastern Europe. Different developments of the Neolithic in the main regions of interest – the Zagros, the Aegean, and the central Balkans – are the subject of direct investigation by the group members, related to the natural and built environment, settling patterns, and material studies (e.g. stone tools, pottery, raw materials).



Fig. 38 The NEOTECH team in summer 2019 in the sherd yard of the excavation house in Lebane (photo: F. Ostmann/OREA)

### *Research in the central Balkans*

The *Pusta Reka* research collaboration between the OREA Institute, the Institute of Archaeology in Belgrade (represented by A. Bulatović), and the National Museum in Leskovac (with collaboration partner V. Stevanović) was supported by the Innovation fund ‘Research, Science and Society’ of the Austrian Academy of Sciences and the project *Visualizing the unknown Balkans* (PIs M. Gavranović and B. Horejs) until this year. In March 2019 this research framework, focusing on the Neolithic landscapes in the central Balkans, with the fieldwork in south Serbia was granted FWF stand-alone funding (project no. P32096) with B. Horejs as the PI, and B. Milić and C. Burke (cf. OREA Raw Material Lab) as post-doctoral researchers. The new project entitled *Neolithic Technological Trajectories in the Balkans (NEOTECH)* will look at technological innovations in lithic and pottery production, and the built environment of the Starčevo horizon (Early–Middle Neolithic) over the next four years. In April 2019, the NEOTECH team had a first study season in the Leskovac museum, undertaking the documentation and recording of the Neolithic and Metal Age finds from the 2018 excavations at *Svinjarička Čuka*. The excavations on the multi-layered prehistoric site continued in summer (August–September 2019) with the Austro-Serbian team. The excavations in two previously opened trenches (N1 and S1) were enlarged with newly opened squares, where the main outcomes referring to the Neolithic period relate to a burnt daub structure and a large use horizon rich in finds with clear Starčevo dating (Figs. 38, 39).

Serbian press reported the activities from both the spring and summer campaigns in local and national TV stations and newspapers, emphasising the importance of the new site in the area, which previously lacked any direct evidence for the pre-Vinča cultural background. Additionally, the project and the research collaboration were presented in a report by the ‘Archaeological Journal’ of the Petnica Science Center, and in the interview with B. Horejs in the ‘CorD’ Magazine from Serbia. The excavations were also visited by the journalist I. Ferenci from the Austrian Ö1. The first public presentation in Serbia was made at the *Annual Assembly of the Serbian Archaeological Society (XLII Skup SAD)* in Negotin. A new lecture series at the Austrian Embassy in Belgrade with the name *Archaeology of the modern era* was initiated in





Fig. 39 Neolithic finds from the site of Svinjarička Čuka/south Serbia from the excavations in 2019 (photo: F. Ostmann/OREA)

cooperation with the Austrian Academy of Sciences. The first talks by B. Horejs and S. Stefanović (Biosense Institute, University of Novi Sad / Department of Archaeology, Faculty of Philosophy, University of Belgrade) addressed the Balkans as a prehistoric bridge between western Anatolia and Europe.

The first results of the excavations were published by the *NEOTECH* team in two articles – in the ‘*Archaeologia Austriaca* 103’, and in the Journal of the Leskovac museum for 2019. Additionally, the team contributed with a report on the *Pusta Reka* 2017 survey season in the new publication series of the Archaeological Institute in Belgrade ‘*Archaeology in Serbia*’. At the beginning of the year, B. Horejs presented the southern perspective on the formation of early farming communities in the central Balkans in the *LBK and Vinča International conference* in Tübingen, Germany. The team members participated in the 1<sup>st</sup> conference on the *Early Neolithic in Europe (ENE 2019)* in Barcelona, Spain at the beginning of November. Three different lectures involving the results of the new fieldwork from *Svinjarička Čuka* and related material studies were held as joint contributions by B. Horejs, B. Milić, M. Brandl, and the project collaboration partners J. Bulatović, D. Filipović, and K. Kotsakis in three different sessions concerning the Neolithic spread and supra-regional interactions, technological processes and subsistence. Finally, the excavations at *Svinjarička Čuka* and the main outcomes of the fieldwork in Serbia in the broader context of the Neolithisation in the Balkans were made public at the presentation *OREA Excavations 2019: Highlights from the Palaeolithic to the Iron Age* in Vienna at the end of the year.

#### *Research in the Aegean and western Anatolia*

The focus of this year’s study campaign in the Ephesos depot was on the Late Neolithic settlements of Çukuriçi Höyük, mainly on the phases ÇuHö X and IX. During the work in 2019, a total of about 1000 characteristic ceramic fragments were documented in detail for both phases. The remaining sherds from these two phases (893 of which are characteristic) coming from layers outside of defined complexes, were documented numerically, although a large proportion of them was already fully documented in previous campaigns. The pottery documented in

2019 is dominated by narrow-mouthed jars and deep bowls with straight or steep-sided walls. Differences between the two settlement phases could be found in the general shape of the jars and bowls. While in the older phase, ÇuHö X, oval vessels still dominate, in the younger phase, ÇuHö IX, they are only exceptionally evident. In both phases, red-brown and beige wares appear to be dominant, with beige wares becoming more common in the younger strata. Detailed technological studies of the pottery are currently being performed by C. Burke (cf. OREA Raw Material Lab), who has begun new analysis of the Neolithic potting technology at Çukuriçi Höyük, examining the relationships between raw materials, vessel type, forming methods, firing and decorative treatments. As part of this work C. Burke has already identified a range of hand-forming methods used to make pottery at the site related to coiling, slab building and pinching. She has also identified important innovations within different paste recipe traditions in relation to the raw materials used for particular vessel colours and surface treatments during the Late Neolithic.

As part of this work C. Burke has presented elements of early results in her joint papers ‘The Neolithic Potters of Çukuriçi Höyük, Turkey’, *Archaeological Finds Analytical Methods Workshop*, Vienna Natural History Museum 12<sup>th</sup>–13<sup>th</sup> December 2019 and ‘Neolithic Potting Traditions at Çukuriçi Höyük’ presented at the *3<sup>rd</sup> International Workshop on Ceramics from the Late Neolithic Near East*, Antalya, Turkey on 7<sup>th</sup>–9<sup>th</sup> March 2019. The latter paper has also been submitted for publication (Fig. 40).

In addition to the primary documentation of the pottery, spatial and functional analyses were carried out by B. Horejs and first interpretations were summarised in writing.

Aside from pottery studies, small finds of all kinds were analysed as well as lithic studies were conducted. D. Bochatz (see below), D. M. Blattner and F. Ostmann worked on the Neolithic small finds (ÇuHö XIII to VIII). Since a large proportion of the objects had already been documented in previous years, only minor additions had to be made for most of the finds. Of the 1861 small finds, 520 were additionally photographed for documentation. Publication photos of selected pieces were already taken in previous years by N. Gail (OeAI). In addition, the small finds of phase ÇuHö I (disturbed surface layer) were checked and their documentation completed as well.

The master thesis with the topic ‘Die neolithischen Steinbeilklingen des Çukuriçi Höyük’ (The Neolithic stone axes of Çukuriçi Höyük) was written by D. Bochatz under the supervision of B. Horejs and successfully defended at the University of Vienna in November. A total num-



Fig. 40 C. Burke presenting at the *Archaeological Finds Analytical Methods Workshop*, Vienna Natural History Museum in December 2019 (photo: A. De Souza/OREA)

ber of 59 stone axes in fragmented and complete form were documented from the entire Neolithic occupation of the Çukuriçi Höyük settlements, dating between 6680–5970 calBC. They were recorded based on their metric data, while the assemblage was divided into blanks, semi-finished, finished and fragmented axes. Based on the results after metrics and shapes, the thesis proposed a typology dealing with three main types – axes, adzes, chisels –, and additional sub-groups corresponding to them. One of the results speaks in favour of a certain selection of stone raw materials for the



Fig. 41 Neolithic stone axes, Çukuriçi Höyük (photos: N. Gail, ÖAI/ÖAW)

production of stone axes, which are characterised by a high density and toughness (Fig. 41). This follows up the dissertation of D. Wolf from 2017, where it was already established that mainly local or regional rock raw materials were used for the production of stone tools in the settlement. In addition, the regional raw materials were supplemented by the exotic, supra-regional procured jadeite. It is suggested that the jadeite was transported through a maritime exchange network from the island of Syros to Çukuriçi Höyük over a distance of approximately 220km. The combination of the raw material used and the type corresponding to that raw material showed that only particular stone axe types were made of jadeite. This leads to the assumption of a Neolithic specialisation in ground stone production since apparently only tools for a certain task were produced from a certain material. The distribution of tools and the evaluation of the find contexts revealed that the work with stone axes at Çukuriçi Höyük took place within the so-called activity zones, i.e. open areas between the buildings of the settlement. The adzes also seem to have been stored there. Finally, the thesis integrates a comparison of stone axes on a regional level, by looking at other contemporaneous sites in western Anatolia. It turned out that the typology created for Çukuriçi Höyük can also be applied to other published stone axes from 7<sup>th</sup>-millennium BC sites in western Anatolia, leading to the conclusion that the whole region shares a certain understanding of shapes and their function, depicting a formal language in the production of stone axes. It seems that only slight variants of already established types exist, which generally remain the same in a wider context. This suggests that there were no major technological or typological changes regarding the production and use in western Anatolia, with the variants having no particular geographical or chronological significance, since the idea of a stone axe, an adze or a chisel stayed the same.

B. Milić focused her work on lithic tools from phases ÇuHö XIII to XI (Fig. 42). Above all, it was finds from flotation that had to be documented. During her stay she succeeded in completing the documentation of phases ÇuHö XIII and XII as well as the finds from the complexes of phase ÇuHö XI. A further focus was on tools made of quartz. In the oldest settlement phase (ÇuHö XIII), quartz was often used in addition to obsidian and chert, while in the younger phases it was only sporadically used for the production of stone tools. The stone tools of phases ÇuHö XI to IX, from which individual layers or flotates are still missing, were not finally completed. In the future, analysis of the use wear of the blades and pointed tools such as drills, and arrowheads is planned.

Due to the kind invitations from the excavation teams of *Çatalhöyük* and *Ekşi Höyük*, our team was able to see the current investigations on-site and discuss the recently excavated materials together with the sites' experts. The already established collaboration of the Çukuriçi project with both teams has been continued successfully.

Beside the work conducted at Çukuriçi Höyük, two study seasons in Greece and Turkey focusing on the lithics in the early farming communities continued in 2019 as well. B. Milić conducted

analyses of the material from the 7<sup>th</sup> millennium BC lithic assemblage from the site of *Ekşi Höyük* in central-west Anatolia (excavated by F. Dedeoğlu, Ege University in İzmir, Turkey). The site is located in the region of the modern town of Denizli, and the focus of this project on lithics is to determine the technological developments and obsidian exchange network between the Lakes District, central and western (coastal) Anatolia. The study by B. Milić and M. Brandl on lithic technology, typology and raw materials in the Early Neolithic period (7<sup>th</sup> millennium BC) of the northwest Aegean was finalised in spring with a study season on the materials from *Paliambela Kolindros* (excavated by K. Kotsakis, Aristotle University of Thessaloniki). First results of analyses concerning *Paliambela* chipped stone production and knappable raw materials used during the Neolithic were presented at the previously mentioned *ENE 2019* conference in Barcelona by the research team, and first publications including the data from Çukuriçi Höyük and *Paliambela* are currently being prepared. PhD thesis results on the Neolithisation of the centre of the Anatolian Aegean coast with the view from Çukuriçi Höyük lithics were presented in an invited lecture at Ege University in İzmir, Turkey by B.

Milić at the very beginning of 2019. Two new publications by B. Milić regarding the content of the ‘lithic package’ of the 7<sup>th</sup> millennium BC in the context of the Neolithic formation and development in western Anatolia; and comparisons between production of chipped stones from the two sides of the Aegean (west: Greece; and east: Turkey) came out this year in the conference proceedings of the PPN8 meeting in Cyprus and in the ‘Eurasian Prehistory’ journal.



Fig. 42 Work on the lithics from the Neolithic Çukuriçi Höyük (collection of cores) in 2019 depot campaign in Selçuk, Turkey (photo: B. Horejs)

### *Research in the Zagros*

At the end of the year, the results of the *Prehistoric Sirvan* project were disseminated in two large conferences in the USA and Japan in November 2019. The research initiative with surveys in the central Zagros region in Iran is a larger collaboration since 2017 between the institutes of the Austrian Academy of Sciences – OREA, IFI (Institute of Iranian Studies), IKAnt (Institute for the Study of Ancient Culture), and the Iranian Center for Archaeological Research (RICHT, ICAR with the cooperation partner Lily Niakan). First insights into the prehistory of the surveyed Sirvan and Chardavol valleys in the Ilam province, with the focus on the Early Neolithic settling patterns were presented by B. Horejs (et al.) at the *ASOR Annual Meeting 2019* in San Diego. Meanwhile, B. Milić (et al.) presented technological trends in chipped stone production by comparing newly discovered early Holocene lithic scatters from the *Sirvan Valley* and the collection of the tell site *Chogha Khaki* at the *9<sup>th</sup> International conference on the Pre-Pottery Neolithic chipped and ground stone industries of the Near East (PPN9)* in Tokyo.

The same conference in Tokyo (PPN9) hosted a poster with the topic *Modelling the spread of pressure technique for blade making outside of the Near East*, with the newest results on the computer simulations and modelling. This project of B. Milić and B. Horejs (OREA) in collaboration with A. Timpson and M. G. Thomas (UCL London, Department for Genetics, Environment and Evolution) was previously funded by the Dr. Anton Oelzelt-Newin'sche foundation, and this year it brought a finished study on the influence of lithic technologies and their movement alongside



people across Anatolia during the Early Neolithic in the broader context of the spread of farming into southeast Europe.

### *Burial Practices in the Pre-Pottery Neolithic Southern Levant*

The DOC project *Burial Practices in the Pre-Pottery Neolithic Southern Levant* which started in 2017 at the Austrian Academy of Science and the University of Vienna, is a comprehensive study of the burial practices during the period of the Pre-Pottery Neolithic (the 11<sup>th</sup> to the 8<sup>th</sup> millennium BP) in the southern Levant. This PhD thesis by Mohamad Mustafa aims at finding similarities and differences between phases of the Pre-Pottery Neolithic (PPNA–PPNB) on the regional and supra-regional level. Moreover, the intention is to analyse the emergence and the development of rituals and beliefs and their effect on PPN mortuary practices. By the middle of 2019, a database for the systematic and complete collection and re-evaluation of all available and published information on PPN burials in the southern Levant was created, to achieve the first objective of the planned thesis. Within the period under review, data from sites under study in the south of the Levant was collected, organised and assessed using specific parameters e.g. location, individuality, position, body treatment. Statistical analyses were applied to identify patterns of practices in the two phases of the PPN. In a second step, in order to understand the potential relationships between the different parameters and the established patterns, correlation analyses are being undertaken, which will measure the degree to which various parameters are connected.

The theoretical part of the thesis, dealing with rituals and beliefs, is continuing, starting from the premise that mortuary practices might be actively chosen by actors in relation to their specific belief, broader world-view, and symbolic themes. Therefore, the overall objective is an investigation of the mortuary practices of the Pre-Pottery Neolithic southern Levant for assessing the preparation and the treatment of the body as an agent in ritualistic practice, possibly serving as highly visual aspects of belief.

### *Diachronic studies in the Thessalian plain (6<sup>th</sup>–3<sup>rd</sup> mill. BC)*

In 2019, the manuscript of the first volume of the publication of excavations of *Platia Magoula Zarkou* in Western Thessaly/Greece was finished by Eva Alram-Stern and her collaboration partners as result of the FWF funded project ‘Platia Magoula Zarkou in Thessaly/Greece’. This volume concentrates on the Neolithic period of the site and includes environmental studies, the stratigraphy and architecture as well as the small finds from the Neolithic layers. *Platia Magoula Zarkou* belongs to the typical Neolithic tell sites of Thessaly which are situated in the plain of the Peneios River. During the Neolithic period the site was located on the edge of a temporarily flooded plain, while the erosional area towards the mountains north of the site was never flooded. Geophysical investigations show that the site was surrounded by a ditch. The nearby Neolithic cemetery is situated on a small elevation. The stratigraphy of the trench, which was excavated on the highest point of the tell to a depth of 10m, produced eight Neolithic architectural phases with various subphases. They show a clear change in the use of space from an area with a ditch, closed house areas to open space with oven and hearth constructions. The absolute chronology based on ten radiocarbon dates puts the settlement sequence between 5900 and 5600 BC, i.e. the Middle and early Late Neolithic phases of the Greek Neolithic. The flaked stone assemblage, which was divided into five phases, consists mainly of radiolarite coming from the upper parts of the Peneios River and its confluent Portaikos River. The macrolithic material, the bone tools as well as the clay and sherd tools point to manifold activities on-site, including food preparation as well as tool and textile production. For the figurines, their production, the typological change visible in their stratigraphic sequence, their fragmentation as well as their relation to other sites were discussed in detail. Of special interest is the house model in which nine figurines as well as a tool were set in a lying position. Finally, to complete the picture of the economy of the site, the already published archaeobotanical and zooarchaeological remains were revisited.

A highlight was the presentation of the presentation of the house model of Platia Magoula Zarkou and its socio-cultural interpretation by E. Alram-Stern in a public lecture at the OREA Institute in December 2019.

*Chalcolithic and Early Bronze Age settlements, economies and technologies (4<sup>th</sup>–3<sup>rd</sup> mill. BC)*

The studies on the Early Bronze Age period were continued in the Aegean, western Anatolia and in the Middle East. Beside Çukuriçi Höyük material studies in Turkey, analytical studies on gold objects and excavations in the United Arab Emirates were conducted, focusing on extended communication and trade networks within the 3<sup>rd</sup> millennium BC.

*Çukuriçi Höyük – Early Bronze Age material studies*

The Early Bronze Age 1 settlements of Çukuriçi Höyük date between 3000–2750 calBC, which is equivalent to the early phases of Troy I, and were excavated and documented in trenches S1–4 and M1. Within these areas two Early Bronze Age settlement phases (ÇuHö IV and III) were distinguished. Research on these occupations was conducted by Maria Röcklinger and Stephanie Emra. During a six week-long research stay in Ephesos, Turkey, the documentation of the pottery from phase ÇuHö IV, the corresponding small finds and the faunal remains (including a selection of Late Chalcolithic animal bones) were completed. The work on the materials mainly comprises the checking of completeness and the creation of last drawings and photos. The digitisation of all selected pottery fragments was conducted by Thomas Urban and group and that of individual photos of pottery and small finds by Niki Gail/OeAI.

In addition to the pottery, all Early Bronze Age small finds were checked, photographed and, where necessary, drawn by Dominik Bochatz and David Michael Blattner. A total of 416 small finds of different categories originate from the EBA settlement phases.

*The Role of Households at the Dawn of the Bronze Age*

The Doc.Team interdisciplinary research cooperation on the *Role of Households at the Dawn of the Bronze Age* is a successfully completed, jointly planned set of interdisciplinary dissertation projects, linking knowledge from the humanities and the natural sciences. The focus was on studying households, household activities and settlement organisation as a primary source for discussing the emergence of social structures in the Early Bronze Age (3<sup>rd</sup> millennium BC), namely underlining the importance of bottom-up studies for classifying and studying prehistoric societies. The social equality or inequality are being addressed from a bottom-up perspective by looking at the domestic organisation in which sharing becomes a leading trait for discussion of social organisation.

This project started in summer 2016 and is being undertaken by two archaeologists (Constanze Moser and Maria Röcklinger, both OREA), a social anthropologist (Sabina Cveček, University of Vienna) and an archaeozoologist (Stephanie Emra, University of Veterinary Medicine, Vienna). Within several meetings and joint presentations, the first aim in focus, the theoretical approach of households, was successfully studied. This intensive interdisciplinary theoretical discussion culminated in a workshop titled *Household Archaeology in Old World Prehistory*, bringing together an array of international scholars in the fields of archaeology, archaeozoology and social anthropology on 21<sup>st</sup>–22<sup>nd</sup> November 2018 at the OREA Institute (AAS) in Vienna. The successfully completed research campaigns at the case sites contributed to the significant progress in the analysis of the archaeological material. Currently these results are merged, both to gain an understanding of the interplay between the different archaeological materials, and to then place it into the previously discussed theoretical framework.

Before the Doc.Team started, social organisation within the research area and period was thought to be organised at chiefdom level due to the existence of, for example, enclosure walls and special buildings seen through either the larger size or particular construction of a specific

household at the Early Bronze Age sites within a broader region. The research, however, through a critical literature review as well as the team's own archaeological investigations, has found contrary to the established theoretical framework. Since research is still ongoing, at least for Çukuriçi Höyük, preliminary investigations show no direct indications for the institutionalised social stratification either through spatial organisation or household differentiation through food consumption or crafts. Both through the zooarchaeological and the archaeological data, the majority of tasks were organised on the household level with some exceptions being common decision making, as seen through possible communal storage, settlement construction as well as meat distribution in rare circumstances. Currently the Doc. Team members are writing up their individual PhD theses.

### *A new Approach for Golden Treasures*

The Innovation Fund project *A new Approach for Golden Treasures. Innovative Analyses in Archaeometry* (PI: Barbara Horejs, Ernst Pernicka) continued in 2019 and the analyses of gold objects were extended. In addition to the already conducted analyses of gold artefacts dating to the 3<sup>rd</sup> and 2<sup>nd</sup> millennium BC from Greece, Bulgaria and Turkey, selected important gold objects were studied and analysed in cooperation with the National Archaeological Museum (NAM: Kostas Nikolentzos, Eleni Konstantinidi-Syvridi) in Athens and the Archaeological Museum of Nemea (Konstantina Kaza-Papageorgiou). Within the framework of the second research stay at the NAM in May 2019, it was possible to add Early Bronze Age gold jewellery from Troy, Lefkada, as well as multiple crucial artefacts dating to the Mycenaean period to the sample series. Thus, a total number of 61 artefacts have been investigated by portable laser ablation technique and are currently being analysed at the Curt-Engelhorn-Center for Archaeometry gGmbH (CEZA: Ernst Pernicka, Moritz Numrich).

So far, the preliminary data of the archaeometrical studies revealed important insights about the production of the gold objects and the use of raw material in the 3<sup>rd</sup> and 2<sup>nd</sup> millennia BC. The analysis process of the gold objects will be completed in early 2020 and subsequently discussed and prepared for publication together with the cooperation partners.

### *Across Arabia. Maritime Trading Networks in the Early Bronze Age Gulf Region*

Within the 3<sup>rd</sup> millennium BC, extended trading networks are evidenced for the first time, reaching from the eastern Mediterranean to the Indus region. Beside land routes, maritime and fluvial waterways seem to be essential for the function of these networks. This is evidenced by various sites situated at important nodes of the trading routes in which objects made of exotic raw material like, for instance, carnelian or lapis lazuli have been found. Therefore, it can be assumed that the region of Mesopotamia and the Gulf Region in particular functioned as a mediator between east and west. In this context, due to its geostrategic location, the region of the southeastern Arabian Peninsula with the Strait of Hormus offers optimal conditions for nodes of these trading networks. Material studies conducted in this region indicate strong evidence of contacts between Mesopotamia and the Indus region. Therefore, the settlement of *Kalba* (UAE, Emirate of Sharjah), situated on the alluvial plain in the coastal region of the Gulf of Oman holds great potential for further research on the Arabian Peninsula.

The joint field investigations between OREA and the Sharjah Archaeology Authority (SAA) at *Kalba* were conducted in January and February 2019 by Christoph Schwall in cooperation with Sabah Abboud Jasim and funded by the Dr. Anton Oelzelt-Newin'sche foundation (Fig. 43). The aim during this one-month pilot study was to pursue several objectives as a basis for future research. In this context, systematic and detailed topographical documentation of the site was undertaken and its visible structural architectural remains were mapped. Nowadays, sediments cover large parts of the site and the former extension of the settlement remained completely unclear. With the help of geophysical analyses, a minimum size of the settlement area with a diameter of 110m has been observed. Additionally, a small-scale excavation was



Fig. 43 The site of Kalba during the field investigations in 2019 (photo: K. Kamyab/SAA)

conducted to gain information about the Early Bronze Age occupation layers in this area. A highlight of the excavation was the detection of a partially preserved fireplace with a nearby shallow pit. Analysed charcoal found inside the fireplace provides a radiocarbon date, dating clearly to the Umm an-Nar period in the late 3<sup>rd</sup> millennium BC.

Moreover, a fragment of an Umm an-Nar-style stone vessel indicates the potential and significance of the site *Kalba* as an important node participating in a far-reaching trading network. Apart from the ideal geostrategic position of the site, nearby rich copper ore deposits in the Wādī al-Hilo (site *HLOI*), situated approximately 15km to the west in the Hajar mountain range, could have been a motivation for the establishment of this site. Further investigations on this hypothesis are planned for 2020.

#### *Y-chromosomal Haplotypes in Prehistoric Horses*

Genetic analyses of the strictly paternally inherited Y chromosome can help us to understand the history of horses. Because of their close association with humans, horse remains can also advance our understanding of human history. As part of the Innovation Fund project *Y-chromosomal Haplotypes in Prehistoric Horses* by Gottfried Brem, Barbara Wallner and Simone Reiter, we sampled about 100 horses from the last 3000 years in Austria, Germany, Slovenia, Croatia, Serbia and the United Arab Emirates.

Sample processing, which involves DNA isolation and sequencing was carried out in three different institutions. Some samples were processed in Vienna, at the laboratories of the University of Veterinary Medicine and the Natural History Museum. Most of the samples were analysed in Toulouse in the lab of our cooperation partner L. Orlando. To date, the DNA isolation of all samples has been completed and the first results of low-coverage next-generation sequencing are available. This data gives us first information about the endogenous DNA content in the sample, which means how much horse DNA is in the sample compared to bacteria and other contaminations. We also acquire information on the species, whether we sampled a horse, a mule or a donkey, which is often not definable from the bones. We also get to know the sex of the individuum from the sequencing data. Based on this information, we decide how much effort we put into further analysis of each sample. 15 samples with a high endogenous DNA content, were already deep sequenced for their whole genomes. For samples with a lower en-



ogenous DNA content we need to use a special method, to enrich the DNA regions of interest prior to sequencing. With this method we can also reveal sequence information from samples with a low endogenous DNA content. The enrichment procedure is currently being established at the University of Veterinary Medicine Vienna. Nevertheless, there were also a few samples we cannot analyse further, because of profound DNA degradation. This is the case for the sample of the Horse of Mleiha, it was not possible to obtain sufficient endogenous DNA for further analysis from this horse.

Data analysis is currently in progress, where we cluster the sampled horses into our existing Y-chromosomal phylogeny built from present and other ancient horses. We should soon get a better picture of the development and spreading of the ancestors of today's horses.

### Highlights 2019

- The OREA series volume 'The Central/Western Anatolian Farming Frontier. Proceedings of the Neolithic Workshop held at 10<sup>th</sup> ICAANE in Vienna, April 2016' (edited by M. Bami and B. Horejs) was published.
- Approval of the FWF stand-alone project '*NEOTECH*', *Neolithic Technological Trajectories in the Balkans* (PI B. Horejs; project no. P32096).
- The summer school of the Cluster Archaeology and Classics (CLAC) in Ephesos, 12<sup>th</sup>–15<sup>th</sup> July 2019.
- Start of the joint research project between OREA and the Sharjah Archaeology Authority (SAA) at the site of Kalba, Emirate of Sharjah, United Arab Emirates by Ch. Schwall.

### Team

Barbara Horejs, Eva Alram-Stern, David Blattner, Dominik Bochatz, Bogdana Milić, Constanze Moser, Mohamad Mustafa, Felix Ostmann, Maria Röcklinger, Christoph Schwall

Eva Alram-Stern – Barbara Horejs – Christoph Schwall – Bogdana Milić – Maria Röcklinger – Dominik Bochatz – Mohamad Mustafa – Simone Reiter – Barbara Wallner – Gottfried Brem

## PREHISTORIC IDENTITIES

(Research group leader: Katharina Rebay-Salisbury)

### Objectives

The aim of the research group is to deepen our understanding of bioarchaeological methods and their diverse and complex scientific results, as well as to embark on a new, discursive path in identity research that discusses cultural and contextual information on an equal footing with bioarchaeological data.

Aspects of prehistoric identities – building blocks of how people saw themselves and others – include age, sex and gender, descent, social relationships, ethnicity, status and religion. Many of these aspects are inextricably linked to the human body, the biological basis of existence through which the world is experienced.

Material culture is directly involved in the creation and maintenance of identities; it also serves to categorise people. Recording and interpreting artefacts, their spatial distribution and chronological development is one of the core competences of archaeology.

Increasingly, the analysis of human bones and teeth focuses on individual life histories of prehistoric persons, with the help of the latest scientific methods. Detailed anthropological analyses allow the reconstruction of biographies, including stress events and traumas, and form the basis for reconstructing health and nutrition. Examinations of human genetic material reveal relationship patterns, lineages and genetic origin. Isotope analyses provide valuable information about nutrition, mobility and migration.

Bioarchaeological data form the basis of the third science revolution in archaeology, which, in combination with established archaeological methods, is currently revolutionising research into prehistoric identities. The temporal and cultural depth as well as the archaeological context, however, now need to be reemphasised.

More than ever, a detailed examination of all aspects of identity, as they develop over time, intersect and influence each other, allows us to understand the human experience in prehistory, while at the same time allowing us to explore the archaeological record in a new light. The developed expertise will be employed by contributing to public and political debates on gender relations, origin and migration.

### Current research

The research group *Prehistoric Identities* emerged from Katharina Rebay-Salisbury's ERC Starting Grant project *VAMOS. The Value of Mothers to Society: responses to motherhood and child rearing practices in prehistoric Europe* (No. 676828, 1.7.2016–30.6.2021), which examines how female identity changed through motherhood in the last three millennia BC. Activities linked to this project include the application of innovative archaeological and bio-anthropological methods.

One focus is the *osteological reassessment* of women's and infants' skeletons, in particular investigating skeletal remains for signs of past pregnancies and parturitions. Elisa-Maria Praxmarer has been employed as a technical assistant from 01.05.2019 to 30.04.2020 to help Michaela Spannagl-Steiner and Doris Pany-Kucera finalise the data acquisition, documentation and description of pelvic features and selected pathological changes from prehistoric sites. Skeletal series dating to the Late Neolithic include Franzhausen I/III/IV/V/VI, Bronze Age series include Hainburg/Teichtal, Drasenhofen and Pitten, and Iron Age series include Pottenbrunn, Mannersdorf, Hallstatt, Dürrenberg (Eisfeld, Friedhof, Hexenwandfeld, Lettenbühel, Moserfeld, Römersteig), Franzhausen and Pötsching.

It has been realised that researching *pelvic features* has to be continued in modern, documented collections, for which data on the number of births is available. Data gathering started with the

Simon Collection (Geneva, Switzerland) and will continue with Spitalfields (London, United Kingdom).

Collaboration with the Medical University of Vienna, Centre for Anatomy and Cell Biology (Wolfgang Weninger and Barbara Maurer-Gesek) to clarify the meaning of the newly described pelvic features ‘sacral preauricular extension’ and ‘sacral preauricular notch’ continued (Pany-Kucera et al. 2019). Urogynecologist Engelbert Hanzal and radiologist Andrea Mair (AKH Vienna) facilitate access to clinical data for comparison, which will be part of Lukas Waltenberger’s

PhD project. 3D data from the anatomical Weissbach Collection held at the Natural History Museum in Vienna will be integrated into the study of pelvic dimensions.

As one of three PhD projects carried out as part of VAMOS, Lukas Waltenberger’s project *Are parturition scars truly signs of birth? A geometric morphometric approach to analyse pelvic birth marks* integrates 3D modelling (Fig. 44) based on photogrammetry to understand the relationship between pelvic shape and the formation of pelvic features. Lukas Waltenberger worked on photogrammetric models for outreach and publications.

Marlon Bas’ PhD project *Macro and micro-wear in the developing juvenile dentition: diet and masticatory mechanics in past populations* aimed to gain insights into the diet of children at our case study sites. He developed a dental macrowear and microwear quantification methodology using occlusal surface curvature descriptors for the purpose of childhood paleo-dietary reconstruction. Data collection included using 3D intra-oral scanning and confocal microscopy of dentitions from Bronze-Age children, as well as medieval children for comparison.

Michaela Fritzl’s PhD project *Mobility, Migration and Connectivity at the Late Bronze Age Cemetery of Inzersdorf ob der Traisen* comprised the osteological re-assessment of age and sex a priori strontium isotope analysis of cremated individuals. In May, Michaela Fritzl and Lukas Waltenberger travelled to Brussels for two weeks to train in sample preparation and laboratory procedures for isotope analysis in cooperation with Christophe Snoeck from the Vrije Universiteit Brussel (Belgium). Preliminary results confirmed that we can identify non-local individuals in the tested sample from Inzersdorf; they were presented at the *EAA* in Bern, Switzerland, and at the *Migrations and Mobility* conference in Edinburgh, United Kingdom. We have applied for funding from the FWF to expand this promising angle of research onto further Urnfield Culture cemeteries in the Traisen Valley (*Unlocking the secrets of cremated human remains: temporality, gendered mobility and family relations in Late Bronze Age Austria*).

A new initiative to compare double and multiple burials from Late Bronze Age cremation cemeteries across the Austrian-Czech border with Klára Šabatová has been supported by a mobility grant from the Austrian Agency for International Cooperation in Education and Research (*Together in life – together in death: adults and children in Bronze Age graves*, 1.1.2020–31.12.2021, Project No. CZ 09/2020).

Within the framework of a research collaboration with Julie Dunne and Richard Evershed from the Chemistry Department of the University of Bristol, we developed a minimally invasive strategy to sample Bronze and Iron Age feeding vessels for organic residues absorbed into the ceramics matrix (Fig. 45). We confirmed that ruminant animal milk was indeed used in *prehistoric* ‘baby bottles’ found in children’s graves. First results were published in the journal ‘Nature’ (Dunne et al. 2019).

We have started to apply a new analytical technique to determine the sex of juvenile prehistoric individuals by analysing *sex-specific peptides in dental enamel* with nanoLC-MS/MS. This has been enabled through our collaboration with Fabian Kanz, Department of Forensic Medicine,



Fig. 44 Photogrammetric 3D model of a Bronze Age pelvis from Hainburg, Austria (L. Waltenberger)



Fig. 45 Late Bronze and Iron Age feeding vessels from Znojmo-Czechia, Harting-Bavaria, Franzhausen-Kokoron-Austria, Batina-Croatia, Statzendorf-Austria, c. 1200–600 BC (photos: K. Rebay-Salisbury)

University of Vienna, and Lukas Janker and Christopher Gerner from the Department of Analytical Chemistry of the University of Vienna. This proteomic technique has only recently been described in the literature (Parker et al. 2019, Stewart et al. 2017, Stewart et al. 2016), and represents a quantum leap for the study of childhood. Based on morphology alone, it is notoriously difficult to assign sex to children, as sexual dimorphism develops primarily after puberty (Figs. 46, 47). In recent years, DNA analysis has been employed to determine the genetic sex of skeletons, but DNA analysis is destructive, its success depends on the preservation of the nuclear DNA and the costs are still prohibitive. The identification of peptides in tooth enamel, in contrast, is almost non-destructive – it only needs an incredibly small amount of tooth enamel gained by acid etching of a small area of the surface of the tested tooth; the tested area is hardly visible to the naked eye.

We can finally answer a number of questions on sex-specific mortality patterns, on sex preferences, and demography. We will be able to know if sex selection took place after birth and whether infanticide affected more girls or more boys. We can ask whether girls and boys were treated equally as babies and small children, for example in terms of access to food. We can investigate if children of both sexes were afforded the same burial rites. We will be able to tell if the sex of babies and infants was important, or if societies only responded to the differences between girls and boys later, as children matured. We will be much better able to understand how children ‘learn gender’, at what age girls and boys were socially recognised and treated as adolescents and adults. The first sex identification of a 5–6-year-old Bronze Age child from Schleinbach via peptides in tooth enamel produced unambiguous results as the male-specific peptide AMELY was clearly present (Rebay-Salisbury et al., submitted). We are planning to expand this angle of research and have submitted project proposals to the FWF and ERC for further funding.



Fig. 46 Lukas Janker and Doris Pany-Kucera in a hands-on discussion on the best spot to sample at the Natural History Museum in Vienna (photo: K. Rebay-Salisbury)



Fig. 47 Lukas Janker performing acid etching to gain peptides from prehistoric teeth at the Natural History Museum in Vienna (photo: K. Rebay-Salisbury)



Editorial activities centred on the edited volume ‘Ages and abilities: the stages of childhood and their social recognition in prehistoric Europe and beyond’, emerging from the 11<sup>th</sup> *Annual International Conference of the Society for the Study of Childhood in the Past* held at the Natural History Museum, Vienna, Austria in 2018 (Katharina Rebay-Salisbury & Doris Pany-Kucera in preparation).

Elisa Perego’s Marie Skłodowska-Curie Individual Fellowship *CoPOWER: Government of Life and Death: The Rise of Coercive Power in European Late Prehistory* (No. 750596, 1.7.2017–30.6.2019) was completed in June. *CoPOWER* has adopted state-of-the-art archaeological and bioarchaeological approaches to investigate the transition to urban society and the rise of increasingly sophisticated social control mechanisms in Europe in the second and first millennia BC.

Osteological, taphonomic, isotope etc. analyses have been used to investigate the life histories of past people, including their health, mobility, diet, kinship, funerary treatment and status. Research has focused on the trade and production hub of Frattesina di Fratta Polesine (Veneto), famous for its amber production and glass making. The cemeteries around Frattesina have yielded hundreds of cremation burials in simple urns, and c. 30 inhumations with evidence of abnormal mortuary treatments, including for children. Themes such as marginality, disability, gender and personhood have also been explored at other sites, e. g. Iron Age Veneto (Palazzo Emo) and Samnium (central Italy).

Environmental research in *CoPOWER* has integrated climate, survey and stratigraphic data to shed new light on the role of marginalised and non-elite communities in times of environmental stress and climate change. Flooding in central Veneto has been discussed as possibly linked to the 2.8 ka BP event, which brought about more humid conditions in western Europe and seems to have been caused by a decrease in solar activity occurring around 800 BC. Social factors potentially leading to increased social inequality and ritual abuse (e.g. urbanism) have also been addressed. A *CoPOWER* case study on ancient Daunia (southern Italy) has shown how increasing temperatures at around 325–200 BC coincided with a period of social tension and, potentially, increased mobility of non-elite groups within the region.

### Events

- 28.11.2019, Vienna, Natural History Museum: Workshop *Female pelvic features: new developments in osteoarchaeology, medicine and evolutionary biology* (Doris Pany-Kucera & Katharina Rebay-Salisbury)
- 6.9.2019, Bern, session organised at the 25<sup>th</sup> *Meeting of the European Association of Archaeologists*: ‘Motherhood in prehistory from a combined bio-archaeological and social perspective’ (Katharina Rebay-Salisbury & Sofija Stefanovic)
- 15.4.2019, Vienna, OREA: *Ancient DNA Workshop* with Martin Sikora, Geogenetics, University of Copenhagen

### Outreach activities

The ‘Nature’ article “Milk of ruminants in ceramic baby bottles from prehistoric child graves” (Dunne et al. 2019) resonated in media outlets all over the world. With at least 188 news articles based on our research output, the article reached an Altmetric score of 1931 and is in the 99th percentile (ranked 9th) of the 922 tracked articles of a similar age in ‘Nature’.

#### *Further media presence included:*

- Katharina Rebay-Salisbury participated in a panel discussion and podcast ‘Heimat großer Wissenschaftlerinnen?’ (8.3.2019). Online <<https://soundcloud.com/makro-mikro/heimat-groesser-wissenschaftlerinnen-makro-mikro-8>>

- Film recordings for the documentary ‘Terra X: Der Schlüssel zur Macht – Die Geschlechterrolle in der Archäologie’ took place at the Natural History Museum in Vienna (7.5.2019), featuring Katharina Rebay-Salisbury and Doris Pany-Kucera
- Doris Pany-Kucera contributed to the ORF 3 broadcast ‘Feuer und Flamme’ (12.6.2019)
- Lukas Waltenberger was interviewed for radio Ö1 ‘Knochen zum Sprechen bringen’ (19.4.2019) and the OeAW ‘Was Knochen uns zu sagen haben’ (19.7.2019). Online <<https://www.oeaw.ac.at/detail/news/was-knochen-uns-zu-sagen-haben/>>.

Research blog articles appeared in ‘Der Standard’:

- Katharina Rebay-Salisbury, ‘Heimat bist du großer Wissenschaftlerinnen?’ Der Standard – Junge Akademie Blog, 8<sup>th</sup> March 2019. Online <<https://derstandard.at/2000099032564/Heimat-bist-du-grosser-Wissenschaftlerinnen>>.
- Katharina Rebay-Salisbury, ‘Mobilität und Migrationen in der Bronzezeit.’ Der Standard Archäologieblog, 21<sup>st</sup> February 2019. Online <<https://derstandard.at/2000098319987/Mobilitaet-und-Migrationen-in-der-Bronzezeit>>.

In 2019, Katharina Rebay-Salisbury’s blog ‘Motherhood in prehistory’ discussed mtDNA results, sex-specific peptides in prehistoric dental enamel, and bony changes in the sacrum. Online <<https://motherhoodinprehistory.wordpress.com/>>.

VAMOS actively engaged in outreach events:

- Doris Pany-Kucera presented her research in the framework of VAMOS at the open day of the Anthropological Department of the Natural History Museum in Vienna (10.4.2019) and at the event *Archäologie am Berg* in Hallstatt (17.–18.8.2019).

### Highlights 2019

- Our article on organic residue analysis of prehistoric feeding vessels from Bronze and Iron Age child graves appeared in the journal ‘Nature’ (Dunne et al. 2019) and was met with great media interest.
- The identification, description and publication of ‘sacral preauricular extensions, notches and corresponding iliac changes’ (Pany-Kucera et al. 2019) represent a fundamental research outcome, which we will continue to build on in the future.
- We have successfully applied nanoLC-MS/MS to identify sex-specific peptides in dental enamel in order to determine the sex of buried juvenile and adult individuals in collaboration with Fabian Kanz, Department of Forensic Medicine, University of Vienna, and Lukas Janker and Christopher Gerner from the Department of Analytical Chemistry of the University of Vienna.
- In November, we hosted a workshop on *Female pelvic features* at the Natural History Museum in Vienna. The event was supported by the Young Academy of the Austrian Academy of Sciences and brought together national and international experts in the field of pelvis research from osteoarchaeology, medicine and evolutionary biology, and will result in a publication (Doris Pany-Kucera & Katharina Rebay-Salisbury, in preparation).

### Team

Marlon Bas, Michaela Fritzl, Doris Pany-Kucera, Elisa Perego, Elisa-Maria Praxmarer, Katharina Rebay-Salisbury, Roderick B. Salisbury, Michaela Spannagl-Steiner, Lukas Waltenberger

Katharina Rebay-Salisbury – Doris Pany-Kucera – Roderick B. Salisbury – Elisa Perego – Michaela Fritzl – Marlon Bas – Lukas Waltenberger

## LEVANTINE AND EGYPTIAN HISTORIES

(Research group leaders: Roman Gundacker & Felix Höflmayer)

### Objectives

Near Eastern Studies, Biblical Archaeology, and Egyptology have developed individual approaches and specific traditions for addressing the historical questions and specific problems of the pre-classical period of the wider Near East. The Austrian Academy of Sciences is one of the few international research institutions that has developed a multidisciplinary focus on and an integrative approach to the history and archaeology of Egypt and the Levant. The research group *Levantine and Egyptian Histories* aims at consolidating and expanding this internationally unique research profile and at continuing to stimulate and advance the cooperation between Egyptology, Biblical Archaeology, and Near Eastern Studies via a combination of philology and archaeology. Textual sources from Egypt and the Levant on the one hand, and the material culture unearthed by the archaeological disciplines on the other hand, are both considered as vital sources of equal importance.

*Levantine and Egyptian Histories* focuses on the Chalcolithic, Bronze, and Iron Ages (c. 5000–600 BC) in the region of the Nile Valley, the eastern Mediterranean littoral and its hinterland up to the Syrian and Jordanian deserts. *Levantine and Egyptian Histories* explores the history and archaeology of these lands, as well as transregional phenomena such as trade and exchange, migration and identity, cultural transfer, adaptation, and adoption, language contact, and language development. While current projects focus mainly on the chronology, history, culture, and inter-regional contacts of the Bronze Ages, *Levantine and Egyptian Histories* also aims at developing new projects including the Iron Age.

The long-term aim of *Levantine and Egyptian Histories* is to provide a firm basis for overarching research questions that lead to the historical synthesis of Egyptian-Levantine interconnections based on the evaluation of philological and archaeological data in concord with a radiocarbon-backed chronological framework, all contributing as equal sources.

### Current research

#### *‘Challenging Time(s)’ – A New Approach to Written Sources for Ancient Egyptian Chronology*

PI: Roman Gundacker

Project staff: Annik Wüthrich, Hermine Huber (project management)

This research project works on the systematic re-assessment of written sources which represent a corner stone for Egypt’s historical chronology. Among the written sources, the kinglists have retained their significant influence until today. For example, the periodisation of Egyptian history and its division into 31 dynasties is based on the kinglist of Manetho, an Egyptian priest and historian (c. 280 BC) writing for the Ptolemaic kings in Greek. It is thus surprising that there has never been an in-depth analysis of the royal names found in Manetho’s kinglist and in the works of further Greek historiographers (Herodotus, Diodorus of Sicily, Pseudo-Apollodorus/Pseudo-Eratosthenes, the so-called ‘Leipziger Weltchronik’ and dispersed mentions of Egyptian royal names in Greek and Latin sources, e.g., Pliny the Younger). Also, the relationship between those Greek kinglists and their Egyptian precursors (Royal Canon of Turin, kinglists of Abydos, Saqqara, Abusir, table of kings at Thebes, sequence of kings in Papyrus Westcar) and the ample contemporaneous written evidence of the various periods of Egyptian history is unclear.

*Challenging Time(s)* advances the current understanding of written sources and the methods of evaluation by (1) systematically examining royal names on a linguistic basis which includes re-vocalisation and morphological analysis in the light of recent onomastic research, (2) compiling dated inscriptions and testing the currently proposed attribution to certain kings in a broader context

if no royal name is given as part of the dating or the further inscription, (3) testing chronological schemes on the basis of prosopographic data which is used for establishing genealogies of royalty and commoners and sequences of officials, (4) combining the results of the three research objectives just mentioned in order to define Egypt's historical chronology more precisely. The primary aim of *Challenging Time(s)* is to test established theories and to get new information from written sources in order to advance further the rigour and accuracy of ancient Egyptian historical chronology, which is a highly important reference point for the chronological systems of neighbouring Near Eastern and Mediterranean cultures and for the calibration and statistical evaluation of  $^{14}\text{C}$  dates.

Annik Wüthrich continued research on different modes of expressing family relations (filiation) during the XXI and XXII dynasties with a focus on funerary papyri. The results show a distinctive evolution in the use of the filiation in the funerary papyri of the early Third Intermediate Period which is essential for dating more precisely those important text sources. Preliminary results were presented at the conference *L'expression de la filiation à la Troisième Période intermédiaire : reflet d'une réalité historique ou simple effet de mode ?* in Grenoble in January 2019. Further work on the means of self-representation by way of (long) genealogies and their historical value was carried out for the XXI and XXII dynasties. The royal and private documentation of the early Third Intermediate Period was supplemented with hitherto neglected material now in Bergamo, Cairo and Copenhagen. In addition, the evolution of the designation of marriage and the marital status of a specific group of women during the XXII dynasty was started in order to develop new dating criteria. Preliminary results were presented at the conference *The expressions of the marital status in the funerary documentation from the first part of the Third Intermediate Period* in Cairo in November 2019.

Roman Gundacker continued research on Manetho and his kinglist with the evaluation of direct and indirect testimonia. The chronological and geographical whereabouts of Manetho were further investigated in order to determine his cultural background and the context in which he composed his Egyptian history (Αἰγυπτιακά). Based on information found in the Byzantine lexicon Suda, the suggestion that there were two authors called Manetho was further substantiated. According to this working hypothesis, Manetho of Sebennytos was an early Ptolemaic author and responsible for works on Egyptian history and religion, whereas Manetho of Diospolis inferior was an author of the 1<sup>st</sup> century AD who wrote the core of an astrological treatise (Ἀποτελεσματικά). A comprehensive overview of research on Manetho and his oeuvre was published as a contribution to the renowned '*Wissenschaftliches Bibellexikon im Internet*' of the Deutsche Bibelgesellschaft. Furthermore, Roman Gundacker started the philological and linguistic evaluation of a recently published inscription which presumably mentions a Sothic date of the V dynasty, although the evidence appears in part doubtful. Additional work was devoted to the advancement of linguistic and onomastic research with the aim of developing methodologies of reconstructing syllable structure, stress and vowel patterns with limited vocalised material from the *Nebenüberlieferung*. The applicability of this approach will be further tested in the future when royal names of the New Kingdom for which the *Nebenüberlieferung* is inconclusive or contradictory are evaluated.

The team members of *Challenging Time(s)* participate in the transdisciplinary research platform *Global Eurasia* of the Austrian Academy of Sciences. Annik Wüthrich contributed a presentation on (long) genealogies of the XXI and XXII dynasties, their face value and their cultural background as secondary means of legitimisation. Roman Gundacker is engaged in a panel on the perception of time and history, measuring and computing of time and chronology.

In 2019, the recruitment process for hiring three praedoc scholars was carried out. As a result, Charlotte Dietrich, Johannes Jüngling, and Julian Posch will join the research team of *Challenging Time(s)* early in 2020. At the same time, a first interim report and financial statement was communicated to the European Research Council and accepted.

Funding: ERC Starting Grant (Grant Agreement Number 757951, European Research Council)

Cooperations: Julia Budka (Ludwig-Maximilians-Universität Munich), Georg Danek (University of Vienna), Armenuhi Drost-Abgarjan (Martin-Luther University Halle-Wittenberg), Heiner Eichner (University of Vienna), Peter Jánosi



(University of Vienna), E. Christiana Köhler (University of Vienna), Nadine Moeller (The Oriental Institute, University of Chicago), Thomas Schneider (University of Vancouver), Stéphane Polis (University of Liège)

*Tracing transformations in the southern Levant: From collapse to consolidation  
in the mid-second millennium BC*

PI: Dr. Felix Höflmayer

Project staff: Dr. Katharina Streit (Hebrew University of Jerusalem), Lyndelle Webster (Austrian Academy of Sciences), Vanessa Becker (University of Vienna), Agnes Woitzuck (Austrian Academy of Sciences)

This project is conducted in close cooperation with the University of Vienna and Hebrew University of Jerusalem and explores the history and archaeology of the late Middle and early Late Bronze Age in the southern Levant. This period saw the demise of the Middle Bronze Age city-



Fig. 48 Orthophoto of Tel Lachish with excavation areas S and P indicated  
(photo and model: Matthew Adams, © W.F. Albright Institute of Archaeological Research)

states, the end of the Hyksos Empire in Egypt, and the rising interest and involvement of the Pharaohs in the Levant, culminating in the military campaigns of the Thutmosid period and leading to the 'International Age' of the Late Bronze Age Amarna period. This transformative period is still poorly understood due to an insecure chronological framework with many open questions regarding the chronological synchronisation of Egypt and the Levant. So far, assessments of this period were dominated by a text-based approach relying heavily on Egyptian sources, while archaeological data from the southern Levant was not always fully appreciated.

*Tracing transformations* sheds new light on this formative period by (1) a targeted excavation of late Middle and early Late Bronze Age settlement layers at Tel Lachish, (2) establishing an absolute chronology for the late Middle and early Late Bronze Age based on sequences of radiocarbon dates that can be correlated with the radiocarbon-backed New Kingdom chronology of Egypt, (3) an in-depth study of the value of Egyptian scarab seals for chronological purposes, (4) a comprehensive study of the development of material culture of the southern Levant based on the radiocarbon chronology, and (5) a new historical assessment of the period based on the new chronological framework, the results of the study on material culture, and a critical study of the available text sources.

In July/August 2019, the third season of excavations was conducted at Tel Lachish. Work continued in Area S on the western side of the mound and in Area P north of the Judean palace/fort (Fig. 48). In Area S, we continued to excavate settlement contexts of the early Late Bronze Age outside a substantial building (Strata S-3 and S-4) and uncovered a substantial fortification of the early Late Bronze Age (Fig. 49). Notable finds include two scarabs from floor surfaces, a bowl fragment inscribed in Hieratic and a sherd of a Cypriot White Slip II milk bowl with an early alphabetic inscription (already discovered in 2018). In Area P, we continued to excavate the eastern extent of the Middle Bronze Age palace and cleared two rooms full of destruction debris, uncovering well-preserved white plastered mud-brick walls (Stratum P-4). A sounding beneath the P-4 palace floor revealed a hitherto unknown massive earlier phase of the Middle Bronze Age palace that will be further explored in the coming seasons. East of the palace, we traced an enigmatic feature that cuts into the Middle Bronze Age remains and dates to the Iron Age. Currently, we interpret this feature as a massive, at least 2.5m-high (underground?) retaining wall from the Iron Age that kept the ruined Middle Bronze Age mud-brick palace in place in order to build the



Fig. 49 Early Late Bronze Age fortification in Area S (photo: Jared Dye, © OREA)



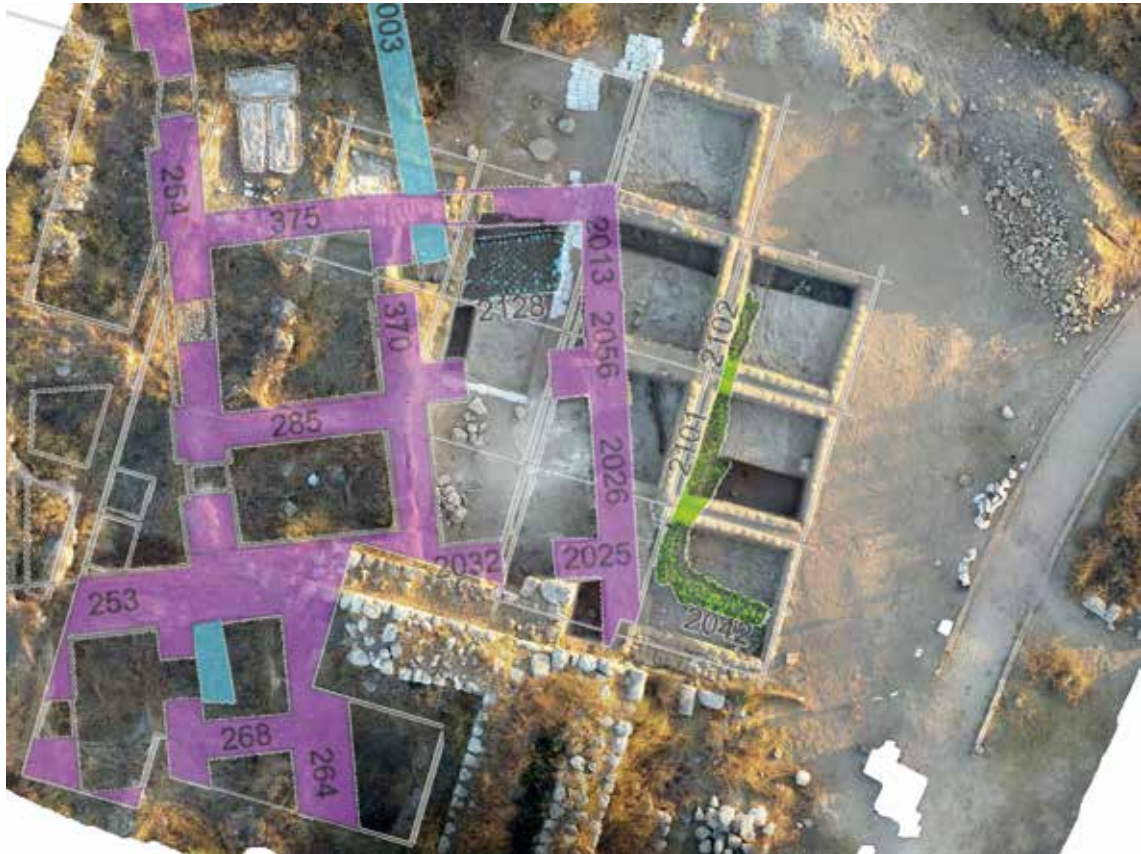


Fig. 50 Orthophoto of Area P at the end of the 2019 field season with architectural plan. Purple: Stratum P-4 Middle Bronze Age palace; Blue: Stratum P-5/6 earlier Middle Bronze Age palace; Green: Iron Age retaining wall (photos and model: Jared Dye, Lara Indra, and Agnes Woitzuck, © OREA)

Iron Age storerooms on top of it (Fig. 50). This feature is additionally reinforced by at least two east-west mud-brick walls abutting the retaining wall.

In October, Katharina Fuchs and Alexander Walser from the University of Applied Arts, Vienna, visited the site to assess the state of preservation of the Middle Bronze Age palace, to take samples from the plaster and the mud-bricks and to develop a conservation strategy for the building.

First results of the Austrian-Israeli excavations were presented by Felix Höflmayer and Katharina Streit for the general public at the site on 7<sup>th</sup> August. The Open Day was attended by approximately 70 people, including the Austrian Ambassador Martin Weiss, Consul Johannes Korherr, and Cultural Attaché Arno Mitterdofer. Further presentations include invited lectures at La Sapienza University Rome, at the W.F. Albright Institute of Archaeological Research in Jerusalem, and at the Southern Adventist University at Collegedale, TN, USA. At the *Annual Meeting of the American Schools of Oriental Research* in San Diego, CA, USA, Felix Höflmayer and Katharina Streit organised two sessions reporting on the results of three years of excavations at Tel Lachish.

Lyndelle Webster continued to cooperate with various projects throughout the Near East for radiocarbon dating. In January, she joined the *Uronarti Regional Archaeological Project* directed by Laurel Bestock (Brown University) and Christian Knoblauch (University of Swansea) for developing a radiocarbon sampling strategy for the site. In February, she sampled various contexts at the Pella Expedition of the University of Sydney directed by Stephen Bourke. In June 2019, Lyndelle presented first results of her project at a lecture held at OREA.

Funding: FWF START Y-932

Cooperations: Israel Antiquities Authority, Israel Nature and Parks Authority, Dr. Matthew Adams (W.F. Albright Institute of Archaeological Research, Jerusalem), Prof. Dr. Jens Kamlah, PD Dr. Simone Riehl (University of Tübingen), Prof. Dr. Michael W. Dee (University of Groningen)

### *Untersuchungen zur Nominalkomposition des Ägyptischen*

PI: Dr. Roman Gundacker

The main objective of this research project is to develop Egyptian linguistics as an additional source for the assessment of the earliest stages of Egyptian elite culture and state development. One hitherto neglected category is compound nouns, for which the differentiation between morphological compounds (traditionally called ‘Ältere Komposita’) and syntactical compounds or juxtaposita (traditionally called ‘Jüngere Komposita’) is paramount. While the earlier kind of compound noun ceased to be formed after the breakdown of the Old Kingdom at the end of the third millennium BC, the latter category remained a vivid category of nouns all throughout the history of the Egyptian language. What makes morphological compounds (‘Ältere Komposita’) special is the fact that many of them, as *termini technici*, denote key concepts of Egyptian elite culture.

Morphological compounds (‘Ältere Komposita’) can only be identified via the assessment of their syllable structure and stress patterns, which are particularly difficult to identify due to the fact that the hieroglyphic writing system does not denote vowels. Therefore, the identification of morphological compounds (‘Ältere Komposita’) depends on the meticulous evaluation of sportive hieroglyphic, uncommon hieratic and phonetic or unetymological demotic writings and on the search for offspring in Coptic or Egyptian Arabic and renderings in cuneiform, Hebrew, Aramaic, Greek, Meroitic and Old Nubian texts.

Given the peculiar chronological and linguistic circumstances, morphological compounds (‘Ältere Komposita’) are a valuable source for the assessment of linguistics and for the determination of the Egyptians’ mindset at the dawn of Egyptian civilisation in the fourth and third millennium BC.

In 2019, collecting attestations of morphological compounds (‘Ältere Komposita’) and linguistic research continued. A detailed study was devoted to the linguistic analysis and philological discussion of the term *ḥšjw-mw* ‘water conjuration’ in its broader cultural context. The investigation of this *terminus technicus* of the Egyptian *lingua magica* is pioneering insofar as no vocalised offspring or rendering in the *Nebenüberlieferung* is known, so that the entire reconstruction relies on peculiar hieroglyphic writings and general considerations concerning morphological patterns.

Funding: APART Fellowship of the Austrian Academy of Sciences (until December 2017)

Cooperations: Research Project *Strukturen und Transformationen des Wortschatzes der ägyptischen Sprache. Text- und Wissenskultur im alten Ägypten* of the Berlin-Brandenburg Academy of Sciences (directed by Tonio S. Richter); Chicago Demotic Dictionary of the Center for Near Eastern Languages and the Oriental Institute of the University of Chicago (directed by Janet H. Johnson)

### **Highlights 2019**

Field Missions:

- Third season of excavation at Tel Lachish directed by Felix Höflmayer and Katharina Streit.

Workshops & Events:

- S. Hartlepp, with a contribution by R. Gundacker, *Hinter den Dingen – The Sound of Science: Das verschwundene Pyramidenfragment*, public event and panel discussion at the Neues Museum in Berlin, 28<sup>th</sup> February 2019 and 23<sup>rd</sup> May 2019.
- S. Hartlepp, with a contribution by R. Gundacker, ‘Hinter den Dingen – The Sound of Science: Das verschwundene Pyramidenfragment’, a podcast including the phonetic reconstruction (re-vocalisation) of Pyramid Texts spell 262 according to the recension for Queen Ankhenespepi II by R. Gundacker, published by the Sonderforschungsbereich *Episteme in Bewegung* of the Freie Universität Berlin, 27<sup>th</sup> February 2019. Online <<http://www.sfb-episteme.de/podcast/>>



a02/index.html> and <<http://www.sfb-episteme.de/podcast/bonusmaterial/a02-pts262-altaegyptisch/index.html>>.

- F. Höflmayer – K. Streit, ‘Tracing transformations in the southern Levant: The transition from the Middle to the Late Bronze Age at Tel Lachish and beyond’, *Annual Meeting of the American Schools of Oriental Research*, San Diego, CA, USA, November 2019.

#### Varia:

- S. Hartlepp, with a contribution by R. Gundacker, ‘Hinter den Dingen – The Sound of Science: Das verschwundene Pyramidenfragment’, broadcast in the series Zeitfragen on Deutschland-Funk Kultur, 27<sup>th</sup> February 2019.
- F. Höflmayer and K. Streit attended the Rosh HaShanah reception at the invitation of Federal Chancellor B. Bierlein in the Federal Chancellery, 19<sup>th</sup> September 2019.
- F. Höflmayer and K. Streit presented the excavation project in the Federal Chancellery on 11<sup>th</sup> November 2019.
- K. Streit presented the excavation project in the framework of the state visit to Israel of Federal President A. van der Bellen to the scientific delegation headed by Federal Minister H. Faßmann, 5<sup>th</sup> January 2019.

#### Team

Vanessa Becker, Roman Gundacker, Felix Höflmayer, Katharina Streit, Lyndelle Webster, Agnes Woitzuk, Annik Wüthrich

Roman Gundacker – Felix Höflmayer – Annik Wüthrich

## MATERIAL CULTURE IN EGYPT AND NUBIA

(Research group leader: Bettina Bader)

### Objectives

The tasks of the research group focus on material culture as a valuable source and as a complement of the rich textual legacy preserved in Egypt for some aspects of the life and death of the ancient Egyptians. The past year's research has shown again that the consideration of this source, especially in instances (spatial or temporal) of relative lack of written sources, enables an intimate understanding of cultural, socio-economic and historical processes of the past. Especially but not exclusively, for the Middle Nubian cultural horizon, the textual sources only represent Egyptian viewpoints that were (a) preserved by chance and are therefore unlikely to be complete in any sense and (b) represent the ideology of a small elite. Moreover, the on-going simplistic identification of persons with the cultural traditions they were associated with leads to a historical narrative that lacks cautious approaches and misses nuances. The same can be said for the early Dynastic cemetery in Turah (early 3<sup>rd</sup> millennium BCE) and the inhabitants of a late Middle Kingdom settlement in Area A/II at Tell el-Dab'a (c. 1800–1700 BCEv), both of which totally lack any written evidence. For these reasons the 'bottom up' approach followed by the research group's participants seeks to remedy these problems and record items of material culture in an objective manner with interpretations added at a later stage. This approach led to the organisation of the very insightful study day *Documenting material culture*, in which researchers from a wide variety of chronological phases, geographical areas as well as types of material culture/artefacts took part. These comparisons of methodology as well as insights into digital options of documenting material culture opened new avenues of research for the participants, which will lead to new insights in the future. Developments and methods of recording need to be implemented fast as, especially in Egypt, the cultural heritage and also material culture is threatened with loss and destruction.

### Current research

#### *Beyond Politics: Material Culture in Second Intermediate Period Egypt and Nubia*

PI: Bettina Bader; team: Natasha Ayers, Lucia Hulková, Elke Kraft

The past year saw the continuation of a dense programme of recording archaeological assemblages of Second Intermediate Period (SIP) date all over relevant sites in Egypt with the aim of better understanding regionalisation and eventually synchronising these regions. Preparatory work on the proceedings of the Round Table *Second Intermediate Period Assemblages: Building blocks for local sequences of material culture* held in 2017 continued. This report will progress from the north towards the south. The archaeological work in Egypt was made possible by close co-operation with the Egyptian Ministry of Antiquities and many international missions. A large number of museums housing finds from excavations of the early 20<sup>th</sup> century all over Europe also provided access to materials in their care. The overarching willingness of museums to cooperate with the project cannot be applauded enough, although austerity measures threaten their functionality as research institutions.

The study of selected finds from a large public 'Building L' at *Tell el-Daba* was continued for four weeks, which provides the basis for raw material comparisons with the south as well as for compositions of find contexts (Bettina Bader, see also Tell el-Daba Publications). This work was possible in close co-operation with the Austrian Archaeological Institute, Cairo branch (OeAW).

While off-site the data from architecture and finds from the tombs of *Tell el-Retaba* and *Tell el-Mansheya* were put into the database and the records were digitised, a six-week excavations

season at Tell el-Retaba took place in August/September to compensate for the cancelled season in 2018 (due to a massive delay in security clearance). The excavation of the Polish–Slovak mission focused on the endangered northwestern part of the tell, which is situated directly beside the modern village. The area opened is a continuation of that excavated in 2017. More settlement structures from the oldest phase were documented. Beside the houses of the living, seven more tombs were unearthed, which date to several phases of the SIP (Lucia Hulková, Fig. 51).

The study of the burial groups from *Tell el-Yahudiya* (15 tombs, 135 objects) situated close to the apex of the ancient delta continued in the Museums of Manchester and the Musée Royaux d'art et d'histoire, Brussels, and could be brought to a favourable conclusion (Lucia Hulková, Bettina Bader).

The Memphis-Fayoum region is represented by tombs from *Haragah* and *Sedment* excavated during the early 20<sup>th</sup> century by Engelbach, Petrie and Brunton, and these assemblages are now housed in European museums (i.a. Manchester, Brussels). While many of the particularly interesting burial groups dated to the 'XVI<sup>th</sup>' Dynasty from Sedment/Mayana seem to have been left behind at the site, one important insight was that a certain type of marl clay pottery (Vienna System Marl C) was still in use at a late stage of the SIP at Sedment (and Ehnasya el-Medina), while other more distant sites north and south lack pottery made of this material (Bettina Bader, Lucia Hulková).

The current excavations at Ehnasya el-Medina (Museo Arqueológico Nacional, Madrid) under the direction of Carmen Pérez-Die continued to trace the architectural history of the Ramesside Hery-shef temple at Herakleopolis Magna. Soundings reached layers datable to the late SIP/early New Kingdom by associated pottery, but no other finds connect any of these soundings to the dynastic history of ancient Egypt. The recording of sounding 0 was started in this season, while two large Nile C pottery vessels below the flagstones of the Ramesside temple were excavated by B. Bader (Fig. 52). Whereas in 2018 those pots had to be left in situ and a preliminary date in the Middle Kingdom was considered, after the excavation the morphological traits of these vessels turned out to be incompatible with such a date (Bettina Bader).

The study of SIP pottery and objects continued at Deir el-Bersha in co-operation with the KU Leuven and the Deir el-Bersha project under the direction of Harco Willems (Bettina Bader).

The cemeteries at *Qau el-Kebir* in Middle Egypt comprise a continuous archaeological sequence for the SIP. Study of the material culture from the burials at *Qau-el Kebir* began in 2019 and will fill the gap in our current knowledge of this period in Middle Egypt. The results will be a cornerstone for linking SIP archaeological sequences from other sites and regions in both Egypt and Nubia. Although these burials were excavated in the early 20<sup>th</sup> century by W. M. F. Petrie and Guy Brunton, the material did not receive detailed study until Janine Bourriau redocumented many of the tombs, starting in the 1960s. The original publications and Bourriau's insightful analysis provide a strong foundation for a comprehensive material culture study and reconstruction of



Fig. 51 L. Hulková at Tell el-Retaba (© K. Smoláriková)



Fig. 52 Large Pottery vessels under the flagstones of the Hery-shef temple at Herakleopolis Magna  
(© photo by B. Bader, Heracleopolis Magna Proyecto)



Fig. 53 Natasha Ayers at Manchester (© N. Ayers/OREA)

a relative chronological sequence for the development of a variety of object types (e.g. pottery, scarabs, jewellery, metal tools, stone vessels, etc.) using qualitative and quantitative analyses. Re-documentation of objects from strategically chosen Second Intermediate Period burials currently housed in numerous European museums is in progress, with four museums visited in 2019 and additional museum visits booked for 2020 (Natasha Ayers, Fig. 53).

The cooperation with the *Djehuti* project under the direction of J.-M. Galán (Consejo Superior de Investigaciones Científicas, Madrid) also continued with the recording of a large offering context found close to some burial shafts of the transition of the late Second Intermediate Period to the early New Kingdom. The study of the chaînes opératoires gives very valuable insights into regional differences in the latest phase of the SIP (Bettina Bader).



Work in identifying archaeological materials from the site of Qubaniyah excavated by H. Junker was undertaken in the Kunsthistorisches Museum Vienna in cooperation with the director of the Egyptian-Oriental Collection Regina Hölzl.

The autumn 2019 excavation season at the provincial capital of *Tell Edfu* was delayed due to administrative issues in the Ministry of Antiquities; however, the season is taking place at the time of writing (January 2020). This project is a cooperation with the Oriental Institute of the University of Chicago and field director Nadine Moeller. In the coming season, work will continue in recording ceramics from the key SIP occupation of the town. Study of the assemblages from a recently discovered New Kingdom house with a rarely preserved domestic cult installation will begin as well. This study promises to yield new information about the development of material culture and use of space in this area of Edfu, as well as extending the study of the ceramic corpus into the New Kingdom (Natasha Ayers).

Work on the material from Area XXXVI at Elephantine in cooperation with the Swiss Institute for Architectural and Archaeological Research on Ancient Egypt, Cairo directed by C. von Pilgrim also continued. This time it was possible to record all the stratified material from the phase below the Middle Kingdom town wall (Phase E) and date it securely to earlier phases of the Middle Kingdom.

*InBetween: Re-appraising Nubian identity through material culture*

PI: Aaron M. de Souza

The *InBetween* project is embedded within the broader framework of the *Material Culture in Egypt and Nubia* research group. The project sets out to reassess existing models for the so-called Middle Nubian culture groups – C-Group, Pan-Grave, and Kerma (c. 1800–1500 BCE) – which were established over a century ago and have remained largely unchallenged since that time. Recent research is finding that these existing models can no longer be supported by the evidence, but no one has yet directly addressed the question of how we might reconfigure our understanding of the Nubian social landscape during the mid-second millennium BCE.

*InBetween* takes a first step in addressing this problem by deconstructing the existing framework from within. Original data used to construct the groups is reinterrogated against a backdrop of more recent evidence within a theoretical framework. Much of the research is conducted in museums, but original reports and other documentation is consulted when objects cannot be located. Central to the project was a six-week secondment period to the Museum Gustavianum at Uppsala University, Sweden, where de Souza recorded complete assemblages from two Middle Nubian cemeteries (Fig. 54). In so doing, he discovered that the cultural attribution assigned to these and many other sites was questionable and that the material culture displayed complex combinations of elements from multiple traditions. These findings were supported by further data collected during a research trip around the United Kingdom, visiting collections in London, Oxford, Manchester, Liverpool, and Swansea.



Fig. 54 A. de Souza drawing a Kerma beaker in Uppsala (© A. de Souza/OREA)



Previously unseen evidence for Nubian pottery-making technologies was illuminated via the application of Reflectance Transformation Imaging (RTI), following training from Mag. Martina Trognitz (Austrian Centre for Digital Humanities). This technological aspect of the project will be supplemented by the results of a first-of-its-kind petrographic analysis of Middle Nubian pottery in collaboration with Dr Mary F. Ownby (University of Arizona, USA) using sherds from the Gustavianum collection.

Research continues, but initial observations are emphatically pointing toward a much more complex network of intercultural and interregional mixing than that presented in much existing scholarship. The boundary between the so-called Pan-Grave and Kerma traditions appears to be more permeable than previously thought, and colonial approaches that expounded Egyptian dominance and influence over Nubia continue to be broken down. Publications in development include a detailed study of the Nubian ceramic sequence at Tell Edfu, a presentation of A. de Souza's collaborative petrographic analysis, and a paper detailing the archaeological manifestations of cultural contact is currently under review. Preparation of a monograph, the author's second, is also underway. As a result of his research, A. de Souza has been invited to present lectures in Oxford and Swansea (UK), Uppsala (Sweden) as well as multiple papers in Vienna. Further invited presentations are planned in Norway, the UK and Italy in 2020.

Funding: Marie Skłodowska-Curie Fellowship grant agreement 796050, 15.01.2019–14.01.2021

*Tell el-Retaba – the settlement of the 18<sup>th</sup> dynasty in the eastern Nile Delta*

Veronika Dubcová

Veronika Dubcová, a visiting scholar from the Institute of Oriental Studies of the Slovak Academy of Sciences, joined the research group for the period of six months. In the course of her research project she is studying the settlement remains and material culture of the early New Kingdom derived from Tell el-Retaba. The aim of the project is to collect and analyse the material for the planned publication and compare it with related material coming from other Egyptian sites. The focus of the research lies on the problematic transitional phase between the Second Intermediate Period and the New Kingdom. Its aim is to analyse the stratigraphy, the change in the material culture and its relationship to/meaning for the inhabitants of the site as well as the contacts with other Egyptian and foreign regions. So far, the material from the last research season 2019 was digitised and collected for further analysis. Special attention was given to metal and imported objects found at the site so far, which are intended to be published within separate case studies. The project is closely connected with the research of the Second Intermediate Period at Tell el-Retaba conducted by the members of the Beyond Politics project.

Funding: Post-doc Scholarship of the OEAD (Österreichischer Akademischer Austauschdienst, Action Slovakia–Austria), 1.10.2019–30.03.2020.

*Project: Centre or Periphery? The cemetery of Turah in the creative tension of state formation at the end of the 4<sup>th</sup> and the beginning of the 3<sup>rd</sup> millennium BC in Egypt*

PI: Vera Müller; team: Karl Burkhardt, Nicola Math, Julian Posch

The *Turah* project led by Vera Müller and her national cooperation partners Regina Hölzl, Director of the Egyptian-Oriental Department of the Kunsthistorisches Museum, and Johannes Sterba, Senior Scientist at the Atominstut of the Technical University of Vienna, was continued with the documentation of objects housed in the Kunsthistorisches Museum (KHM) in Vienna.

The cemetery excavated by Junker in 1910 consisted of 587 tombs encompassing the last phase of the Predynastic Period (Naq. III-B) to the end of the 1<sup>st</sup> Dynasty and a few tombs from the 3<sup>rd</sup> Dynasty. Apart from a copper harpoon, Junker was allowed to take all objects to Europe. From the sumptuous publication it can be gleaned that nearly 1100 objects were recovered by Junker during the excavation. The majority of these are housed to this day in the KHM, whereas

a smaller quantity of objects was given to the University of Vienna and to collections in Graz, Cracow, Berlin, Leipzig and Hildesheim. Recently it turned out that an unknown number of objects was also presented to the landowner's family in Egypt, which were, however, lost in the course of the commotions in the wake of the First World War. Surprisingly, no packing lists seem to have survived, either from Junker, or from the diverse museums or the landowners, so that the exact number of objects that arrived in Europe remains obscure at the moment. In addition, the previous directors of the KHM, having received Junker's finds, did not pay a lot of attention to this archaeological collection so that only a small part of the objects had already been registered when the project started. Due to several moves (*i.a.* WW II), unregistered items are now mixed in with those from other Egyptian excavations. In addition, the paper labels mentioning the tomb number have mostly decayed and the ink inscriptions on the vessels themselves, naming the find location, have often faded away. Fortunately, Junker photographed labels with the tomb information next to all objects excavated in Turah so that, on the basis of the photographs, a large number of pieces can be unequivocally identified and in many cases attributed to the respective tombs.

During 2019 we succeeded in documenting all the pottery vessels kept in the KHM in the form of drawings and descriptions in a database, i.e. about 600 items. One of the clay sarcophagi and its lid could be newly reconstructed and a range of copper artefacts were investigated by our cooperation partners Mgr. Martin Odler and Jiří Kmošek from the Charles University of Prague.

Funding: Standalone project (P 31551), the Austrian Research Fund (FWF), 1.9.2018–31.8.2022.

### *Beautiful Kush: Cosmetic substances and utensils in New Kingdom Nubia*

PI: Uroš Matic

Uros Matic finished his D.A.A.D. Prime Project "Beautiful Kush: Cosmetic substances and utensils in New Kingdom Nubia" successfully by the end of January 2019 (see detailed report in OREA Annual Report 2018: doi: 10.15661/orea/annualreport/2018).

Funding: P.R.I.M.E (Postdoctoral Researchers International Mobility Experience) by DAAD (German Academic Exchange Service), 1.12.2016–31.1.2019.

## Events

The study day *Documenting Material Culture* (organised by the research group) took place at OREA. It brought together scholars working in different fields in different classes of materials to discuss the perception of material culture, how it influences the recording methods and to gain interdisciplinary insights for their own work on materiality (12<sup>th</sup> June 2019).

- B. Bader, 'Beyond Politics: New Developments in Second Intermediate Period Archaeology in Egypt (1800 to 1500 BCE)', *XII<sup>th</sup> International Congress of Egyptologists*, Ministry of Antiquities, Cairo, 3<sup>rd</sup>–8<sup>th</sup> November 2019.
- B. Bader, 'Borderline – Die schwierige Beziehung von Materieller Kultur und Identität. Tell el-Dab'a im späten Mittleren Reich', Habilitationskolloquium, Institute for Egyptology, University of Vienna, 29<sup>th</sup> July 2019.
- V. Dubcová: 'Life on the frontier. 18<sup>th</sup> dynasty settlement at Tell el-Retaba', *XII<sup>th</sup> International Congress of Egyptologists*, Ministry of Antiquities, Cairo (Egypt), 3<sup>rd</sup>–8<sup>th</sup> November 2019.
- V. Müller, R. Hölzl, 'Centre or Periphery? A new Project in Vienna re-evaluating the late Predynastic and Early Dynastic Period Cemetery of Turah', *XII<sup>th</sup> International Congress of Egyptologists*, Ministry of Antiquities, Cairo (Egypt), 3<sup>rd</sup>–8<sup>th</sup> November 2019.

### Outreach activities

- A. de Souza, Introductions to the SJE Nubian ceramic collection at the Museum Gustavianum, 14<sup>th</sup> & 15<sup>th</sup> May 2019, Uppsala University, Sweden.
- V. Müller, 'Excavations in Museum Stores – Updating the Cemetery of Turah'. University of Copenhagen, Society of Friends of Egypt, Copenhagen, 25<sup>th</sup> April 2019.
- L. Hulková, Presentation 'Črep nad zlato: Staroegyptská keramika' (A sherd is better than gold: Egyptian Pottery) of the Egyptological Society Agyptos Foundation in Bratislava (Museum of Bratislava), 24<sup>th</sup> April 2019.
- L. Hulková, Presentation 'Smrt' na Níle' (Death on the Nile), *Museum's Night* (Bratislava; Archaeological Museum), 18<sup>th</sup> May 2019.

### Highlights 2019

- Natasha Ayers started her Post-doc research with the project *Beyond Politics* in February 2019. Her research focus lies on the archaeology of the Second Intermediate Period in Edfu and Qau.
- de Souza started his post-doc MSCA project *InBetween* at OREA in January 2019.
- Veronika Dubcová received a scholarship from the Austrian Agency for International Mobility and Cooperation in Education, Science and Research (OEAD) to conduct the project *Tell el-Retaba – Siedlung der 18. Dynastie im östlichen Nildelta* at OREA from 1.10.2019–31.03.2020.
- Bettina Bader received her *venia legendi* (Habilitation) at the University of Vienna (B. Bader, 2019, Complexities of Identity Research in Archaeology – Interpretational Possibilities by means of a Case Study of a late Middle Kingdom settlement. Kumulative Habilitationsschrift zur Erlangung der Venia Legendi im Fach Ägyptologie) after a public lecture in July 2019.
- Bettina Bader taught at the Pottery Summer School in Naples organised by the University *L'Orientale UNIOR* The Pottery of the Nile Valley: Classification, Documentation and New Methodology of Analysis, 1<sup>st</sup>–12<sup>th</sup> July 2019.

### Team

Natasha Ayers, Bettina Bader, Aaron de Souza, Veronika Dubcová, Lucia Hulková, Nicola Math, Uroš Matić, Vera Müller

Bettina Bader – Natasha Ayers – Aaron de Souza – Veronika Dubcová – Lucia Hulková

**TELL EL-DABA PUBLICATIONS**  
(Coordination: Vera Müller)

### Objectives

The research group is engaged in the preparation of final publications of the long-term excavations at Tell el-Daba in the Eastern Nile Delta directed by Manfred Bietak from its beginning in 1966 until his retirement in 2009. Encompassing the period from the early Middle Kingdom until the middle of the New Kingdom (c. 2000–1300 BC), the site developed from a small planned settlement to a major harbour town with widespread international connections and functioned as the capital during the period of the Hyksos domination (c. 1650–1550 BC), before it was reintegrated into the Egyptian realm at the beginning of the New Kingdom and continued to serve as an important transfer shipment centre. The site thus incorporates a wide range of Egyptian and Near Eastern cultural traits which are reflected in the architecture of domestic houses, palaces, temples and tombs as well as in the diversity of archaeological materials. The publications will therefore not only present these materials in their respective contexts, but will answer a diversity of research questions concerning different spheres of life of the ancient inhabitants which consisted of Egyptians as well as a wide range of foreigners. This research is conducted in close cooperation with the Austrian Archaeological Institute, especially with the head of the Cairo Branch, Irene Forstner-Müller.

In addition, each member of this research group is involved in further scientific activities, such as the processing of materials from a diversity of excavations in Egypt (D. Aston in Deir el-Bersheh, Elephantine/Assuan and the Valley of the Kings at Luxor; E. Czerny at the Karnak temple in Luxor; V. Müller at Abydos; B. Bader with her own research group *Material Culture* in several sites in Egypt and Sudan) and the active excavation in Lebanon (K. Kopetzky on her own new excavation project in Lebanon, which is part of the research group *Mediterranean Economies*). K. Kopetzky was furthermore intensively engaged in the project *A puzzle in 4D* closely interwoven with the *DIGigital Documentation Lab*, in which a large portion of the analogue archive of Tell el-Daba was digitised. V. Müller continued with her new project on the cemetery of Turah financed by the FWF, which is part of the research group *Material Cultures*. E. Czerny is also co-leader of the *Platform History of Archaeology*, in which he is responsible for the history of Egyptology.

### Current research

#### *The late Middle Kingdom settlement in Area A/II*

PI: Bettina Bader

Bettina Bader successfully obtained the *Venia Legendi* at the University of Vienna with the cumulative Habilitation thesis ‘Complexities of Identity Research in Archaeology – Interpretational Possibilities by means of a Case Study of a late Middle Kingdom settlement’, which used the archaeological finds from the late Middle Kingdom area A/II at Tell el-Daba (the first volume of the archaeological report ‘Tell el-Dab’a XXIV. The late Middle Kingdom Settlement of Area A/II. A Holistic Study of Non-élite Inhabitants at Tell el-Dab’a, Volume 1, The Archaeological Report of the Excavations from 1966 to 1969’, is currently in press) to argue for more scrutiny with regard to cultural assignments to ethnic and other identities and criticises the culture-historical paradigm in the interpretation of archaeological finds in Egypt. This part of the ancient settlement in the late Middle Kingdom in particular does not show a deep influence of non-Egyptian culture in most elements of daily life except for a very small percentage of non-Egyptian cooking pottery and a very small percentage of locally-copied ceramic material with non-Egyptian prototypes. The presence of such traits is not surprising in a site connected to Syria-Palestine by a large trade

network. In contrast, the assertion that exclusively non-Egyptian people lived at Tell el-Daba in the late Middle Kingdom is now much more difficult to prove as the known settlement areas at Tell el-Daba are now proven to differ from each other. Whilst on the individual level it is impossible to decide on any numbers of non-Egyptian people present – temporarily or permanently – the graves also contain cultural traits from both cultural backgrounds that make it difficult to make an unequivocal attribution of ethnic identity in the late Middle Kingdom. Thus, the existence of a local identity composed of both the Egyptian and Syro-Palestinian cultural traditions was proposed. The bulk of the architecture and the finds from the settlement, however, follow the Egyptian cultural tradition without any obvious differences to other Egyptian settlements in the Nile Valley, as far as information is available. The lack of sufficient settlement excavations in Egypt for comparison hampers further research considerably.

### *Temple Rituals in Area A/II*

PI: Vera Müller

In continuation of last year, V. Müller's work was dedicated to the re-documentation of diagnostic pottery sherds (rims, bases, handles, decorated fragments – undiagnostic sherds were immediately counted and discarded during the excavations) deriving from the courts of temples which are situated in area A/II of Tell el-Daba – the tell proper still standing today. This area was already excavated from the 1960s until the 1980s under the directorship of Manfred Bietak. Although the finds were already documented during the excavation, it is necessary to redocument the material according to modern standards, as knowledge on the ancient pottery has developed considerably in the last decades. Only on this basis will it be possible to compare the material with that from other areas within Tell el-Daba as well as with contemporary sites.

The temples, built entirely of mud-bricks, were founded during the middle of the 13<sup>th</sup> Dynasty (ph. F to E/3 – c. 1700 BC) and were kept in function during the Hyksos period (ph. D/2 – c. 1540 BC). It is not yet entirely clear at what time they fell out of function and which kinds of inventories were involved in the cults. As no precious objects are preserved, evaluation of the pottery vessels found within the temples and in their forecourts is of prime interest for answering these questions.

In this respect it is very interesting to note that at a first glance there are no differences in the spectrum of vessel types found in settlement contexts and those found in the precincts of the temples. Only to a few pieces can a ritual character be attributed, such as dishes with a high foot, tall stands or vessels with applications. By contrast, the majority of vessels are rather similar to those found in the households. Cups, plates, bowls, jars, cooking pots and ringstands are the usual types of vessels encountered in simple houses as well as in the temple courts. A difference can, however, be found in the frequency of distribution. Thus, it seems that the use of ringstands and jars for presenting liquids occurs more frequently in the temple courts than in households. At the same time, the number of variations of different types seems to be more limited than in the contexts of the settlement. This might suggest that only certain types of vessels were regarded as appropriate for cultic purposes.

### *Necropolis in Area F/I*

PI: Karin Kopetzky

Research on the cemetery of area F/I by K. Kopetzky concentrated on the funerary practices and the offering cult at the tombs from the middle of the 13<sup>th</sup> dynasty to the late Hyksos period. The aim is to differentiate between rituals that happened outside the tombs during the burial ceremony and those that took place after some time at regular or irregular intervals. During the early 13<sup>th</sup> dynasty, the cult outside the tombs was celebrated inside chapels that were constructed over the chamber tombs (Schiestl 2008). After the palace-like building was abandoned, its ruins were used as a burial ground. It seems that the southeast quarters of the city (area A/II) became so densely populated that the people were first forced to move their tombs to areas that were either aban-



doned or still had open spaces available, while their houses only followed in a second step. In F/I clusters of smaller tomb groups were established in such spaces.

With the middle of the 13<sup>th</sup> dynasty a new burial concept was established and the whole of area F/I was restructured. Large houses with a specially attached space reserved for burials were constructed. We see the first appearance of jar burials for neonati and small children; before that children were buried in pits under the houses or in constructed tombs. Changes in the tomb orientation and an increase in the number of burials that took place within one tomb are all signs of an influx of new ethnic elements to Tell el-Daba. The old living quarters in area A/II give way to a purely religious concept with temples surrounded by small walled cemeteries with chapels that very likely served for communal celebrations, similar to the attached enclosures in area F/I. The cult at the tombs now takes place mainly close by in the open air. Frequent patches of ash and nearby charcoaled bones are evidence for burnt offerings, while installations such as ovens and zirs as well as pits filled with pottery and animal bones are indicators for feasting near the tombs.

During the Hyksos period a densification of the settlement took place, in some areas large family crypts were constructed under the houses. The layout of the city changed and, as such, also the function of area F/I, where the tombs had to make way for the construction of a possible temple. In general, hardly any constructed tombs have survived from the latest Hyksos period and all of them were heavily plundered. This is a sign of uncertain times during this crucial period of Egyptian history. However, the number of tombs unearthed from that period so far shows that the bulk of the tombs and cemeteries have been relocated and are possibly to be found outside of the inhabited areas.

#### *Pit System 'L81' in Area F/II*

PI: David Aston

The publication of finds from this extensive and unique assemblage of the Second Intermediate Period including pottery and small finds, some of which have been published in a series of smaller articles, also made considerable progress. Now the remaining material to be published has been inked (1400 A3 pages), although some still requires digitisation. Arrangement into a catalogue and the thorough description of the finds and building of a typology are the next tasks to be undertaken.

Three articles on some finds or specific aspects of this assemblage were written and accepted for publication in 2019.

#### *Pottery Corpus of Ezbet Helmi, Area H/VI*

PI: David Aston

Work on the analysis of the development of pottery beginning in the late Second Intermediate Period to the late 18<sup>th</sup> Dynasty continued. On the basis of the now existing catalogue of 4250 entries, the typology of the pottery corpus has been divided into roughly 350 single types. The development and incidence of each of those types over the 9 phases in Area H/VI was described, parallels in other Egyptian sites researched and listed, as well as local peculiarities and differences pointed out. The manuscript of the final publication of this enormous project is expected to be concluded in 2020.

#### *Building L of Ezbet Helmi, Area H/VI*

PI: Bettina Bader

The study of finds from the large public building of the early New Kingdom continued. This season, from 2<sup>nd</sup> to 27<sup>th</sup> September 2019, particular stress was laid on finds from Loci L6370, 6371, 6372, 6373 and 6374. These loci represent a series of rooms in square H/VI-r/26 pl. 3, namely the levels close to the floor and the fill of the rooms to a certain extent. While already immediately after

the excavation a large number of almost complete vessels could be reconstructed, drawn and photographed, the sherd material was viewed and compared with the more complete material and several joins made (Fig. 55). The scrutiny of cross joins enables insights into the sequence of deposition of the material in the various rooms and how they were spread afterwards. The analysis includes spreading the pottery, checking with neighbouring contexts for joins, reconstructing as much pottery into more complete shapes as possible and then beginning recording the material by drawing, quantification and photographing. The recording includes the distinction of the various fabric groups, division into pottery types of diagnostic fragments, drawing of usual types with quantification of smaller diagnostic fragments. Finally, the less diagnostic body fragments are divided by fabric, surface treatment and whether they belong to open or closed vessels, and are counted as well as weighed. This analysis ensures that the pottery used in the particular room of this building can be used to inform on the use of spaces within the building (majority of storage jars – store room; majority of open vessels used for food consumption – living/eating area; majority of cooking vessels – kitchens; majority of bread moulds – baking area, and so on). While the pottery is processed, more finds such as white plaster fragments and animal bones come to light and are set aside for the respective specialists to analyse.



Fig. 55 Pottery assemblage from building L at Ezbet Helmi (photo: B. Bader, © ÖAI/OAW)

### *A Puzzle in 4D*

#### Digitising the Tell el-Daba archive

PI: Edeltraud Aspöck, Karin Kopetzky

In 2019, during its final year, the long-term storage project of the Tell el-Daba documentation *A Puzzle in 4D* (Österreichische Nationalstiftung für Forschung, Technologie & Entwicklung DH 2014/12) reached a phase where a large portion of the analogue documents stored in the OREA archives has been digitised. This project became necessary when it was noted that the documentation from the beginning of the excavations more than 50 years ago had started to deteriorate and was in danger of being lost for future generations. A similar problem occurred with the born-digital data, some of which were in danger of becoming ‘unreadable’ in the near future. So far nearly 100,000 documents (i.e. field drawings, field and object photos, register books, ...) were scanned and partially already provided with metadata.

During this process, digitisation workflows were created and documented for all types of analogue and digital resources, so that they can also be applied for future digitisation work. These workflows (available via the project homepage) can be used for future projects on TD, but also for projects dealing with resources from other archaeological (long-term) fieldwork.

In 2019 the main assignment was to prepare the digital resources from the OREA network drives for digital long-term archiving in the Tell el-Daba documentation archive of the OeAW repository ARCHE, available at <https://id.acdh.oeaw.ac.at/td-archiv>. The final archive structure was created (Fig. 56) and the ‘4DP’ web application which can be used to search the Tell el-Daba

resources via the project homepage <https://4dpuzzle.orea.oeaw.ac.at/explore/> was prepared.

The TD resources which will be accessible publicly can be browsed, viewed and downloaded via the ‘Puzzle in 4D’ web application (select ‘view public resources’) or ARCHE. This will allow researchers, wherever they are based, to access the materials. The rest of the archive remains closed due to ongoing research projects. Via the ‘4DP’ web application information about the documents with restricted access can be found and researchers can apply for access.

Other public resources on the webpages are the documentation of project workflows and downloads for future research projects on Tell el-Daba (with information on file naming, folder structures, other standards). These workflows are important for data management in future projects, so that the new data is fit for the Tell el-Daba documentation archive in ARCHE.

Furthermore, public access to reconstructions, movies and other project-related content is available at <https://4dpuzzle.orea.oeaw.ac.at/reconstruct/>



Fig. 56 Organisation of data in the digital Tell el-Daba Documentation Archive at ARCHE <https://id.acdh.oeaw.ac.at/td-archiv>

Funding: Österreichische Nationalstiftung für Forschung, Technologie & Entwicklung (DH 2014/12)

Project partners: Tell el-Daba Publications, AAS ACDH, Austrian Archaeological Institute (ÖAI), Ludwig Boltzmann Institute Archaeological Prospection and Virtual Archaeology (LBI ArchPro), PIN, ADS, University of Chicago, Universität Bochum

Resource	Description	est. numbers (@OREA)	Scans/digital objects	4DP scans + metadata
Slides (mainly colour, a few b&w) analogue	Framed slides, 24 × 36mm, 6 × 6cm	45 000	4630	4630
Photo negatives (b&w and colour) analogue	Filmstrips, 24 × 36mm, 6 × 6cm	62 000	48 403	18 710
Find sheets analogue	A6 paper	1 folder	20 folders (with scans from folders in Cairo)	20
Scans of protocols, wall-lists, locus-lists analogue	A4 paper	1 folder	3490 (with scans from folders in Cairo)	3490
Field drawings analogue	A3 graph & tracing paper	3700	3700	3700
Convolute cards (ceramic drawings) analogue	A5 cardboard	1000	495	495
Scans of inventory of wall paintings analogue	A4 paper, b&w		3 pdf files (131 pages)	0
Scans of ceramics- & find-inventory analogue	A4 paper (books and sheets)		13 924	13 924
Find drawings analogue	A4, paper and tracing paper	23 200	11 700	0
Diaries analogue	A5 and A6 notebooks	15 notebooks	0	0

Tab. 1 Overview of analogue resources and the quantity of digitised material from the OREA archive

Resource type	Description/file formats	Quantity	Conversion and Metadata	To do
3D-Models	Reconstructions of tombs and a cellar, walk-through, phase-model, wooden reconstruction / .skp, .unityweb	6 models	complete	
AutoCAD	Maps of TD and surrounding area / .aps/ .dwg	86 files	complete	
Databases	Protocols, locus- and wall-numbers, inventory, images, wall paintings, seals, literature / .mdb, .fp5, .fp7, .fp12	24 DBs	complete	
Geophysics	Magnetometer surveys from different campaigns, TD and surrounding area / .srf, .tif, .pdf, .eps	167 files	complete	
GIS	Prospection and measurement / .geojson, .jpg, .adf, .tif, .cpg, .dbf, .prf, .sbn, .sbx, .shp, .shx	21 files	complete	
Photos	Digital-born photos / .nef, .jpeg, .tiff, .pds, .raw	62 000	complete (processed as collections)	Arche meta-data
Spreadsheets	Locus- and wall-numbers, inventory, wall paintings, stones, bones, botanical remains, C14, employees, billing / .xls, .xlsx, .mdb	222 files	complete	
Videos	Mobile objects, excavation / .avi, .mov, .mp4, .mpg	56 files	complete	

Tab. 2 Overview of born-digital resources prepared for long-term preservation

### Further Activities

D. Aston also worked in Egypt in 2019 (8<sup>th</sup> January to 8<sup>th</sup> February; 14<sup>th</sup> to 30<sup>th</sup> June), in the Valley of the Kings, in Luxor in a cooperation with teams from the University of Basle in Tombs KV 38 and 42; with the Pacific Lutheran University, Tacoma, (WA, USA) in Tombs KV 49, 50, 51, 52; and with the American University in Cairo in KV 63. Intermittently over the past twenty-five years, David Aston has recorded all the pottery from Eighteenth Dynasty tombs in which material still remained (KV 21, 26-28, 30-38, 40, 42, 48-52, 56, 57, 59, 63 and 64) in order to create a finely dateable pottery concordance with good associations to well-dated monuments for the New Kingdom. Such a reference work on ceramic material is currently missing from the Valley of the Kings and the publication of this material will serve as a guide for fine dating the pottery of the New Kingdom. Three pottery corpora on the material from KV 32, 40 and 64 have already been written and will be published in 2020.

A small corpus of well-dated pottery from the 26<sup>th</sup> Dynasty found in Elephantine is currently being analysed by D. Aston in a collaboration with the Swiss Institute in Cairo, which importantly fills a gap in the work done at Elephantine during the late 1990s (Fig. 57). A short season of documentation was carried out from 5<sup>th</sup> to 19<sup>th</sup> March 2019. The material is derived from settlement layers and, thus, allows insights into the use of space in that area and local development of the pottery.

E. Czerny continued work on the editing of the manuscript by Christa Mlinar, 'Die Skarabäen von Tell el-Daba'. He also did editorial work for the following publications: 'Ägypten und Levante 29, 2019' (will



Fig. 57 David Aston and Lucia Hulková at Elephantine, sorting pottery fragments from the 26<sup>th</sup> Dynasty (photo: Patricia Mora Riudavets)

appear in January 2020); Bettina Bader, ‘Tell el-Daba 24’ (will appear 2020); Manuela Lehmann, ‘Tell el-Daba 25’; manuscripts by Carolin Sauvage, Miriam Müller, and Katharina Streit.

From 26<sup>th</sup> February until 12<sup>th</sup> March, he was working with the IFAO mission led by Irmgard Hein (University of Vienna) at Karnak temple (Karnak-north). The aim of the season was the documentation of a large number of small objects kept at the reserves of Karnak temple, such as scarabs, sealings, statuettes, ceramic objects etc.

B. Bader is group leader of the research group *Material Culture in Egypt and Nubia*, into which V. Müller has been integrated since autumn 2018 with her FWF-funded project *Centre or Periphery?*.

K. Kopetzky’s FWF project *Between the Land and Sea: The Chekka region in Lebanon* is part of the research group *Mediterranean Economies* in 2018.

E. Czerny is also co-leader of the research platform *History of Research* who, together with M. Zavadil, organised the two-day workshop *Archäologie und Republik* in January 2019.

### Outreach activities

- 26.–27.3.2019: lecture by V. Müller, ‘Origins of Cultic Activities at the ‘Osiris tomb’ in the beginning of the 3<sup>rd</sup> millennium BC at Umm el-Qaab/Abydos’. International Conference: *Rethinking Osiris*. Florence, Italy.
- 8.–9.4.2019: lecture by V. Müller, ‘Re-excavating re-excavated materials – A case study from the royal necropolis of the Early Dynastic Period at Umm el-Qaab/Abydos’. Conference: *Excavating the Extra-Ordinary. Challenges and merits of working with small finds*. Mainz.
- 14.05.2019: lecture by V. Müller, ‘Archäologie in Ägypten – Koloniales Erbe oder Zukunftsvision?’ Österreichische Orient-Gesellschaft Hammer-Purgstall, Vienna.
- 12.06.2019: lecture by V. Müller, ‘The dog is in the detail – technological necessities versus aesthetical gimmicks’. Workshop: *Documenting material culture, FG ‘Material Culture in Egypt and Nubia’*, OREA Institute. Vienna.
- 12.–14.07.2019: lecture by Annik Wüthrich & Vera Müller (with contributions by David Aston, Bettina Bader, Manfred Bietak, Julia Budka, Silvia Gómez Senovilla, Roman Gundacker, Holger Kockelmann, Karin Kopetzky, Anna-Latifa Mourad, Sylvia Prell, Sarah Vilain), ‘Bericht zu den ägyptologischen Aktivitäten des Instituts für Orientalische und Europäische Archäologie (OREA) der ÖAW’. *Ständige Ägyptologenkonzferenz (SÄK)*, Basel.
- David Aston taught at the Pottery Summer School in Naples organised by the University L’Orientale UNIOR *The Pottery of the Nile Valley: Classification, Documentation and New Methodology of Analysis*, 1–12 July 2019.

### Highlights 2019

- Bettina Bader received her *venia legendi* (Habilitation) at the University of Vienna (B. Bader, 2019, Complexities of Identity Research in Archaeology – Interpretational Possibilities by means of a Case Study of a late Middle Kingdom settlement. Kumulative Habilitationsschrift zur Erlangung der Venia Legendi im Fach Ägyptologie) after a public lecture in July 2019.

### Team

Edeltraud Aspöck, David Aston, Bettina Bader, Karl Burkhart, Ernst Czerny, Stefanie Fragner, Gerald Hiebel, Karin Kopetzky, Vera Müller, Irene Petschko, Julian Posch, Martina Simon

David Aston – Bettina Bader – Ernst Czerny – Karin Kopetzky – Vera Müller



## MEDITERRANEAN ECONOMIES

(Research group Leader: Reinhard Jung)

### Objectives

The research group is combining archaeological case studies with economic theory. The development of the forces of production constitutes a decisive factor in the history of human societies and determines contacts between different societies to a large extent. Therefore, modes of production including property relations as well as exchange processes between different Mediterranean societies are in the focus of the projects conducted by the scholars in this group. A first level of research relates to the establishment of chronological frameworks, in order to define for each site and project its proper historical context. On a second level, the research questions target the economic basis as well as related social structures and political institutions. This includes local and regional perspectives as well as interregional product exchange and mobility. All of the projects cooperate closely with colleagues from a wide array of archaeometric disciplines – e.g. for analyses of different find materials (pottery, metals, biological remains) or for chronological purposes ( $^{14}\text{C}$ ). For arriving at historical conclusions, written sources – if available – are taken into consideration as well. The projects deal with different pre-state and early state societies in Mediterranean and circum-Mediterranean regions ranging from Italy in the west to the Levant in the east and from the central Balkans in the north to Egypt in the south.

In the ‘Zentral-Café’, which is directly affiliated to the research group, researchers from different OREA research groups as well as from the University of Vienna meet in discussion. They come from various disciplines of archaeology and social anthropology and work on chronological periods from the Neolithic up to modern times. Our discussions centre on important texts of economic theory on the one hand and specific case studies from archaeology and anthropology on the other. In our 2019 meetings the ‘Zentral-Café’ focused on subjects such as gendered labour; slavery and corvée labour; the calculation of the value of labour by early palatial and temple economies (the average labour day of an average worker and its similarities to the Marxian concept of socially necessary labour time); differences between palatial and non-palatial workshops. Archaeological and historical case studies ranged from Greece, Egypt and Mesopotamia to Mesoamerica.

### Current research

In the autumn of 2019 we welcomed Michaela Zavadil and Jasmin Huber, who joined our research group when Birgitta Eder, till then leader of the *Mycenaean Aegean* research group, was appointed head of the Athens branch of the OeAI. Both colleagues enrich the *Mediterranean Economies* group with their projects and expertise in Bronze Age Aegean studies.

*Between Land and Sea: The Chekka Region in Lebanon. An Archaeological and Paleo-environmental Approach towards the Potential of an East Mediterranean Coastal Region*

PI: Karin Kopetzky

In 2019 the measurements from the LiDAR scan taken by the Department for Physical Geography of the Catholic University of Eichstätt-Ingolstadt under the directorship of PD Dr. Florian Haas in November 2018 were processed at the TU Vienna and at Eichstätt. In total an area of nearly 300km<sup>2</sup> was scanned via aerial LiDAR. Due to a problem with shutdowns of the GPS in central parts of the scanned area, it took nearly a year to calculate and match the individual scans from the various flights. The generated *Digital Terrain Model* (DTM) of these scans will be the basis for future surveys in the region. To get an idea of where to start with our research, a *least-cost-path*



Fig. 58 Aerial view of Tell Mirhan, Lebanon (photo: K. Kopetzky, © OREA)

model was calculated covering the landscape from Mount Lebanon to the Bay of Chekka. This model was then combined with an iMound algorithm based on four given parameters (visibility, water source, average size and shape, potential hinterland) to recognise possible settlement locations. The results of this study were presented at the 24<sup>th</sup> *Conference on Cultural Heritage and New Technologies* (CHNT) in Vienna (see highlights).

The excavations on Tell Mirhan were continued under the directorship of Karin Kopetzky (OREA) and Hermann Genz from the Department for History and Archaeology at the American University in Beirut and lasted from 10<sup>th</sup> June to 13<sup>th</sup> July 2019. Work concentrated on an Iron Age building in Area A/I and on two test trenches at the foot of the preserved tell to clarify the extension of the site. We also continued our investigation in the centre of the site, where we hoped to reach the extension of the MBA fortification wall clearly visible in the large E-W section cutting through the tell (Fig. 58).

At the western edge of the preserved tell, a possible IA city wall is preserved, running parallel to the seashore. A large IA II period building of uncertain dimensions is probably associated with this enclosure. So far, two phases of what seems to be a planned orthogonal edifice were excavated. The material retrieved from its rooms indicates a preliminary date of this building to the 8<sup>th</sup> century BCE. The finds include local pottery and imports from Greece, Cyprus and Egypt as well as a large triton shell (*charonia variegata*) and a fragment of a Phoenician terracotta mask.

Funding: FWF 30581

### *The Collapse of Bronze Age Societies in the Eastern Mediterranean: Sea Peoples in Cyprus?*

PI: Peter M. Fischer, University of Gothenburg, Sweden; co-researcher: Teresa Bürge

In the framework of the project, the tenth season of excavations at the LBA city of Hala Sultan Tekke was carried out from April to June 2019. City Quarter 1, with domestic and industrial structures, was further excavated, and at least two new phases of occupation came to light, the oldest of which can preliminarily be dated to the LC IB (c. 15<sup>th</sup> century BCE).

Excavations also continued in City Quarter 4. A test trench was opened up 150m to the SE, in an area where the magnetometer survey carried out in 2017 had indicated a possible city wall

with moat. A c. 2.5m-wide man-made construction consisting of small stones intermingled with larger blocks of stones was found running north-south. Large amounts of slag, ash and possible remains of a furnace point to a copper workshop at the inner side, protected by the possible city wall.

The already partly excavated extramural Tomb RR was reopened and additional burials came to light. The total number of individuals now amounts to 37. The pottery grave goods include Cypriot wares and Mycenaean imports of LC IIB–C (14<sup>th</sup>–13<sup>th</sup> century BCE) date as well as a unique Minoan female figurine (most likely LM IIIA in date).

The 2019 season of excavation yielded numerous <sup>14</sup>C samples, which are being analysed by Eva Maria Wild (VERA Laboratory Vienna). Since the start of the project in 2016, a total of more than 300 ceramic vessels from Hala Sultan Tekke have been sampled for petrographic studies and FTIR analyses (carried out by Paula Waiman Barak, University of Haifa) and NAA analyses (processed by Johannes Sterba, TU Vienna).

Funding: The Swedish Research Council (Vetenskapsrådet)

*Cooking in Times of Transformation: A Diachronic Study of Organic Residues in Cooking Pots from Hala Sultan Tekke, Cyprus*

PI: Teresa Bürge

The aim of the project is to trace changes in food preparation and consumption on Cyprus at the end of the LBA (13<sup>th</sup>–12<sup>th</sup> century BCE). Organic residue analyses of cooking vessels indicating their original contents will contribute to a deeper understanding of changes in dietary patterns at Hala Sultan Tekke, which may be connected to the known upheavals around 1200 BCE.

Around 1200 BCE handmade cooking pots of Late Cypriot tradition were replaced by new types, which include wheel-made and flat-bottomed pots of Aegean type and wheel-made bi-conical vessels of Levantine type. In the autumn of 2019, specimens of all three categories were sampled for analyses, which will be carried out by Julie Dunne (School of Chemistry, University of Bristol, UK). The chemical analyses are supplemented by the ongoing archaeozoological and archaeobotanical studies.

Funding: Dr. Anton Oelzelt-Newin'sche Stiftung of the OeAW

*Studies on the new Mycenaean Palace of Ayios Vasileios in Laconia*

PI: Reinhard Jung

In 2019 the research project *Studies on the new Mycenaean Palace of Ayios Vasileios in Laconia* entered its final phase. The year was dedicated to the preparation of several archaeometric and archaeological publications based on work conducted in the previous years. The first objective of this research project, the establishment of a chronological framework for the newly identified Mycenaean palace in the southeastern Peloponnese is under preparation and will be published as a monograph by E. Kardamaki. The second objective has been to characterise the local pottery tradition by means of technological and provenance analyses within a broader chronological framework covering almost the entire LBA occupation of the site (X-ray analysis, NAA, thin section petrography). A third goal of our project was the investigation of consumption and culinary practices at the palace. To this end, organic residue analyses were conducted on a set of 90 sherds (C. Debono Spiteri, University of Tübingen). The results of the technological study by means of X-ray analysis (M. Choleva, Fitch Laboratory, British School at Athens) revealed shared traditions as well as differences between the pottery manufacturing practices in Mycenaean Laconia and the Argolid (Fig. 59).

Preliminary results of the project were presented at several international conferences and workshops.

Funding: FWF 28023

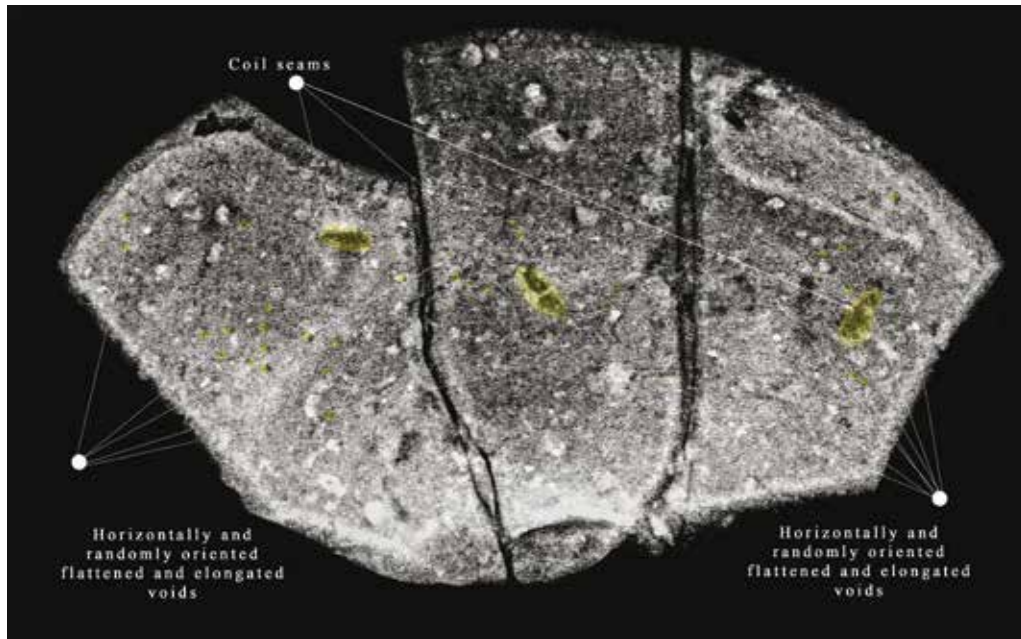


Fig. 59 X-Ray sample of a LH IIIA conical cup from Ayios Vasileios, Laconia (analysis and © M. Choleva)

### *Kontopigado – A Mycenaean Industrial Area South of Athens*

PI: Reinhard Jung

In July 2019 the project *Kontopigado – A Mycenaean Industrial Area South of Athens* started as an integrated study of the largest workshop complex discovered so far in the Late Bronze Age Aegean. Our primary focus is on the exact dating of the construction, use and abandonment of this workshop area and understanding of its function within a wider geographic and cultural context. The typological and archaeometric analysis of the pottery, small finds and raw materials, as well as the investigation of the architectural remains, forms the basis of this study that we are conducting with our cooperation partner K. Kaza-Papageorgiou, who excavated the site during the construction of the Athenian Underground.

In August and September, E. Kardamaki worked in the storerooms of Piraeus. She started recording the pottery dumped into the 4m-deep Well 7, which is located 30m to the west of the workshop installation. The pottery from the lowest stratum of 1.85m thickness was inspected. According to this preliminary study it dates to late LH IIIB (late 13<sup>th</sup> century BCE). A total of 1700 feature sherds (rims, bases, legs, and pattern painted sherds) was counted. This material comprises pottery of various functions, i.e. drinking, cooking, storing and specialised functions of an as yet unknown nature. The largest part comes from fragmented material, but there are several well-preserved or fully preserved pots. Of particular interest is the high frequency of basins and bathtubs of various sizes in the material (Fig. 60). For settlement contexts this is an unusual trait.

R. Jung and K. Kaza-Papageorgiou were occupied with the planning and organisation of a geophysical prospection campaign to be conducted in 2020 in the area around the installation. One paper by E. Kardamaki about the workshop installation and a second paper by K. Kaza-Papageorgiou,



Fig. 60 Mycenaean bathtub from Well 7, Kontopigado, Attica (photo and © K. Kaza-Papageorgiou)

V. Hachtmann and E. Kardamaki about the Early Bronze Age occupation of the site were submitted for publication.

Funding: FWF 31938

*Middle Bronze Age pottery from the acropolis of Pheneos/Korinthia*

PI: Michaela Zavadil

Michaela Zavadil completed her study of the Middle Helladic and other prehistoric pottery classes to be published by the Austrian team. A new group of sherds was sampled for petrographic and chemical analyses (NAA). It concerns three fragments of Fine Grey Burnished pottery, two of which could be imports from Central Greece due to their macroscopic fabric. A total of 150 sherds was examined through petrographic analyses (Clare Burke, OREA), while 43 fragments will be investigated by NAA (Johannes Sterba, Vienna University of Technology, and Hans Mommsen, University of Bonn).

In spring 2019 Clare Burke worked at N.C.S.R 'Demokritos' in Athens undertaking SEM-EDS of 14 samples. The aim was to examine the firing conditions of the pottery and obtain semi-quantitative information on the elemental composition of slips and paints. The SEM work confirmed that a wide variety of firing temperature ranges, from below 750° to above 1000°C were used to fire local pottery, and that in some examples there is evidence of overfiring consistent with poorly controlled firing conditions.

Georgia Kordatzaki (Athens) and Michaela Zavadil completed their study of macroscopically detectable traces of manufacture on the MH pottery. The study attested various hand-building techniques. It seems that at Archaia Pheneos particular forming techniques are associated with specific shapes in various wares. This fits well with the petrographic research carried out by Clare Burke, which shows that a range of wares was produced from the same raw materials locally available in the wider area. Cynthia Debono Spiteri (University of Tübingen) obtained preliminary results in her organic residue analysis of a small EM III/MH I storage container.

C. Burke, G. Kordatzaki and M. Zavadil presented their results at several national and international conferences and evening lectures.

Funding: University of Graz, INSTAP, OREA.

*Bronze Age Gold Road of the Balkans – Ada Tepe Mining*

PI: Barbara Horejs

Within the framework of the project, Laura Burkhardt was able to complete writing her doctoral thesis on 'Die Funde der Goldbergwerkssiedlung vom Ada Tepe. Chronologie, Funktion und kulturelle Beziehungen in der späten Bronzezeit'. It marks the completion of the analysis of the Northeastern Settlement on the Ada Tepe hill. Today, this is the only entirely evaluated settlement assemblage of the Bronze Age in the Rhodope Mountains and, thanks to the absolutely dated pottery typology, it will provide a chronological anchor for future research in the region. Despite the poor and very fragmented state of pottery preservation, it was possible to arrive at statistically significant results about the vessel spectrum using the method of pottery recording developed by B. Horejs. The spatial contextualisation of these data allowed a spatial and functional analysis of the settlement. This led to an identification of different activity zones within the settlement and to the reconstruction of the everyday practices of the miners. Based on the architectural structures and the find spectrum of the settlement, conclusions about the group of inhabitants and their social organisation were drawn.

By means of a supra-regional contextualisation of the pottery traditions, L. Burkhardt was able to reconstruct different and partly entangled interaction zones that extended between the eastern and western Rhodopes as well as the Thracian plain and the north Aegean region during the LBA. Those exchange relationships were probably driven by comparable everyday practices, consumer habits and craftsmanship, or even mining and metallurgical activities.

Funding: FWF 28451



*Dietary and Mobility Reconstruction Using Stable Isotope Analyses for Mycenaean Greece:  
the Case of Portes*

PhD project by Annalisa Rumolo (supervisor R. Jung)

This PhD project entered its third year and final phase. It aims at a general re-evaluation of data related to nutrition and mobility by means of archaeological and archaeometric approaches for Mycenaean Greece. New primary archaeometric results of multi-isotope analyses (C, N and Sr) undertaken on skeletal materials from the cemeteries of Portes in Achaea and Mageiras in Elis (NW Peloponnese) enrich the database with well-stratified new contexts. The newly analysed burials can be divided into three groups, (1) without grave goods, (2) with pottery grave goods (one or more items), and (3) with rich grave goods including jewellery, prestige items and/or weapons.

In 2019, the stable isotope analyses scheduled for all the skeletal materials were concluded, as well as the collection of archaeological and archaeometric data from published Mycenaean contexts.

While on the one hand, the diet of individuals at Mageiras was based on food sources similar to those available at Portes and at other coeval Mycenaean sites, the Sr analyses have revealed the presence of a possibly non-local individual among the analysed samples. Some final targeted water and plant samplings in southern Greece will extend the Sr geographic map and help to identify the origin of this individual.

Funding: Gerda Henkel Stiftung, doctoral scholarship for A. Rumolo

*The Late Bronze Age Pottery of Triphylia (Peloponnese). Production, Distribution and  
Consumption in a Micro Region*

PhD project by Jasmin Huber

As part of the project *Kakovatos and Triphylia in the 2<sup>nd</sup> Millennium BC* (PI: Birgitta Eder, OeAI), this thesis is the first systematic discussion of Mycenaean pottery from Triphylian settlements and offers insights into the settlement patterns and exchange relations on regional and supra-regional levels. The studied ceramics come from four different sites – Kakovatos, Kleidi-Samikon, Epitalion-Aghiorghitika and Aghios Dimitrios. Comparison of the Triphylian material with stratified deposits of other regions has shown that all mentioned sites consumed Mycenaean pottery as early as LH IIA.

In 2019 the work focused mainly on the LH IIIA–B material, providing insight into different aspects of the Late Bronze Age pottery consumption in Triphylia.

For LH II, the distribution of shared ceramic features and imports suggested intensive relations with the Southern Peloponnese (Messenia, Laconia) and regions further north (northern Peloponnese, central Greece). Minoan products and other imports seem to be restricted to LH II, while striking Minoan characteristics in the local pottery indicate a distinct but more indirect Cretan influence throughout the Palatial period. The more or less distinct zones, which can be distinguished by a set of specific pottery regionalisms in LH II, seem to dissolve in favour of far-reaching networks in the following LH III period.

Funding: FWF 27568 (PI: Birgitta Eder)

In April and November 2019 R. Jung continued his cooperation with the Belgian-Greek excavation team of the Cypriot settlement of *Pyla Kokkinokremos* (direction: J. Bretschneider, J. Driesen, A. Kanta) to coordinate the pottery study. He is also supervising the PhD project of Ioanna Kostopoulou (holding a PhD scholarship by the Gerda Henkel Stiftung), who will treat those ceramic finds in her co-tutela thesis at the Universities of Tübingen and Gent. In June–July, he continued to coordinate the Mycenaean pottery study at the *Sidon-College Site* excavations in southern Lebanon (direction: J. Doumet-Serhal).

Birgitta Eder and Michaela Zavadil submitted for publication the proceedings of the international conference on *(Social) Place and Space in Early Mycenaean Greece*, that was held at the Austrian

Archaeological Institute in Athens in October 2016. The substantial volume contains 28 papers. Reinhard Jung submitted the first volume with 26 articles of the final publication of the Punta di Zambrone excavations. Both volumes will be part of the publications of the OREA Institute.

### Outreach Activities 2019

- In cooperation with the Lebanese Directorate General of Antiquities, an *Open Day* was organised for the local population at the site of Tell Mirhan on 4<sup>th</sup> July 2019.
- H. Genz and K. Kopetzky participated in the ‘Tell Mirhan’ exhibition at the castle of Tripolis, organised by the Department of General Antiquities/Lebanon in spring 2019.

### Highlights 2019

- In December 2019 Teresa Bürge was awarded an APART-GSK fellowship for her project *Ritual or Refuse? Depositional Practices in Wells and Shafts: Late Bronze Age Cyprus as a Case Study*. The project will start in March 2020.
- Best Student Paper Award 2019 at CHNT 24, 4<sup>th</sup>–6<sup>th</sup> November 2019 in Vienna for: J. Rom – F. Haas – M. Stark – F. Dremel – H. Genz – K. Kopetzky, ‘Between Land and Sea: A LiDAR field survey to detect Bronze Age sites in the Chekka region/Lebanon’.
- Laura Burkhardt was appointed a foreign correspondent of the journal *Archäologie in Deutschland*.

### Team

Teresa Bürge, Laura Burkhardt, Barbara Horejs, Jasmin Huber, Eleftheria Kardamaki, Karin Kopetzky, Annalisa Rumolo, Michaela Zavadil

Reinhard Jung – Teresa Bürge – Laura Burkhardt – Jasmin Huber – Eleftheria Kardamaki – Karin Kopetzky – Annalisa Rumolo – Michaela Zavadil

## URNFIELD CULTURE NETWORKS

(Research group leader: Mario Gavranović)

### Objectives

The research group *Urnfield Culture Networks* is focused on the long-term investigation of the Bronze Age in central and southeast Europe with a special emphasis on the emergence and expansion of the Urnfield Culture and mutual interactions with neighbouring, contemporary cultural phenomena.

Special attention is given to burial customs, socio-economic phenomena, as well as religion and ritual and their impact on the cultural and social developments. Selected research questions include resources, technologies and power, cremation burials and cultural transmission in a diachronic perspective as well as social identities and mobility as expressed through cultural and biological parameters.

The team members are involved in various regional studies on economic and religious aspects of the Bronze Age with a focus in Austria and in the Balkans. Essential for the successful cooperation and implementation of research goals and objectives is the integration of local research and specialists. The research group strongly supports medium- and long-term inclusion of young talent at the doctoral and early post-doc level.

The utilisation and evaluation of large data sets from excavations that have been conducted over many years in Austrian sites, such as the settlements of Thunau am Kamp, Stillfried an der March, as well as the cemeteries Franzhausen-Kokoron and Inzersdorf ob der Traisen are of central importance for the research in Austria as one of the core zones of Urnfield culture. The investigations in southeast Europe (Croatia, Bosnia-Herzegovina, Serbia and North Macedonia) represent another crucial and complementary part of the research programme. Open-access digital initiatives, interactive publications, international workshops and conferences organised by the members of the UCN in Austria and abroad round out the activities of the team.

### Current research

#### *South Connections: Spreading of the Urnfield Phenomena and Mobility in the Bronze Age*

Team: Mario Gavranović, Michaela Lochner; Cooperation partners: Snježana Karavanić and Daria Ložnjak Dizdar (Institute for Archaeology, Zagreb, Croatia)

This research aims to explore specific interregional connections between the regions of Lower Austria and northern Croatia during the older stage of the Urnfield Culture (Baierdorf-Velatices complex) with a special emphasis on chronology, burial customs and changes in the material culture. The focus of the bilateral project will be on the comparison of the advanced typological sequence of the material culture in correlation with absolute dates and other analytic results (archaeometallurgy)

First activities in 2019 included the visit of our Croatian partners in May and sampling of organic remains from graves of the Baierdorf necropolis. Thanks to the cooperation with Museum Horn (Höbarth- and Madermuseum) in Lower Austria, all available remains from cremation graves in Baierdorf (bones, charcoal) could be used for dating purposes. First results are expected in early 2020. In the meantime, our Croatian partner in the project sampled cremation remains from several graves from northern Croatia (Voćin and Migalovci) with a very similar ceramic repertoire. The results of all radiocarbon analyses from Austria and Croatia, together with thorough revision of archaeological data, will be published in a joint paper in 2020.

In November 2019, the team members organised a concluding workshop in Zagreb (Institute of Archaeology) with participation by experts from Croatia, Slovenia and Austria. The main outcome of the workshop, and the project in general, is the determination to increase the amount of

analytic data in order better to conceive mutual relationships between Urnfield groups between Lower Austria and northern Croatia. On that occasion, several specific bronze objects from settlement Kalnik as one of the key sites of the Early Urnfield period in northern Croatia were sampled with the aim of conducting archaeometallurgical analyses that will, together with other achieved results, serve as a basis for future cooperation projects.

Funding: Austrian Agency for International Cooperation in Education, Science and Research (OEAD), Scientific and Technological Cooperation Programme (WTZ), Federal Ministry of Science, Research and Economy (1.1 2018 – 31.12. 2019).

### *Securing resources, power and cult in Stillfried?*

PI: Michaela Lochner, Team: Monika Griebel (Key Researcher), Benedikt Biederer

The project is devoted to the question of whether the central site of Stillfried had the function of a supra-regional grain storage space which was accompanied by elaborate rituals. The remarkably high density of cone-shaped (storage) pits with similar filling patterns gave rise to these considerations; in particular, the depositions of wild and domesticated animals in these pits are exceptional.

After the accomplishment of archaeological evaluation and all analyses (radiocarbon dates, archaeozoology, archaeobotany, strontium isotope analyses), the team members submitted the manuscript of a final comprehensive monograph in December 2019. The study on storage pits from Stillfried will be published within the renowned series 'Mitteilungen der Prähistorischen Kommission' of the Austrian Academy of Sciences. In April 2019, B.



Fig. 61 Ring-shaped bread-like objects from Stillfried (photo: B. Biederer/OREA)

Biederer presented some aspects of the research project at the annual conference of *AG Bronzezeit* in Würzburg, Germany. Furthermore, in cooperation with A. Heiss (University of Natural Resources and Life Sciences, Vienna), M. Griebel and B. Biederer published the results of analyses on black, ring-shaped, bread-like objects (Fig. 61) from a Late Bronze Age pit (No. 5400) in the journal 'PLOS ONE'. The enormous media feedback after the publication of the article contributed vastly to the publicity of the research project and visibility of the investigations in Stillfried.

Within his PhD with the title 'Challenge of storing food. Essential strategies in prehistoric Europe from the Neolithic to the Iron Age', B. Biederer started to investigate general patterns of food storage in central Europe in a diachronic perspective. Based on results from Stillfried, the doctoral thesis will elucidate the socio-economic background and different strategies of food storage. The PhD also includes an experimental part with three storage pits, set up in a loess soil (in summer 2018) in Lower Austria. In May 2019, the pits were opened and the evaluation of the results is still ongoing. The first observations point to extremely good preservation in a pit with a straw layer. In October 2019, B. Biederer already published preliminary results of the experimental project in the journal 'Experimentelle Archäologie in Europa'.

Funding: FWF stand-alone project P 28005 (1.11.2015–31.03.2019)

### *Landscape and communication network in the Late Urnfield Culture in the Sava Valley*

Team: Daria Ložnjak-Dizdar, Mario Gavranović

The project focuses on the site of Dolina na Sava in northern Croatia, situated on the left bank of the River Sava, across from the famous site Donja Dolina in Bosnia-Herzegovina. The results of the excavations, which have been going on since 2009 and since 2015 in cooperation with the UCN research group, have opened new perspectives for the better assessment of local, regional,

and wider socio-economic and communication contexts in the Late Bronze Age. Thanks to the support of the JESH (Joint Excellence in Science and Humanities) programme of the Austrian Academy of Sciences, D. Ložnjak Dizdar from the Institute of Archaeology in Zagreb, principal investigator of the project, was able to spend two months (January–March 2019) at the OREA Institute. The team members worked on the finalisation of the publication regarding joint investigations in Dolina and on the development of future publication and research strategies. M. Gavranović and D. Ložnjak Dizdar presented some aspects of the achieved results in a public lecture at the OREA Institute (27.02.2019).

### *Visualising the unknown Balkans*

Team: Barbara Horejs, Mario Gavranović, Irene Petschko, Nicole Mittermair, Michael Konrad

This project represents a joint action by the research groups *Prehistoric Phenomena* and *Urnfield Culture Networks*. Based on the five case studies of the OREA Institute in the Balkans, the project aims to communicate the results of the archaeological research with understandable and accessible visual concepts. The *UCN* research group is involved in three case study areas, including eastern Serbia (Bronze Age sites with evidence of metallurgical activities), central Bosnia (Bronze Age hilltop settlements) and northeastern Bosnia (large tumuli in lowlands).

The activities in 2019 started with the field investigation near the city of Zenica in central Bosnia in August 2018. The thus far only partially investigated sites are located on the hills and peaks around the basin of the Bosna River. In terms of the landscape and possible communication along the river, this micro-region represents a perfect example of a Bronze and Iron Age settlement area in the Dinaric Alps. The first aim of the research was to achieve a diachronic overview of the sites with regard to settlement patterns and burial activities. In cooperation with local partners, the excavations were first conducted in the area of Gradišće with several stone mounds indicating Bronze Age burial places. The two excavated tumuli revealed a remarkable grave architecture with semi-circular chambers built in the dry wall technique. (Fig. 62).

The finds of Bronze Age pottery and pieces of human skeleton confirmed the assumption that these mounds represent prehistoric monuments connected with burial practices. The second step of excavations in Zenica focused on the Ravna plateau, situated around 1km from the tumuli.



Fig. 62 Excavation of a prehistoric burial mound in Gradišće, Bosnia-Herzegovina (photo: OREA)



Geophysical prospection, airborne scanning and surveys conducted in the last year suggested the existence of a prehistoric hillfort. The excavations in 2019 yielded a number of finds (pottery, stone tools) with evidence of occupation in the Early Bronze Age. This result is particularly important since Ravna represents a first Early Bronze Age site in the micro-region. Finally, the excavation campaign also included the Kopilo hillfort on the opposite side of the Bosna, previously attested as a Late Bronze and Early Iron Age settlement. In 10 days of excavation, the members of the research team uncovered structures and layers from the Iron Age with first finds demonstrating thus far unknown occupation in the La Tène period (a fibula and wheel pottery) or in the time between the 4<sup>th</sup> and the 1<sup>st</sup> centuries BC. The deeper Early Iron Age layers (6<sup>th</sup>–5<sup>th</sup> century BC) were characterised by a massive amount of finds including pottery, loom weights, iron objects, stone tools and a unique find of an anthropomorphic clay figurine representing a male person with a mask, a first of this kind in the wider region of central Bosnia. The first goal for 2020 is the publishing of results and accomplishing of visual presentation. Based on airborne scanning from 2018 with well-visible prehistoric hillforts and burial mounds in the area of Gradišće and the first results of excavation, the visual reconstruction of sites will offer a new insight into the prehistoric occupation of this particular area. The goals and first results of the research activity in the Zenica Basin were presented at the conference of the European Association of Archaeologists (EAA) in Bern, Switzerland (September 2019).

In October 2019, the team members continued the field activity in Eastern Serbia with an excavation of the Hajdučka česma urn necropolis near the city of Bor. First investigations on this burial site took place in 2018 with geophysical prospection and smaller excavations in which four urn graves in circular stone constructions came to light. In 2019 ten further cremation graves were discovered, some of them also containing rare grave goods (spindle whorls, small lamps, cups and beakers and one bronze sewing needle). A new feature in 2019 was the circular construction with three placed urns and a number of small vessels found within and on the fringe of stone monuments. The first anthropological analyses carried out in cooperation with the research group *Prehistoric Identities* showed a surprisingly young age (subadults, infants and young adults with newborn) of individuals from graves excavated in the last year. The obtained radiocarbon dates both from cremation remains and charcoal indicated a much older age than previously assumed. Necropolises like Hajdučka česma or neighbouring Trnjane were thus far conceived of as Middle and Late Bronze Age (15<sup>th</sup>–12<sup>th</sup> century BC) sites. The new absolute dates, gained within the current project, clearly demonstrate the occupation of the burial sites already in the Early Bronze Age, with most dates pointing to a time between the 19<sup>th</sup> and 17<sup>th</sup> centuries BC. Bearing in mind that urn necropolises in eastern Serbia were previously regarded in the context of a much younger Urnfield period, the new results will certainly cast into question the existing models and narratives of the 2<sup>nd</sup> millennium BC in the central Balkans. The first results of investigation in Hajdučka česma were presented in November 2019 at the international conference *Prehistoric communities along the Danube* in Osijek, Croatia.

The last part of the excavation in October 2019 involved the settlement site Čoka Njica, situated on an unfortified plateau, about 2km to the east of Hajdučka česma. The geophysical prospection and survey from last year with a number of finds including Bronze Age pottery and copper slags indicated the existence of a settlement with copper smelting activities. In order to verify this assumption, excavations in 2019 focused on several geophysical anomalies, located in the upper part of the plateau (Fig. 63). The revealed structures included a thus far unique oven with clear traces of copper smelting (copper drops, slags) accompanied by a great number of pottery finds and stone tools. Judging by diagnostic pottery, the copper smelting installation in Čoka Njica belongs to the same period (Early and start of the Middle Bronze Age or 19<sup>th</sup>–17<sup>th</sup> centuries BC) as the nearby necropolises in Hajdučka česma and the settlement and necropolis at Trnjane. The discovery of the copper smelting installation in Čoka Njica represents final evidence about the involvement of Bronze Age populations in eastern Serbia in copper extraction. The abundance of raw material (copper ore) in the region of Bor, which is still being exploited in the present day, also suggests intensive prehistoric mining, although tangible evidence (shafts) is not attested. The traces of ancient mining have most probably been destroyed by recent extensive exploitation.



Fig. 63 View of the settlement plateau Čoka Njica with excavation trenches (photo: OREA)

The accomplished results of field actions in Bosnia and Herzegovina and Serbia provide a good starting point for digital reconstruction of the different prehistoric landscapes in the Balkans. Furthermore, the outcome of this project offers a possibility for future, more specific research on different topics (settlements, burials, metallurgy).

Funding: Innovation Fund of the Austrian Academy of Sciences, 1.3.2018 – 28.2.2020.

#### *New insights in Bronze Age metal producing societies*

PI: Mario Gavranović; Key researcher: Mathias Mehofer (Vienna Institute for Archaeological Science)

The new FWF-supported project is investigating metal production and metal supply and exchange networks in the Bronze Age societies in Balkans as an intermediary region between central Europe (Urnfield Culture) and the Mediterranean world. By using various chemical-analytical and archaeological methods, the project is developing a new idea about the importance of the local metallurgy and ore resources. The region of eastern Serbia in particular, as an area with large copper ore deposits, exploited until modern times, will be in the focus. Recent discoveries of copper smelting slags (block slags, plate slags) point to a significant increase of metallurgical activities during the Bronze Age. To explore how and to what extent metallurgical activities influenced inner social structures in terms of settlement organisation, burial rites and exchange relationships with the surrounding regions, is one of the central cultural-historical research questions. In order to historically contextualise the developments in eastern Serbia, the project also pays attention to the neighbouring region of central Bosnia with comparable resources (ores) and a similar landscape, yet with important differences in social organisation, as shown by the settlement pattern (hillforts vs. unfortified sites) as well as diverse burial rites (inhumation vs. cremation).

The project is also implementing a large series of archaeometric analyses of ores, slags, ingots and metal objects from the region under study. During the preparation stage of the project, the team members obtained over 500 samples and established a long-term cooperation with all relevant archaeological museums in the region, including national museums in Belgrade and Sarajevo and a number of regional museums in Bosnia-Herzegovina, Croatia, Serbia and North Macedonia. Furthermore, M. Gavranović and M. Mehofer inspected the finds from the Balkan countries that are stored at the Natural History Museum in Vienna and sampled 95 relevant objects.

The first analyses of the finds from the sites with metallurgical activities in eastern Serbia such as Trnjane and Ružana clearly confirmed Bronze Age copper smelting activities with different

slag types pointing to developed technology. The first radiocarbon dates, however, demonstrated that copper ore smelting activities started as early as the 20<sup>th</sup> century BC and continued throughout the following centuries, which is significantly earlier than previously estimated. The ongoing analyses are dedicated to the question of the distribution patterns of copper produced in eastern Serbia. The results will help to reconstruct networks and exchange strategies between Bronze Age groups in southeast and central Europe. As an additional step, field studies conducted within the project include investigation of the newly discovered sites Hajdučka česma (contemporary urn cemetery) and Čoka Njica (settlement with copper smelting activity). The fieldwork in 2019 yielded new slag finds as well as pottery finds, stone artefacts and animal bones.

The successful application by M. Gavranović to the Dr. Anton Oelzelt-Newin'schen Foundation in November 2018 has enabled the first larger series of analyses (trace elements, lead isotope) on samples obtained from the Balkans. The first evaluation of the results during 2019 pointed to an existence of different regional metallurgical networks within the Balkans and raw material supply connections reaching between the Alps and Cyprus. The outcome of first analyses was the main subject of two talks presented at the international conference *Bronze Age metallurgy. Production-Consumption-Exchange* held in May 2019 in Vienna.

Funding: FWF stand-alone project (P 32095) 01.10.2019 – 30.09.2023

### *Macedonian Metals*

Team Mario Gavranović, Aleksandra Papazovska (Archaeological Museum Skopje), Mathias Mehofer (Vienna Institute for Archaeological Science)

Based on the long-term cooperation agreement between the OREA Institute and the Archaeological Museum in Skopje signed in 2018, this project represents the first joint action of the two institutions. The main objective is to investigate the technological and metallurgical background of Bronze and Early Iron Age metal finds from the Republic of North Macedonia by combining archaeological and analytical methods. Furthermore, the analytical results (chemical and isotopic signature) will allow comparison with data sets from the surrounding regions in southeast and central Europe.

In 2018, the team members sampled 65 metal artefacts from museums in Skopje, Veles and Gevgelija. Within the framework of the research supported by the Dr. Anton Oelzelt-Newin'schen Foundation of the Austrian Academy of Sciences, first analyses were accomplished in late 2018. The chemical composition (trace elements and lead isotope ratio) of the objects from the Late Bronze Age (15<sup>th</sup>–14<sup>th</sup> centuries BC) pointed clearly to the foreign (Aegean) technological background of certain items (rapier of Mycenaean type from Tetovo) and use of copper from Cyprus in their production. Four socketed axes from Manastir (13<sup>th</sup> century BC) showed a chemical composition suggesting their provenance from the Morava Valley up to the north. The sampling set also included a variety of so-called 'Macedonian bronzes' (pendants, belt discs) from female graves in necropolises in Milci, Lisičin Dol, Bučinci, Dedeli and Mali Dol. First results of the project were presented at the international symposium *Mining and Metallurgy* held in September 2019 in Štip, Northern Macedonia. Some of the samples and the results achieved in the first step of the project will also be integrated in a FWF stand-alone project *New insight in Bronze Age metal producing societies*.

### *The Early Urnfield Culture cemetery of Inzersdorf ob der Traisen, Lower Austria*

Team: Michaela Lochner, Mario Gavranović, Katharina Rebay-Salisbury, Michaela Fritzl

Despite grave robbing in antiquity, the 273 urn burials from and scattered cremations of the cemetery were found exceptionally well equipped with grave goods. In joint actions by the research groups *Urnfield Culture Networks* and *Prehistoric Identities*, several young scientists are carrying out the analysis and interpretation of the cemetery.

In 2019, N. Mittermair, a master's student associated with the *UCN* group, finished her master's paper on metallographic analyses of selected bronze finds (35 items) from graves (knives, razors and pins). The analyses were conducted at the archaeometallurgical laboratory of the Vienna Institute for

Archaeological Science (VIAS) under the guidance of Mathias Mehofer. The results demonstrated use of different craft steps in the production, traces of reworking and repair and casting adjustments.

The comprehensive analysis of the cemetery at Inzersdorf, with a focus on possible non-local elements, both in material culture and biological parameters (isotopes), is the focus of the PhD Thesis of Michaela Fritzl (research group *Prehistoric Identities*). With the aim of significantly increasing the amount of isotope data from Inzersdorf, the research group *Prehistoric Identities* applied for a FWF stand-alone project.

*The Late Urnfield Culture cemetery of Franzhausen-Kokoron, Lower Austria*

Team: Michaela Lochner, Mario Gavranović

The extensive analysis and interpretation of the 403 cremation graves with approximately 1600 individual objects includes a catalogue and photographic material (overview plan, photographs and drawings of finds and contexts), which is available as a digital, interactive open-access publication via the Austrian Academy of Sciences Press.

Within the framework of her master thesis, N. Mittermair analysed 40 bronze finds from the Franzhausen graveyard (knives, razors and pins) with a special emphasis on use traces, abrasion, details of casting, decoration details and metal structure). The results of the first metallographic investigation in both Franzhausen and Inzersdorf are conceived as a starting point for more comprehensive study that will also include chemical composition and isotope ratios

### Digital initiatives

*OREA Doku\_Plattform Thunau am Kamp – a fortified hilltop settlement of the Urnfield Culture*

Team: Mario Gavranović, Michael Konrad, Michaela Lochner

The main aim of *Doku\_Plattform Thuanu* is the digitisation, presentation and long-term storing of all available data from excavations of the Thunau am Kamp site carried out between 1965 and 2003 (directors: H. Friesinger, E. Szameit). The large quantity of documentation (maps, plans, find drawings, excavation diaries) has been digitised and prepared for the long-term repository, 'Arche', of the Austrian Academy of Sciences. Thanks to the cooperation with the Austrian Centre for Digital Humanities (ACDH), the Archaeological Department for Prehistory in Lower Austria (Franz Pieler) and the Digital Documentation Lab at the OREA Institute, the structure for online presentation of all available data was finalised by the end of 2018. The first, test transmission into the central repository of the Austrian Academy of Sciences was successfully accomplished in 2019. The repository 'Arche' provides the possibility for an advanced online search and sample queries. In 2020 the team members will continue with the digitisation of archaeological documentation and successive transmission of data to the central repository. Datasets from Thunau can be used for both public and scientific purposes on different levels (review, research, queries).

*Cremation Bronze Age Burials Database (CBAB)*

Team: Mario Gavranović, Michaela Lochner

The objective of the *Cremation Bronze Age Burials Database (CBAB)* is coordinated assessment of the European phenomenon of cremation burials in the Bronze Age. The project was developed in cooperation with the *Austrian Centre for Digital Humanities (ACDH)* and the first version was launched in 2018. Based on an open-access and browser-supported database, the burial sites and graves can be entered, mapped and evaluated with the help of data queries. The inquiry mask involves a set of questions regarding the position, extension and investigation of the site, as well as all information relevant to individual graves within the cemetery. In 2019, team members released a user manual and started with the entries of burials from sites in Austria, Slovenia, Hungary,

Croatia and Serbia. Throughout 2019, a large number of graves from important sites in Austria – Franzhausen-Kokoron and Inzersdorf ob Traisen – as well as from cemeteries currently being investigated in southeast Europe were entered in CBAB. The CBAB also provides a possibility for the integration of existing databases on Bronze Age burials and represents a perfect tool for the integration of the international research.

### Conferences/workshops

#### *Urnfield Culture dialogues ('UK-Gespräche')*

The *UC dialogues* ('Get together') is an annual workshop for researchers on the Late Bronze Age/Urnfield Culture (1300–800 BC) in Europe with different thematic and regional focuses. Meetings are organised by the research group *Urnfield Culture Networks* and the home institute OREA. The concept combines a one- or two-day thematic workshop and a corresponding public evening lecture.

Taking into account the fact that metallurgy is one of the focal points of the research within the *UCN*, the idea for *UC dialogues* in 2019 was to organise an international conference with an emphasis on Bronze Age metal production and exchange. The two-day event was organised in cooperation with the Vienna Institute for Archaeological Science (VIAS), the University of Vienna and gathered leading experts in Bronze Age metallurgy from Austria, Italy, Switzerland, Germany, Poland, USA, Great Britain, Hungary, Croatia, Slovenia and Serbia who presented the most recent results of current research on copper smelting, the exchange of raw material, bronze casting and metallurgical networks in Bronze Age Europe. The conference offered a state-of-the-art research overview and attracted great interest among students and other scholars resulting in over 80 registrations (audience) from Austria and abroad (Fig. 64). Thomas Stöllner (University of Bochum) held the keynote lecture. Due to the great response from participants, the majority of the papers will be published in conference proceedings with M. Gavranović and M. Mehofer as editors of the volume.



Fig. 64 International workshop *Bronze Age metallurgy*, 24<sup>th</sup>–25<sup>th</sup> May 2019, Vienna (photo: OREA)

- 25.05.2019 *UK-Gespräche* / Key note lecture: Thomas Stöllner Immo Heske, University Bochum: 'Der Mitterberg und die alpinen Kupfererzreviere. Technische Innovationen und Verwobenheit in alpinen Wirtschaftsräumen der Bronzezeit'.
- 24.05.–25.05.2019 *UK-Gespräche* / Workshop: *Bronze Age metallurgy. Production-Consumption- Exchange*.

#### *PeBA (Perspectives on Balkan Archaeology)*

The primary aim of the PeBA initiative is to create an international platform for young academics that will refresh, further facilitate and maintain cross-border archaeological research between central and southeast Europe.

In 2019, the participating institutions in the PeBA Initiative, the OREA Institute, the Ludwig-Maximilians-University in Munich and the Charles University in Prague signed a long-term cooperation agreement and established a new publication series. The first volume includes proceedings of the conference held in 2017 in Belgrade (*Spheres of Interaction. Contacts and Relationships between the Balkans and adjacent regions in the Bronze and Iron Ages*) with 14 contri-



butions. The volume will be published in early 2020. In December 2019, a call for papers for the next conference with the title *The Mechanism of Power in Bronze and Iron Ages in Southeastern Europe* was sent out. The next conference is scheduled for 20<sup>th</sup>–23<sup>rd</sup> May in Ohrid, North Macedonia and will be organised in cooperation with the Archaeological Museum of North Macedonia and the university in Ohrid.

### Outreach activities

- 10.–20.08.2019: Agency reports, articles and interviews on excavations in the Zenica Basin and on the discovery of a clay anthropomorphic figurine (media in Bosnia-Herzegovina, Serbia, Montenegro, and Turkey).
- 18.09.2019: Guest appearance of Mario Gavranović on Al Jazeera Balkans within the discussion show ‘Context – Prehistory of Balkans’ (30 min) with other experts.
- 28.09.2019: Visit of Austrian cultural attaché from the embassy in Belgrade in Bor, Serbia and joint interview for TV stations with detailed presentation of the excavations and cooperation with local institutions.
- 12.10.2019: Broadcast of the documentary (30 min) produced by the State Television Company of Bosnia and Herzegovina about the research in the Zenica Basin within the project *Visualizing the unknown Balkans*.
- 11.12.2019: Presentation of excavation results from 2019 in Serbia and Bosnia-Herzegovina for the public and the scientific community at *OREA Excavations 2019*.

### Highlights 2019

- Successful application for the project proposal *New insights in Bronze Age metal producing societies* with the Austrian Science Foundation by M. Gavranović. Start of the project 01.10.2019 (FWF stand-alone project P32095).
- Results of field investigations in Bosnia-Herzegovina and Serbia within the project *Visualizing the unknown Balkans* including a distinctive set of finds from Kopilo (central Bosnia), the new area of the urn necropolis in Hajdučka česma (eastern Serbia) with ten further graves and the discovery of a copper smelting installation from the Early and Middle Bronze Age in Čoka Njica (eastern Serbia).
- Organisation of the two-day international conference *Bronze Age metallurgy. Production-Consumption- Exchange* within the *Urnfield Culture dialogues (UK-Gespräche)* 24<sup>th</sup>–25<sup>th</sup> May with participation by leading experts in Bronze Age metallurgy and a great public response.
- Submission of manuscript for the final monograph presenting all results of the project *Securing resources, power and cult in Stillfried* by M. Griebel and B. Biederer.
- Submission of proceedings from the second PeBA conference held in 2017 in Belgrade within the newly established series ‘Perspectives on Balkan Archeology’.

### Team

Mario Gavranović, Michaela Lochner, Monika Griebel, Irmtraud Hellerschmid, Michael Konrad, Katharina Rebay-Salisbury, Benedikt Biederer, Nicole Mittermair

Mario Gavranović – Monika Griebel – Benedikt Biederer

## **Raw Material Lab** (Head: Michael Brandl)

### **Mission statement**

The OREA Raw Material Lab undertakes material, technological and provenance studies of archaeological materials. We cover the analysis of lithic, ceramic, and leather and fur objects from various geographical and cultural backgrounds. Our in-house equipment consists of high resolution reflected and polarised light microscopes, with additional access to Scanning Electron Microscopy (SEM) and Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS) for trace element analyses through national and international collaborations. The goal of our analytical work is the reconstruction of technological and socio-economic developments of past societies in order to test models of prehistoric resource management on a broad scale.

### **Current research**

The report for the year 2019 contains all activities of the members of the OREA Raw Material Lab, and is structured according to the various materials studied during the reporting period.

#### *Lithic studies (Michael Brandl)*

##### **Kammern-Grubgraben (Austria)**

In February 2019, the lithic assemblage from the 2015–2018 field campaigns at Kammern-Grubgraben, the longest known Palaeolithic open-air site in Austria dating to the Last Glacial Maximum (LGM), was analysed for its raw material composition. Altogether, 1313 individualised stone tools were recorded during this undertaking. First results show that lithic procurement strategies relied heavily on non-local raw materials, with erratic flint clearly dominating the assemblage. The additional presence of north Lower Austrian raw materials, south Moravian cherts, Carpathian radiolarite, and Jurassic Cracow chert attest for the strong connections of the Palaeolithic people at Kammern-Grubgraben to the northeast.

##### **Krems-Wachtberg (Austria)**

Between March and mid-August, the first draft of the lithic raw material section for the manuscript of ‘Krems-Wachtberg – Lithics’, which will be published as a monograph in 2020, was finished. With the completion of this work, the most detailed raw material investigation of a Palaeolithic stone tool assemblage ever undertaken was coming to an end. Altogether, over 44000 stone tools were analysed individually under the stereomicroscope, accompanied by extensive raw material surveys in and outside of Austria, with collaboration partners from the University of Vienna (Gerhard Trnka), the Masaryk University at Brno in the Czech Republic (Antonín Přichystal), the Archaeological Institute of the Slovak Academy of Sciences in Nitra (Ivan Čebén), and the Hungarian National Museum in Budapest (Katalin T. Biro). The final results will be ground-breaking with regard to the lithic raw material economy and its detailed assessment, which has the potential to trigger a re-assessment of the Pavlovian phenomenon on a broader scale in combination with all other lines of evidence gathered from this exceptional site.

##### **Paliambela Kolindros (Greece)**

Analytical work at Paliambela Kolindros in northern Greece was continued in May, and all relevant Early and selected Middle Neolithic chipped stone tools were recorded. Hence, a more

complete understanding of diachronic raw material use at this important site could be gained. Although the sample is small, an overall assessment can be attempted.

It appears that in the earliest phases of the settlement predominantly locally available materials were used for chipped stone tool production; however, they are accompanied by mainly blades (some of which were recycled on-site) from non-local high-quality cherts and notably obsidian, which clearly represent imports. Hence, the inhabitants of the site were integrated into pan-Mediterranean raw material networks from the very beginning, with the non-local chert components most likely arriving by land, the obsidian, however, clearly indicating a connection to seafaring.

In the Middle Early Neolithic, the lithic sample is unfortunately very small with only eight pieces; it is, however, interesting that six of those lithics are made from obsidian. The picture changes during the Late Early Neolithic, where the use of obsidian drops to only a few pieces, and other raw materials, e.g. locally available vein quartz, become more important.

During the Middle Neolithic, obsidian dominates the lithic assemblage, followed by mainly high-quality and in most cases very likely non-local cherts, and local vein quartz. There seems to be a focus on specific materials, as indicated by the narrower spectrum when compared to the Early Neolithic. During the latest phase of the Middle Neolithic (c. 5200 BC) we examined, 13 out of 16 lithic are made from obsidian, which is now used for a broad variety of implements.

Therefore, with all due caution it seems that we can trace – with some possible intermezzos as indicated by the Late Early Neolithic sample – specialisation and the increasing intensification of networks from the Early Neolithic to the Middle Neolithic phases at Paliambela Kolindros.

#### Syros (Greece)

The workshop *International Network on Jade Cultures* in Athens in June 2019 (see ‘Conference presentations’), was organised by Lasse Sørensen in order to bring leading scientists in the field of characterisation and provenance studies of lithic materials together, particularly for jadeite studies. As part of the workshop, the group went on an excursion to the Cycladic island of Syros, where, a few years ago, only the second jadeite deposit in Europe was detected. The outcrops and prehistoric workshops (Fig. 65) are located on the western side of the island, from where we were allowed



Fig. 65 An eclogite anvil on Syros at a prehistoric stone axe workshop (photo: M. Brandl)

to take a strictly limited amount of samples for scientific analyses. This deposit is of particular interest since it could be the potential supplier of the entire eastern Mediterranean realm with this kind of material, which is present in practically every Neolithic and some Bronze Age assemblages in western Anatolia, e.g. Çukuriçi Höyük, Ulucak, and Yeşilova Höyük. Petrological and geochemical analyses also involving archaeological material are currently ongoing.

#### Gortalovo (Bulgaria)

In July 2019, Vassil Nikolov from the Institute of Archaeology and Museum at the Bulgarian Academy of Sciences (BAS) invited Michael Brandl to the Late Neolithic (+/- 5000 BC) site at Gortalovo in northwestern Bulgaria (Pleven district). The goal of this interdisciplinary work was

the interpretation of an extensive former water-related feature, which had fallen dry but revealed its character through the accumulation of dark sediment in a shallow basin situation. The expertise of M. Brandl was required based on the masses of lithic finds recovered from this elusive feature. In the course of geological surveys in the vicinity of the site together with Chavdar Nachev (Geological Institute at BAS), it was possible to locate chert sources and an associated extraction (quarrying) location close to the archaeological site. Additionally, extensive lithic workshop areas are present in the immediate surroundings of the feature under investigation. Bringing all the evidence together, it was possible to find a plausible interpretation of the Gortalovo site: chert was quarried from residual deposits located between 1 and 2km away from the site. The quarried raw material was tested and pre-worked at the extraction site, and the suitable material (cores and pre-cores) was brought to slightly elevated areas surrounding the former water feature. The high number of heavily used endscrapers discarded in the dark sediment of the Gortalovo feature is a strong indication for leather and/or hide working at this locale. Hence, we can trace specialised tasks in this prehistoric operation, involving quarrying, lithic tool production, and possibly hide processing. In order to verify this hypothesis, soil chemical analyses are currently ongoing.

#### Svinjarička Čuka (Serbia)

Lithic raw materials from the Svinjarička Čuka excavation campaign of the OREA Institute in southern Serbia were also on the agenda of the Raw Material Lab in 2019. In April, during the yearly depot campaign, detailed raw material groups were created, which will be used for any work on the lithic assemblage in the future. In a first step, raw materials were sorted according to macroscopic (visual) criteria, such as colour, translucency, texture, and granularity. Subsequently, the resulting groups were microscopically tested for their consistency. In this way, 12 consistent raw material groups were defined. From Neolithic contexts, 138 chipped stone tools from SUs 20, 22, 26, 28 and 30 were investigated. In order to gain a diachronic perspective, 82 lithics from SU 1003(=1016), which dates to the Bronze Age, were additionally analysed. Results from this investigation show that Neogene Lacustrine Silicite (NLS) varieties dominate both the Neolithic and Bronze Age assemblages. To date, it is not possible to differentiate exact source locations for these materials, since they occur throughout residual sediments in the Leskovac and Niš-Dobrič Basin complexes. Geochemical analyses of samples collected from deposits in the vicinity of the site as well as potential sources further away hold promise for more detailed assessments. Additional to NLS, vein quartz and jasper were used for chipped stone tool production, however in much smaller numbers. Only one Neolithic chert corresponding to the enigmatic 'Balkan Flint' demonstrates the use of clearly non-local materials at Svinjarička Čuka. Therefore it can be concluded, based on the available data that both Neolithic and Bronze Age inhabitants of the site relied heavily on local resources, a picture we will definitely be able to refine as work progresses.

During the September field campaign at Svinjarička Čuka, selected rocks were investigated on-site using a stereomicroscope with 20x magnification. For the analysis, little chips were detached in order to obtain insight into the 'fresh' rock matrix. The majority of the investigated rocks correspond to the lithologies of the immediate surroundings of the site, which are comprised of Neogene Lacustrine Silicites (NLS), quartz, and mica-rich (biotitic) gneiss and mica schists. The sources of those rock raw materials can be found in both primary and secondary positions around the archaeological site, notably in the small river the settlement is located on. Primary sources are located e.g. on the hillock Justiniana Prima is located on, and on every hill rising from the basin. NLS is interspersed in the basin fill as a melange (gravel-sand series), and crops out in agricultural fields and in every watercourse in the wider catchment area. The closest sources of andesite, the material from which one of the mortars from trench N1, SU 1061, was produced, are located approximately 10km to the west, around the village of Donji Gajtan, west of Slišane.

Additionally, all chipped stone tools recovered in the course of this project and not yet analysed during the spring campaign were visually inspected. Materials were sorted into local (mainly

NLS) and non-local materials. The latter consisted predominantly of varieties of ‘Balkan Flint’, which were exported for further analysis. with the permission of the Museum in Leskovac.

#### Lojanik (Serbia)

While in Serbia, an important cooperation was established with Vera Bogosavljevic Petrović from the Department of Archaeology at the National Museum in Belgrade. Together with Anda Petrović and Gerhard Trnka, Michael Brandl visited the prehistoric quarrying site at Lojanik in central Serbia as preparation for a mutual lecture bringing together all of the results gathered from this significant place to date. The outcomes were presented in the framework of the *ISKM* conference in Budapest in November 2019 (see further details under ‘Conferences’). Raw material was collected for the OREA Raw Material Reference collection, and it was agreed upon that Lojanik will be integrated into the larger framework of lithic raw material investigations covering significant parts of Serbia and the entire Balkan area. Geochemical analyses of material from Lojanik are planned for summer 2020.

#### Vienna Gemeindeberg (Austria)

During the second week of October, archaeological fieldwork was conducted on the northern slope of the Gemeindeberg in Vienna (Hietzing), extending from the excavation in 2018 in cooperation with the University of Vienna and the Stadtarchäologie Wien. This undertaking is linked to the larger *BergbauLandschaftWien* project investigating prehistoric chert and radiolarite quarrying and the corresponding settlement infrastructure in the vicinity of present-day Vienna.

The goal of this year’s field campaign was the cleaning and documentation of a large section of the profile created in the course of road construction two years ago by moving east from the quarrying pit detected in 2018, which, according to first radiocarbon dates, belongs to the Lengyel Culture. Altogether, a length of 33m of the profile was cleaned and digitally recorded during this season. We were able to identify several geological outcrops of the underlying limestone formations, as well as two archaeological objects (defined as objects 5 and 6) and additional archaeological features which cannot be securely classified at the moment. Objects 5 and 6 clearly represent mining features, the profile revealed several layers of backfilled sediment and quarrying debris. The large features east of these two objects are preliminarily interpreted as mighty spoil heaps possibly derived from extensive near-surface quarrying activities. A continuation of this work, also concentrating on the profile extending to the west, is planned for 2020.

#### Platia Magoula Zarkou (Greece)

In the course of completing the manuscripts for the *Platia Magoula Zarkou* (Thessaly) publication project, the question arose as to the potential sources of the raw materials of the macrolithic implements (e.g. axe blades, grinding stones, etc.). Since this question was not the primary focus of last year’s field survey, it was decided to conduct a follow-up investigation. The results of this small survey, which was undertaken together with Georgios Toufexis from the Ephorate of Antiquities of Larissa and Christos Mpatzelas, will be presented in near future. Geological and archaeological background information was provided by Riccardo Caputo (Dept. of Physics & Earth Sciences, University of Ferrara), Vasilios Melfos (Dept. of Geology, Aristotle University Thessaloniki), and Anna Stroulia (Dept. of World Languages and Cultures, University of Southern Indiana). The survey results correspond well with our observations from 2018: the further west one moves, the smaller the rock components in river sediments become. While certain materials, e.g. serpentinite, can be found within the substratum of the alluvial deposits surrounding the archaeological site, the origin of other materials remains elusive (e.g. gabbro). Time constraints did not allow for a complete geological re-examination of the entire investigated area (i.e. 15–20km around PMZ). As regards radiolarites, it was possible to refine our previous observations. Small radiolarite gravels were detected closer to PMZ in river sediments at Pineiada (c. 6km west of the



site) and the Enippeas River (c. 4km southeast of PMZ); however, they are too small for stone tool production (max. 10–20mm DM). In the meanwhile, geochemical analyses have verified our hypothesis that the gravel banks at the upper courses of the Pineios and Portaikos rivers are the main source of the high-quality radiolarites at PMZ, also corresponding to the enigmatic ‘Pindos’ or ‘chocolate radiolarite’.

### ISKM

After the *International Symposium on Knappable Materials* at the Hungarian National Museum in Budapest, a group of selected researchers undertook an excursion to the most relevant lithic source areas in Hungary, including the Bakony, Bükk and Tokaj Mountains. One highlight was the visit to Bükkszentkereszt–Szénégető, which was identified as the main source of meta-rhyolite (in older literature referred to as ‘quartz porphyry’), the preferred raw material for leaf point production during the Szeletien. The Szeletien is a late Middle Pleistocene complex in east-middle Europe characterised by its leaf point technology. Together with colleagues from Hungary and Switzerland, one follow-up project will be the petrological-geochemical characterisation of this rare lithic raw material.

### *Lithic raw material research in eastern Austria (Oliver Schmitsberger)*

#### Lainzer Tiergarten (Austria)

O. Schmitsberger continued the successful geo-archaeological surveys in the area of the Lainzer Tiergarten from recent years throughout the year 2019 in cooperation with Martin Pent (Stadtarchäologie Wien) in order to fill gaps in the already impressive map of the *BergbauLandschaftWien* project. A research grant supporting the detailed study of one exceptional site discovered in the course of these survey activities (Fig. 66) was approved by the OeAW (for details, see under ‘Highlights’). Work on this project will start in early 2020.



Fig. 66 Radiolarite artefacts at site LTG 15, a potential pre-Neolithic quarrying locale (photo: O. Schmitsberger)

### Leiserberge (Austria)

Additionally, a previously extremely underestimated raw material type holds the potential to significantly alter our understanding of prehistoric resource management: Leiserberge (Lower Austria) silicite. Significant background research, including microscopic analysis, has already been completed, and various lithic assemblages have been screened for this kind of material. First results indicate that it was far more frequent in eastern Austria (and possibly beyond) than previously assumed. An extensive report is currently in preparation.

### Csaterberge (Austria)

Field surveys were also continued at the Csaterberge site in Austrian Burgenland. This raw material deposit is well known for exceptional opal finds, and was recently securely determined as a prehistoric source for tool stone material. A paper concerning the Late Miocene gastropod fauna from this area is currently in press.

### Steindlgraben (Austria)

Lastly, geo-archaeological field surveys were undertaken by Oliver Schmitsberger in St. Leonhard/Hornerwald in Lower Austria. There, at the so-called Steindlgraben, opals occur which were used for stone tool production. A manuscript reporting this new discovery will be submitted to 'Fundberichte aus Österreich' for publication.

### *Ceramic analyses (Clare Burke)*

Ceramics specialist, Clare Burke, has been involved with a number of different projects at OREA (Fig. 67) and helped write the ceramic elements for the *NEOTECH* project that was awarded in March 2019. The work being undertaken on the Çukuriçi Höyük material has already been discussed within the section for the *Prehistoric Phenomena* research group so this section will only refer to work not mentioned elsewhere in the report.

### Dolina (Croatia)

During the spring, Clare Burke finished the analysis of Late Bronze Age ceramics from the site of Dolina in Croatia as part of the *Burial* project led by Mario Gavranovic (OREA). The analytical work focused on characterising the ceramic macroscopic groups formed by Mario, and revealed an unexpected degree of raw material and technological variability in the material suggestive of different potting practices, including the use of grog and organic tempers. The analysis has been submitted for publication as part of the excavation volume.

### Pheneos (Greece)

In March 2019, Clare Burke undertook scanning electron microscope (SEM) analysis of Early to Late Bronze Age pottery from Pheneos, mainland Greece, as part of her diachronic examination of the pottery technology and raw materials at the site. This work investigated the firing conditions of the pottery and the composition of slips and paints used to decorate it. The results showed variable firing conditions alongside the choice of specific raw materials related to the desired vessel colour.

A summary of the results was presented at the *European Meeting on Ancient Ceramics* in Barcelona in September, and is subject to publication. She also presented the work from Pheneos as well as part of joint lectures with Michaela Zavadil (OREA) and Georgia Kordatzaki (Independent Researcher) at OREA and the University of Graz in November. This work has been particularly important in relation to Middle Bronze Age production and potting technology in Greece, which is still not well understood; as such, the results being obtained will add significant new data.

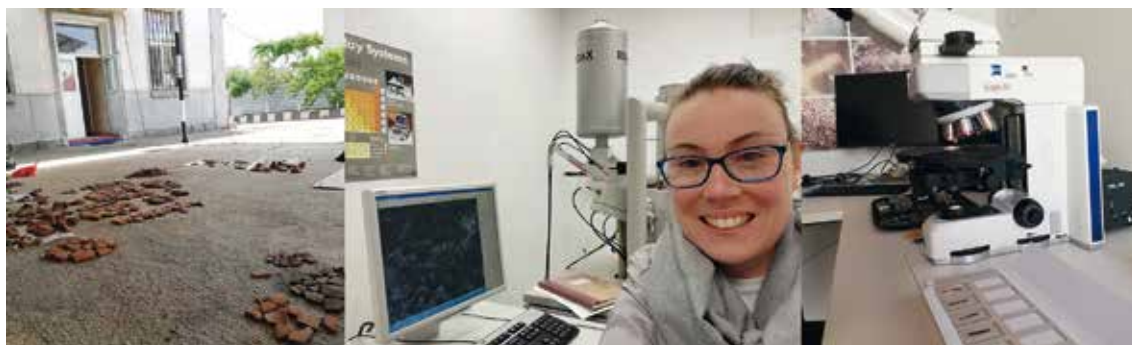


Fig. 67 An overview over Clare Burke's analytical activities during 2019

### NEOTECH

In April Clare Burke joined the team in Leskovac, Serbia to process and record the Neolithic pottery recovered from the previous excavation season at Svinjarička Čuka. In this work, she examined the typology and macroscopic evidence of forming, firing and paste variability. The work has already highlighted a range of ceramic vessels at the site consistent with Starcevo types and a number of hand-forming methods, most dominantly coil and slab techniques. This first season of ceramic work was published as part of the joint report by the team, and between August and September she joined the team processing the pottery from the excavations, and began training two Serbian students, Nev-ena Pantić and Anastasija Stojanović, to help process and identify the pottery.

### Ada Tepe (Bulgaria)

In July Clare Burke travelled to Krumovgrad in Bulgaria to continue her work on the Late Bronze Age pottery from the Ada Tepe gold mine, this time macroscopically examining and sampling the pottery from the top sector of the mine and extending the sampling to include some Iron Age shapes. This work was undertaken to compliment the investigation of the ceramics from the northeastern sector to provide a more detailed spatial and diachronic picture of ceramic production and use at the site. The results so far indicate that pottery was made specifically for the mining community using a narrow range of raw materials.

### Emporio (Greece)

As part of a collaboration with the Institute of Classical Archaeology at Charles University, Prague, and with permission from the British School at Athens, Clare Burke was invited to look at Middle and Late Bronze Age pottery from the site of Emporio on the island of Chios. In this work Clare examined the pottery macroscopically, assessing the degree of paste and technological variability in the assemblage to complement the broader study of the East Aegean and west Anatolian archaeology within the *Along the Interface* project led by Professor Peter Pavúk and funded by the Czech Science Foundation GACR, Award 17-19746S.

### *Leather and skin technology (Gabriela Ruß-Popa)*

### Chehrābād (Iran)

The year 2019 was primarily dedicated to preparations for the planned exhibition 'Salt Men in Iran', during which the antique mine and the salt mummies from the Chehrābād salt mine (Iran) are to be presented to the European public for the first time. Gabriela Ruß-Popa's task in this regard was to conduct research concerning leather and fur in general, and to specifically study

objects from Chehrābād intended for exhibition. Additionally, she was responsible for preparing texts for particular objects and general exhibition texts concerning leather, leather manufacturing, and clothing. She also composed two papers for the catalogue which focus on key elements such as clothing and equipment made from leather and fur, as well as technological aspects of leather and fur processing, also including the economic context of these materials.

In the framework of this project, two colleagues from Iran, Shahrzad Amin Shirazi, leader of the conservation department at the Research Centre for Conservation of Cultural Relics (RCCCR) in Tehran, and Paria Afzali, responsible for leather conservation at RCCCR, were guests at OREA between 16<sup>th</sup> and 22<sup>nd</sup> September. Together with Gabriela Ruß-Popa, conservational issues regarding the security, adequate packaging, transportation and exhibition of the highly sensitive organic objects from the Chehrābād salt mine were discussed.

The Natural History Museum (NHM) Vienna was also involved in this research visit by the Iranian conservators. Karina Grömer, the textile specialist of the Prehistoric Department at NHM, granted them access to the leather and textile finds from the Hallstatt salt mine. A visit to the ethnographic Weltmuseum in Vienna, which also holds important leather objects, was also organised for comparison studies. Additionally, Gabriela Ruß-Popa, Karina Grömer and their Iranian guests were invited to the Michaelergruft in Vienna, where naturally mummified human bodies, mainly from the 17<sup>th</sup> and 18<sup>th</sup> centuries, and their clothing (including leather objects) are preserved. During this visit it was possible to share experiences with conservators from the University of Applied Arts in Vienna, Carine Gengler and Michael Ullermann, concerning the conservation and restoration of objects made from organic materials.

Finally, the Iranian colleagues went to the Romano-Germanic Central Museum in Mainz (Germany), where they treated objects exported from Iran with various conservational measures. After the objects were cleaned, Gabriela also had the opportunity to go to Mainz during mid-October, to investigate the items (Fig. 68) and take samples for additional analyses.

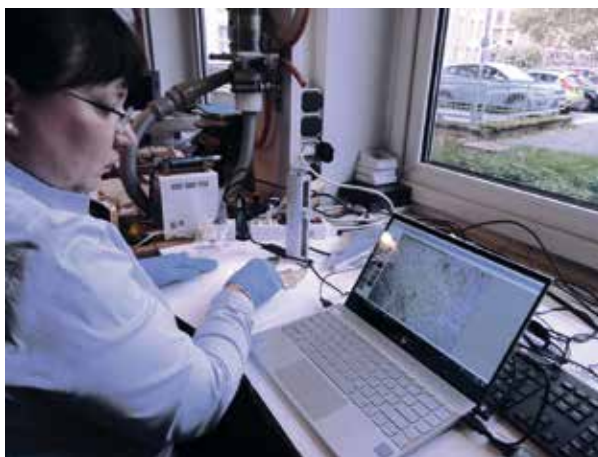


Fig. 68 Gabriela Ruß-Popa during the analysis of a leather object from Chehrābād using a digital microscope (photo: S. A. Shirazi)

### Scanning Electron Microscopy

Another important event in 2019 was a course in Scanning Electron Microscopy that Gabriela Ruß-Popa completed in April. The course was directed by Antoinette Rast-Eicher (Archeo-Tex, Ernen/Wallis, Switzerland), who is an expert in the field of hair fibre analysis. Gabriela conducted SEM examinations of archaeological hair fibres of fur objects from the Chehrābād salt mine, with the result that she will, from now on, be able to identify such archaeological materials independently. A comparison between microscopic pre-examinations of the identical specimens and the SEM investigations showed that the results (i.e. the determination of the animal species) of both methods were in full agreement. This can be regarded as a great achievement for the OREA Raw Material Lab, and the Institute in general.

### Tanning experiment

In July, an experimental setup was organised by Gabriela Ruß-Popa together with Georg Rösel in Altengbach (Lower Austria). The goal of the experiment was the reconstruction of a specific





Fig. 69 Gabriela Ruß-Popa participated at the award ceremony in occasion of the Hertha-Firnberg celebration 2019 (photo: FWF)

technique for leather tanning using a combination of brain and smoke tanning. The result is the so-called ‘Indian leather’, because this method was predominantly used by Native North American people, however, it was also familiar to the Zulus in Africa, the Sami in Scandinavia and different populations in Asia. The results from this experiment will allow us to gain a better understanding of prehistoric tanning techniques when compared to archaeological finds.

### Grants/awards

Michael Brandl was awarded a research grant from funds of the Stiftungsverwaltungskommission of the Austrian Academy of Sciences in the framework of the Dr. Anton Oelzelt-Newin'sche Stiftung. The project has the title *Radiolaritabbau in Wien vor der Jungsteinzeit? – Rohmaterial und technologische Analysen an einem ungewöhnlichen Artefaktinventar*. The primary goal is to investigate an unusual assemblage from one site in the Lainzer Tiergarten discovered by Oliver Schmitsberger (who will also be employed through the funding) a few years ago. Analyses will encompass morphological as well as raw material studies. There is a possibility, based on several preliminary observations, that this could be a pre-Neolithic quarrying site, which hypothesis will be scientifically tested in the course of this project.

Additionally, Michael Brandl applied for the FWF-funded START-programme. The project's title is *The emergence of ‘modern’ economic behaviour: lithic raw material economy in the Balkans as indicator for Neolithisation (NEOECO)*. NEOECO aims at reconstructing economic behaviour in the Balkan region, and seeks to define criteria which will help in tracing different scenarios of Neolithisation in this key area for understanding the spread of the Neolithic into Europe.

The *NEOTECH* project, for which Clare Burke wrote the ceramic analyses part, was awarded in March 2019.

Gabriela Ruß-Popa was officially announced as the Hertha-Firnberg grantee at the Hertha-Firnberg and Elise-Richter-Celebration 2019 on 8<sup>th</sup> March by Minister Heinz Faßmann and the president of the FWF, Klement Trockner at the Austrian Museum of Applied Arts (MAK) in Vienna (Fig. 69).

### Conference presentations

- *International network on Jade Cultures* – workshop in Athens from 3<sup>rd</sup> to 8<sup>th</sup> June 2019 at the Danish Institute in Athens; organiser: Lasse Sørensen (Head of Department of Ancient Cultures of Denmark and the Mediterranean, National Museum of Denmark)



*Presentation:* Oral. M. Brandl – C. Schwall – B. Horejs, ‘Provenance analyses of raw materials from Çukuriçi Höyük, Western Anatolia’.

- 2019 UISPP meeting at the Archaeological Museum and Reserve ‘Krzemionki’ (Ostrowiec Świętokrzyski, Poland), 19.–21.9.2019; organiser: UISPP Commission on Flint Mining in Pre- and Protohistoric Times.

*Presentation:* Oral. M. Brandl – C. A. Hauzenberger – P. Filzmoser – G. Trnka, ‘Characterization of ‘Rijckholt flint’ and its position amongst Northern European flint types’.

Michael Brandl was also on the scientific board of the conference and chairman of the poster session.

- *12<sup>th</sup> International Symposium on Knappable Materials (ISKM)*, 18.–26.11.2019; organiser: Hungarian National Museum Budapest.

*Presentations:* Oral. M. Brandl – C. A. Hauzenberger – P. Filzmoser – M. M. Martinez, ‘Protocol for geochemically sourcing secondary deposits of siliceous rocks’.

M. Brandl – J. Budziszewski – J. Niebyski – M. Szubski – G. Trnka, ‘Gunflints flint mine ‘Lysinka’ in Nyzhniv, Iwano-Frankiwska oblast (Ukraine)’.

V. Bogosavljević-Petrović – M. Brandl – B. L. MacDonald – C. Klesner – K. Šarić – V. Cvetković – D. Jovanović – A. Starović, ‘From quarry to settlement in the central Balkans: test of the origin of stone raw materials based on LA-ICP-MS and microanalysis’.

Michael Brandl also acted as chairman during the conference.

- *Archaeological finds & Analytical methods* at the Natural History Museum (NHM) Vienna, 12.–13.12.2019; organiser: The University of Vienna, Institute for Egyptology and VIAS, in collaboration with the NHM Vienna.

*Presentations:* Oral. C. Burke – B. Horejs, ‘The Neolithic Potters of Çukuriçi Höyük, Turkey’.

M. Brandl – C. A. Hauzenberger – P. Filzmoser – M. M. Martinez, ‘The Multi layered Chert Sourcing Approach. An analytical technique for chert and flint provenance studies in archaeology’.

- *MinPet2019* meeting of the Austrian Mineralogical Society at Graz University of Technology, 6.9.2019; organiser: NAWI Graz Geocenter (Institute of Applied Geosciences).

*Presentation:* Poster. M. Brandl – C. A. Hauzenberger – P. Filzmoser – M. M. Martinez – E. Alram, ‘Provenance analyses of Chipped Stone Tools from Neolithic Platia Magoula Zarkou, Thessaly (Greece)’.

- *European Meeting on Ancient Ceramics (EMAC)* in Barcelona, 16.–18.9.2019; organiser: ARQUB, a research unit of the GRACPE research team at the University of Barcelona (UB)

*Presentation:* Oral. C. Burke – M. Zavadil, Tradition and Adaptation: ‘The Potting Technology of Middle Helladic Archaia Pheneos’.

- *3<sup>rd</sup> International Workshop on Ceramics from the Late Neolithic Near East*, Antalya, Turkey on 7–9 March 2019.

*Presentation:* Oral. C. Burke – B. Horejs, Neolithic Potting Traditions at Çukuriçi Höyük

### Outreach activities / events

On 1<sup>st</sup> February 2019, Oliver Schmitsberger was invited by the Forstverwaltung Vienna (MA 49) to give a talk at the Hermesvilla and present an overview of his impressive results from the Lainzer Tiergarten. The title of the presentation was ‘Steinzeitliche Radiolarit-Abbaustellen im Lainzer Tiergarten in Wien’.

Within the framework of the event *Faszination Kelten. Salzarchäologie am Dürrenberg. Ein Tag zum Erleben, Erfahren und Analysieren*, Gabriela Ruß-Popa gave the keynote lecture ‘Mit Rauch und Hirn zu feinem Leder! Das Lederhandwerk am Dürrenberg’. Additionally, she demon-

strated the process of tanning, presented original finds and replicas, and introduced the interested public to microscopic investigation methods. This event was organised by Thomas Stöllner (Deutsches Bergbaumuseum) and the Salzwelten in Hallstatt, and took place on 13<sup>th</sup> July at the Salina, Salzwelten Hallein am Dürnbach.

For the *KinderuniWien 2019* event on 17<sup>th</sup> July, Michael Brandl lectured in front of 25 pupils (between 10 and 15 years old). The topic of his talk was 'Feuerstein – der Stahl der Steinzeit. Mit dem Mikroskop und Schlagstein auf Entdeckungsreise in die Steinzeit', which was accompanied by digital microscopy to identify microfossil inclusions in chert and flint raw materials, and a flintknapping demonstration.

On 15<sup>th</sup> November, Michael Brandl and Estella Weiss-Krejci were invited to hold a one-day workshop at the International Academy again. They introduced the pupils to the topic of prehistoric jewellery production using self-made stone tools. The German title of the workshop was 'Steingerät und Steinzeitschmuck: Rohstoffe, Werkzeuge und Schmuckherstellung in prähistorischen Zeiten'.

Shortly before Christmas, the Raw Material Lab was still active. On 19<sup>th</sup> December, class 2B of the Bundesgymnasium/Bundesrealgymnasiums Rainergasse visited us and learnt about leather making & analysing ancient leather goods from Gabriela, and how to identify lithic raw materials under the stereomicroscope from Michael.

### Teaching and supervision

As in previous years, coursework on various topics was provided at the IUHA, University of Vienna. This included a course in microscopic analysis of archaeological material from the Palaeolithic to the Neolithic periods, and one lecture regarding the determination of lithic raw materials in prehistory for the lecture series 'Scientific methods in archaeology'. This coursework was carried out by Michael Brandl.

Additionally, Michael Brandl is the main supervisor for a master's thesis dealing with early hominin behaviour in relation to stone tool development, and second supervisor for a master's thesis at the University of Graz developing a protocol for lapis lazuli provenance.

Gabriela Ruß-Popa gave one lecture in the framework of Karina Grömer's course on archaeological textiles. G. Ruß-Popa used the example of leather finds from Chehrābād to exemplify antique leather technology.

### Highlights 2019

- The application for an FWF-funded START-programme with the title *The emergence of 'modern' economic behaviour: lithic raw material economy in the Balkans as indicator for Neolithisation (NEOECO)* by Michael Brandl. For this project, cooperation agreements have been achieved with research institutions from Bulgaria, Greece, Serbia, Albania and North Macedonia to find new pathways tracing Neolithisation processes on a large scale.
- A research grant with the title *Radiolaritabbau in Wien vor der Jungsteinzeit? – Rohmaterial und technologische Analysen an einem ungewöhnlichen Artefaktinventar* was awarded to Michael in the framework of the Dr. Anton Oelzelt-Newin'sche Stiftung. Oliver Schmitsberger will be hired to investigate the possibility of a pre-Neolithic quarrying site in the Lainzer Tiergarten in the southwest of Vienna, an area which was already established as a prehistoric radiolarite mining district.
- It was possible to sample the jadeite deposit on Syros in the Cyclades, only the second European jadeite source. This locale is of specific importance since it could be the main supplier for jadeite in the eastern Mediterranean. Petrological-geochemical analyses are planned in an international collaborative effort to characterise the raw material from Syros.

- The *NEOTECH*-project, which investigates Neolithisation processes in the Balkan region by combining analyses of the built environment and the introduction of new technologies (mainly pottery and lithic technology), was awarded by the FWF in March 2019. Clare Burke was responsible for writing the ceramic part for the proposal.
- SEM analyses conducted by Clare Burke on Early to Late Bronze Age pottery from Pheneos, mainland Greece, provided significant new insights into Middle Bronze Age ceramic production and technology, aspects of key importance but still poorly understood.
- Gabriela Ruß-Popa was able to share substantial experience with two colleagues from the Research Centre for Conservation of Cultural Relics (RCCCR) in Tehran (Iran) in the course of preparations for the planned exhibition *Salt Men in Iran*, during which the antique mine and the salt mummies from the Chehrābād salt mine are to be presented in Europe for the first time. Gabriela was able to examine and sample organic materials (leather and fur objects) from this unique site at the RGZM in Mainz.
- After successfully completing a SEM-course in Switzerland, Gabriela is now able to independently identify animal species using a wide range of analytical methods, a skill set which is not widely available in archaeometric sciences.

#### Team

Michael Brandl (head, lithic analyses), Clare Burke (ceramic petrography), Gabriela Ruß-Popa (leather and skin technology); associated researcher: Oliver Schmitsberger (*BergBauLandschaft-Wien* project)

Michael Brandl – Clare Burke – Gabriela Ruß-Popa – Oliver Schmitsberger

## **DIGITAL DOCUMENTATION LAB**

(Head: Mario Börner)

### **Objectives**

The DIGital Documentation Lab is a central facility combining technical support for field investigations (e.g. excavations, survey, etc.) and the application of computer-assisted methods for capturing, processing and preparing research data in numerous projects of the OREA Institute. Consequently, the Lab focuses on all the digital support archaeological research might need – professional excavation engineering and provision of all computer-assisted methods for the capture, processing and preparation of research data. Moreover, the DIGital Documentation Lab is responsible for the digital conservation and archiving of OREA research data and its transfer into long-term repositories in cooperation with the Austrian Centre for Digital Humanities (ACDH) of the Austrian Academy of Sciences.

### **3D Find Documentation**

In order to provide optimal state-of-the-art documentation of find assemblages, photographic equipment for 3D photogrammetry was purchased at the beginning of the year 2019 (Fig. 70). The equipment consists of a camera, a remote-controlled automatic turntable and a photo tent. Due to several excavation projects in foreign countries hosted at OREA (e.g. Iran, Emirates, Serbia, etc.), it was mandatory to provide easily transportable and low-weight documentation equipment for artefacts.

For documenting an artefact with this method, the object is positioned on the turntable inside the tent. LED light strips installed on the inner top of the tent allow for an optimal illumination. During the photogrammetric recording process, the turntable stops automatically during a 360° rotation while the object is being photographed. This procedure is possible due to an IR connec-



Fig. 70 The use of 3D photogrammetry equipment (photo: M. Börner/OREA)



Fig. 71 The use of the Breuckmann SmartScan 3D structured light scanner in the Natural History Museum of Vienna (photo: M. Börner/OREA)

tion between the turntable and the camera. The number of stops is freely selectable, depending on the complexity of the artefact. The expenditure of time for the recording process also depends on the complexity and usually lasts less than 10 minutes. Afterwards the acquired data is processed with the software Agisoft Metashape Professional to produce a 3D photogrammetric model.

In April the new photographic equipment for 3D photogrammetry was utilised to document 33 objects during the two week-long research campaign of the *NEOTECH* project in the Museum of Leskovac, Serbia (cf. Prehistoric Phenomena). The resulting 3D models of Neolithic figurines, tools and pottery will not only be of use in the *NEOTECH* project, but also in the *Visualizing the Unknown Balkans* one (cf. Urnfield Culture Networks) and, furthermore, it will be integrated in the multimedia display at the exhibition *DONAU – Menschen, Schätze & Kulturen*, opening in spring 2020 at the Schallaburg, Lower Austria.

In the course of the PhD research of L. Waltenberger (cf. Prehistoric Identities) the DIGital Documentation Lab supported the analysis of pelvic features using geometric morphometric methods (Fig. 71). In order to guarantee optimal results it was necessary to record 3D surface models from articulated human pelvises by using the Breuckmann SmartScan 3D structured light scanner as well as 3D photogrammetry. The Breuckmann SmartScan 3D scanner works on the fringe projection principle. The contactless optical scanning technology is useful for very fast data acquisition and a high level of detail. L. Waltenberger was introduced to this method and workflow by the team of the DIGital Documentation Lab and performed the recording process on his own.

The Breuckmann SmartScan 3D device was built up at the Natural History Museum of Vienna and proceeded with scans of twelve pelvises over the following weeks. Overall, human articulated pelvises were quite problematic for the structured light scanner: the human pelvis contains lots of



sharp-edged areas which are difficult to access, such as the internal pelvic region. Therefore, making surface models using the Breuckmann SmartScan 3D was intensive timewise (c. 3 hours per pelvis) and surface meshes still contained some missing areas. Therefore, using the Breuckmann scanner for further data collection was reconsidered and the data collection was continued using 3D photogrammetry instead, as it provides precise surface meshes of a mean deviation of 100 micrometres. This time-saving method was then applied for the further documentation. A study comparing the deviation between surface meshes and landmark configuration set on them will be published soon. In this study, data obtained from the Breuckmann SmartScan 3D structured light scanner, 3D photogrammetry, clinical CT scanning, and microscribe were compared.

In the course of the FWF projects *Platia Magula Zarkou in Tessalien/Griechenland* (cf. *Prehistoric Phenomena*) and *Bronze Age Gold Road of the Balkans – Ada Tepe mining* (cf. *Mediterranean Economies*) about 100 artefacts, already recorded in different museums and depots in Greece and Bulgaria, were digitised. The recorded objects cover a wide range of artefacts, such as the house model found at Platia Magula Zarkou as well as fully preserved ceramic vessels found in the north-east settlement at Ada Tepe, a Late Bronze Age gold mine in southeastern Bulgaria.

For the recording process, the Breuckmann SmartScan 3D structured light scanner was used. The already processed, high-resolution 3D models were visualised for analyses and publications by using the software Blender. This is a free and open-source 3D creation suite which supports the entirety of the 3D pipeline (e.g. modelling, rigging, animation, simulation, rendering, compositing and motion tracking, video editing, and the 2D animation pipeline). During the rendering process, the option to use special shaders allows the exportation of different kinds of visualisations like orthophotos, simulation of drawings, and monochrome pictures of the objects. Furthermore, it is possible to combine these options as needed.

In general, the DIGital Documentation Lab provides three different methods for recording archaeological artefacts: structured light scanning by using the Breuckmann SmartScan 3D, 3D photogrammetry by using ‘Structure from Motion’, and pseudo-orthophotos by using camera and light equipment (Fig. 72).



Fig. 72 Result of a post-processed 3D scan, in different kinds of visualisation (graphics: M. Börner/OREA)



Fig. 73 Drone photo of the Svinjarička Čuka excavations, Serbia (aerial photo: M. Börner/OREA)

### Excavations

During 2019 numerous excavation campaigns were supported by the DIGital Documentation Lab in Serbia, Bosnia and Herzegovina, Lebanon and the United Arab Emirates:

- Zenica Basin, Bosnia and Herzegovina; *Visualizing the Unknown Balkans* project (cf. Urnfield Culture Networks).
- Bor, Serbia; *Visualizing the Unknown Balkans* project (cf. Urnfield Culture Networks).
- Svinjarička Čuka, Serbia, *NEOTECH* project (cf. Prehistoric Phenomena) (Fig. 73).
- Tell Mirhan, Lebanon; *Between Land and Sea – The Chekka Region in Lebanon* project (cf. Mediterranean Economies).
- Kalba, United Arab Emirates, Emirate of Sharjah, *Across Arabia* (cf. Prehistoric Phenomena).

The lab contributed on-site with 3D photogrammetry for the excavation documentation and the generation of topographical DEM models (aerial photos provided by a drone), surveying and GIS analyses. The orthophotos derived from the 3D models serve as a base for digitising archaeological features and DEM in GIS. GIS was also used for field surveys to locate features observed nearby on the airborne laser scan data. Beside these techniques, drone footage was used for short movies that introduce viewers to the topography of the sites, share excavation impressions, and were used for dissemination on social media/news reports.

### A Puzzle in 4D

The long-term storage project of the Tell el-Daba documentation *A Puzzle in 4D* managed by E. Aspöck (Österreichische Nationalstiftung für Forschung, Technologie & Entwicklung DH

2014/12) was realised in close cooperation with the Tell el-Daba Publication group (for detailed information see above).

### Highlights 2019

- 12.12.2019: Blog article in the newspaper ‘Der Standard’ by Mario Gavranović, Irene Petschko, Michael Konrad and Mathias Mehofer, ‘Prähistorische Kupfergewinnung im serbischen Bor’. Online <<https://www.derstandard.at/story/2000112137007/praehistorische-kupfergewinnung-im-serbischen-bor>>.
- 11.12.2019: Presentation by Irene Petschko and Mario Gavranovic, ‘Höhensiedlungen, Bosnien & Herzegowina – Spätbronzezeit und frühe Eisenzeit’, *OREA Ausgrabungen 2019*, Vienna.
- 05.12.2019: Organisation of an event to introduce the OREA researchers to ARCHE, the archiving platform of the Austrian Centre of Digital Humanities.
- 04.11.2019: Presentation by Mario Gavranović and Irene Petschko, ‘Revealing Bronze Age Landscapes of the Balkans’, *CHNT 24*, Vienna.
- 17.10.2019: Blog article in the newspaper ‘Der Standard’ by Nicole Mittermair, Irene Petschko, and Mario Gavranović, ‘Hoch hinaus in der Bronzezeit Zentralbosniens’. Online <<https://www.derstandard.at/story/2000109946934/hoch-hinaus-in-der-bronzezeit-zentralbosniens>>.
- 12.06.2019: Presentation by Irene Petschko, ‘You spin me round – creating 3D models of objects’, OREA Study Day *Documenting Material Culture*, Vienna.

### Team

Mario Börner, David Blattner, Karl Burkhart, Irene Petschko, Julian Posch, Edeltraud Aspöck

Mario Börner – Irene Petschko – Julian Posch – Lukas Waltenberger – Edeltraud Aspöck

### ANKH-HOR PROJECT

(Principal Investigator: Julia Budka)

### Objectives of the Research project

The new Ankh-Hor project, hosted at the LMU Munich and conducted in cooperation with OREA and the OeAI, was launched in 2018. It investigates the finds from the tomb of Ankh-Hor, TT 414, in Asasif (Western Thebes, Egypt). This material, which has not yet been published completely, holds rich potential for understanding the funerary customs in the Late Period, the Ptolemaic and Roman era.

### Current research

The major goal of the 2019 season of the Ankh-Hor Project was to continue the cleaning, consolidation and documentation of the large amount of objects excavated from TT 414. The main focus was on wooden coffins, especially from the Ptolemaic period. Work was conducted from 14th February to 10th March 2019.

The coffins studied during the 2019 season belong both to primary burials of the family of Ankh-Hor and to secondary burials of Amun priests, mostly dating to the 4<sup>th</sup> and 3<sup>rd</sup> centuries BCE. Some pieces were identified for the first time and correlated with the documentation from the 1970s. Some additional material was recorded for the first time.

The main objective of the conservation campaign 2019 under the supervision of Daniel Oberndorfer (OeAI) was the cleaning and consolidation of painted wooden objects, especially of coffins. A total of 61 wooden and painted objects was successfully treated in 2019, including five fragmented coffins, which were transported to the study magazine (see Fig. 74).

The rich prospects of the detailed work on the finds from TT 414 again became clear during the 2019 season. Despite all of the progress, large numbers of coffins, fragments of coffins and cartonnage from the Late Period to Ptolemaic and Roman times still remain to be cleaned, consolidated and reconstructed. Matches to coffins have yet to be discovered for several fragments that have been found scattered all over the magazine and are now almost completely documented and sorted. The large-scale conservation programme, as carried out successfully in 2019, needs to be continued in the near future in order to prepare the final publication of the inventory of the tomb of Ankh-Hor, TT 414.

Team members of the 2019 season: Julia Budka, Cajetan Geiger, Mona Dietrich, Hassan Ramadan, Daniel Oberndorfer, Viktoria Ackerl, Stefanie Hasenauer, Irina Huller, Magdalena Theresa Hopfensperger, Jessica Karin Rossmann, Hannan Hassan Ahmed Hussein and Iman Ibrahim Zaghlol (both Inspectorate West Bank).

Julia Budka



Fig. 74 Back side of lower part of anthropoid inner coffin Reg. 590 (photo: Cajetan Geiger)

## ERC ADVANCED GRANT PROJECT 'THE ENIGMA OF THE HYKSOS'

(Principal Investigator: Manfred Bietak)

### Objectives

The *Hyksos Enigma* project set out to explore the origin, the ethnicity and the influence of the 'rulers of the foreign countries' – the Hyksos, ruling the North of Egypt in the Second Intermediate Period. Also, the reasons for the decline of the Hyksos kingdom and the impact of their rule on the Egyptian culture of the New Kingdom are a part of this project. Therefore, archaeological findings from several missions working in the Eastern Delta of Egypt have to be compared to structures and objects known from the Levant and surrounding regions. This five-year ERC Advanced Grant-funded project is being run in cooperation with Bournemouth University (BU).

### Current Research

The project team worked in its full capacity on preliminary results, planned, organised and attended relevant conferences and seminars in this year. Team members received invitations to present their research and findings, but also received recognition for their work.

Although the hope never ceases that the vital material located at Tell el-Dab'a can be viewed before the project ends and enough time remains to sufficiently analyse and scrutinise this material, efforts had to be concentrated elsewhere. These alternative routes to continue working on material sourced outside of Egypt have been intensified and samples of source material provided by institutions from Vienna, Canada, Lebanon and Australia have been analysed by experts and specialist laboratories such as Bradford University. Further investigations are planned in the forthcoming year and hopefully these results can be incorporated into the project's outputs.

Besides this, the teams in Vienna and Bournemouth attended other seminars, lectures and workshops (internal and external). In this way, they also contributed to the project's visibility and, at the same time, progressed with their personal career development.

Due to her contract coming to an end, Elisa Priglinger (RT 2) left the project by mid-June and is finalising work on her manuscript. Sarah Vilain (RT 6) presented her research at the *POCA* in Berlin, participated in a summer course organised by the UCL and took advantage of viewing samples at the Petrie Museum at the same time. During her sampling trips, she cooperated with Hanan Charaf Mullins (SC4) and the French Institute in the Lebanon (Fig. 75). Anna-Latifa Mourad (RT 5) finished her editorial work on the substantial manuscript by Ernest Bumann and progressed with her own research in multidirectional cultural interference studies, the draft of her monograph 'Transforming Egypt: The impact of the Hyksos on the New Kingdom Egypt'. The PhD student from the team in Vienna, Silvia Gómez-Senovilla (RT 4), presented



Fig. 75 Sarah Vilain checking samples  
(© The Enigma of the Hyksos)



her studies at the *BAF 2019* in Bern and, together with Elisa Priglinger, attended the *CAS* at the LMU in Munich. Whilst continuing work on her thesis ‘Settlement pattern and Settlement Morphology at Tell el-Dab’a and the Ancient Near East’, S. Gómez Senovilla is attending seminars required for her doctoral studies at the University of Vienna. Silvia Prell (RT 3) is continuing her work on ‘The Burial Customs in the Ancient Near East in Diachronic Perspective: From the Early to the Late Bronze Age’.

The PI Manfred Bietak proceeded with his book ‘Architecture as Expression of Spiritual Roots’ and published an array of articles for the ERC Grant. He was able to show the influence of the Egyptian cult of Herishef on solar cults in Byblos (Fs Piotr Bielinski), the Canaanite roots of the rock temples at Serabit el Khadem on the Sinai (Fs Beatrix Midant-Reynes) and wrote a substantial contribution for the conference volume for *ASOR-Boston 2017* and the *ICAANE Munich 2018* with a comparative architectural study on sacred architecture. He disseminated the results of his research in lectures about the history of Austrian excavations after 1945 in the Austrian Academy (1.02.), about the Hyksos Enigma in the Austrian Academy (5.02.), on the exodus at the University of Munich (7.12.) and about the excavations at Tell el-Dab’a and its importance for the ‘Hyksos Enigma’ for the society of Friends of the Austrian Academy. He held the vice-chair of an ERC Panel in Brussels and was project and personnel reviewer for the Paul Getty Institute in Los Angeles, The Alexander von Humboldt Stiftung, and article reviewer of the ‘Proceedings of the National Academy of Sciences of the USA’, the journal ‘Antiquity’, Cambridge, and ‘JAEI’ Manchester.

The research team at BU, Nina Maaranen (PhD student) and the two post-docs, Christina Stantis as well as Arwa Kharobi, attended conferences related to their areas of interest, such as the Palaeopathology Association satellite conference for *AAPA* in Cleveland, Ohio and Vienna. N. Maaranen won a C. G. Tuner II/Cambridge University Press Poster Competition, organised by the Dental Anthropology Association, for her poster entitled ‘Hyksos in Egypt – Utilizing Biodistance Methods to Interpret Archaeological and Textual Evidence from Tell el-Dab’a,’ together with co-authors S. R. Zakrzewski and H. Schutkowski.

As some of the planned BU project delivery had to be modified, H. Schutkowski, the PI at BU, was able to extend the employment contracts of his team, which will give them more time to analyse their findings in more detail and finalise publications.

The project PI and the project coordinator worked on the first volume of a planned series of Hyksos publications, and finalised ‘The Enigma of the Hyksos, Volume I, *ASOR Conference Boston 2017 – ICAANE Conference Munich 2018 – Collected Papers*’, *CAENL 9*, Wiesbaden 2019.

For more information and the latest news on the project, please refer to the project website: <https://thehyksos-enigma.oeaw.ac.at/news/>.

### **Conference/Workshop Changing Clusters and Migration in the Near Eastern Bronze Age** (4<sup>th</sup>–6<sup>th</sup> December 2019)

Throughout the year, the team worked toward the project workshop, which took place from 4<sup>th</sup> until 6<sup>th</sup> December at the Austrian Academy of Sciences (Figs. 76, 77). Invited speakers were encouraged to share their research with participants from over 15 countries attending two and a half days filled with not only relevant lectures but also two extremely interesting keynote speeches by the two renowned scholars Marlies Heinz from Freiburg i.Br.



Fig. 76 Workshop *Changing Clusters and Migration in the Near Eastern Bronze Age* 4<sup>th</sup>–6<sup>th</sup> December 2019, Vienna  
(© The Enigma of the Hyksos)



Fig. 77 The extended *Hyksos* project team at the workshop *Changing Clusters and Migration in the Near Eastern Bronze Age 4<sup>th</sup>–6<sup>th</sup> December 2019*, Vienna (© The Enigma of the Hyksos)

and Gernot Wilhelm from Würzburg. Beside the extended team and the invited speakers, the workshop was visited by many guests from Austria and abroad. All project team members prepared presentations and were involved in the successful delivery of this important project output.

Manfred Bietak

## Long-term research and stand-alone projects

### THE PHILAE TEMPLE TEXT PROJECT: EPIGRAPHIC SURVEY AND SITE MANAGEMENT

(Principal investigator: Holger Kockelmann; Senior Director: Erich Winter)

#### Overall objectives

The temples of Philae, now located on Agilkia Island some 5km south of Aswan, form a conglomerate of sanctuaries, colonnades, kiosks and gates. The long-term objective of the *Philae Temple Text* project (*Projekt Edition der Tempelinschriften von Philae*) is to publish the hieroglyphic reliefs of all these buildings. The latest monograph in the 'Philae Temple Text' series, which appeared in 2016, is devoted to the Second East Colonnade of the great Temple of Isis. The next volume will contain a complete edition of the scenes and inscriptions of the Temple of Hathor, which are partly unique and many of which represent key sources for the study of Egyptian religion. Apart from text editions, the project publishes studies on the cults, theology and history of Philae.

#### Research 2019

In autumn 2019, the *Philae Temple Text* project of the Austrian Academy of Sciences, Vienna, continued its work in the temples of Philae. The activities of the project were generously funded by the Stichting Mehen (Den Haag), the Gerda Henkel Stiftung (Düsseldorf), and the Fondation Michela Schiff Giorgini (Geneva).

With the kind permission of the Ministry of State for Antiquities, Cairo, the team focused its activities on the epigraphic study of the Temple of Hathor. In the autumn field campaign, we checked our copies of the scenes and inscriptions against the original reliefs in preparation of the first full facsimile edition of the Hathor Temple including transliteration, translation and photographic documentation. Members of the mission were Holger Kockelmann (director), Silke Caßor-Pfeiffer (epigraphist) and Pauline Calassou (epigraphist). The work started on 5<sup>th</sup> October; the last working day in the field was 31<sup>st</sup> October 2019. In the fieldwork, we concentrated on the



Fig. 78 Silke Caßor-Pfeiffer and Pauline Calassou revising the facsimiles of reliefs on temple blocks from Philae (photo: H. Kockelmann)

most delicate parts of the temple reliefs of Hathor Temple. Absolute priority was given to collating our facsimiles of the soubassements (or dado) decoration at the base of the exterior lateral walls of the pronaos of the Temple of Hathor (Fig. 79), especially of the highly problematic reliefs of the north wall soubassement. The latter is extremely badly carved and partly rubbed. Careful examination of the original reliefs with grazing light led to numerous improvements in the facsimiles and substantial progress in our understanding of these inscriptions. After the soubassement decoration, we continued with the severely rubbed reliefs on the lower parts of the east gate inside the pronaos, leading to the completely lost naos of the Temple of Hathor. Here we were able to add a number of hieroglyphs and details of the figures which were still visible as faint traces in the original relief to our facsimiles.

Another focus in collating our drawings with the originals was the decoration of the columns of the south side inside the entrance kiosk of the Temple of Hathor. Here we were able to check all those facsimiles which had not yet been examined. Another activity spot was the scenes on the exterior face of the south door of the pronaos of the Temple of Hathor. Close-up photos of unclear details were taken of the aforementioned reliefs of the Temple of Hathor for further study and improvement of the facsimile drawings at home. Moreover, we examined the decoration on spolia from the Temple of Hathor and other Philae temple buildings (Fig. 78; for the site management project dealing with the temple blocks, see the OREA Annual Report 2017). Some of the most interesting spolia will be published in articles.



Fig. 79 Collating our facsimiles of the soubassements (or dado) decoration at the base of the exterior lateral walls of the pronaos of the Temple of Hathor (photo: H. Kockelmann)

### Other activities

In addition to its regular work, the Philae project delivered papers at several international conferences and colloquia. Holger Kockelmann was the invited keynote speaker in the colloquium *The Mammisis of Egypt* (Institut français d'archéologie orientale, Cairo); moreover, he gave a lecture at the conference *Dendera and Ptolemaic Studies: The Egyptian Temples in the Ptolemaic and Roman Periods* (Dendera). At the Ptolemaic summer school in Prague, Silke Caßor-Pfeiffer and Holger Kockelmann presented some unique texts from the Temple of Hathor; at the *XII International Congress of Egyptologists*, they discussed the unusual decoration on a block, which possibly comes from the Temple of Arensnuphis at Philae.

Holger Kockelmann

**F.E.R.C.AN.**  
**Fontes Epigraphici Religionum Celticarum Antiquarum**  
 (Heads of the Project: Gerhard Dobesch and Herwig Friesinger,  
 coordination: Manfred Hainzmann)

Since 1998, the international project F.E.R.C.AN. – Fontes Epigraphici Religionum Celticarum Antiquarum, coordinated at the Austrian Academy of Sciences, examines Greek, Latin and Celtic written records of religious content from linguistic epigraphic-historical and iconographic perspectives. One of the main aims of the project is the edition of a *corpus* comprising the epigraphic testimonies together with their translations and a commentary as well as an analysis of the deities in their linguistic and ritual context for every major find area.

In 2019, the first volume of Corpus F.E.R.C.AN., dealing with the *Provincia Noricum*, was completed and will be released in early 2020 within the MPK series.

*Scientific Board:*

Helmut Birkhan (Vienna, Department of German Studies)  
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Funding: FWF P 14306; FWF PUB 471-Z25

Manfred Hainzmann



## **DEEPDEAD – DEPLOYING THE DEAD: ARTEFACTS AND HUMAN BODIES IN SOCIO-CULTURAL TRANSFORMATIONS**

(Principal investigator: Estella Weiss-Krejci; postdoctoral researcher: Sebastian Becker; predoctoral researcher: Kirsten Mandl)

### **Overall Objectives**

The DEEPDEAD-project is a collaboration between archaeologists, literary scholars, and anthropologists in the UK, Austria, Germany, and the Czech Republic. It attempts to map the links and differences between contemporary uses of dead bodies, their artefacts and monuments, and comparable practices in past eras from an interdisciplinary perspective.

### **Project Funding and Partners**

The project is funded under the HERA Joint Research Programme III: The Uses of the Past (UP) [Collaborative Research Project (CRP) no. 15.055] and the European Union's Horizon 2020 research and innovation programme under grant agreement No 649307. The DEEPDEAD-projects lasted from July 1, 2016–September 30, 2019 and received € 1,160,116 across four partners. The international consortium partners are: Philip Schwyzer (PL and PI), Department of English, University of Exeter, United Kingdom; Estella Weiss-Krejci (PI), OREA, ÖAW, Austria; Andrew James Johnston (PI), Department of English, Freie Universität Berlin, Germany; and Ladislav Šmejda (PI), Czech University of Life Sciences Prague, Department of Ecology, Czech Republic. Associated partners are Harald Meller, Landesmuseum für Vorgeschichte, Halle/Saale, Germany and Maria Teschler-Nicola, NHM, Vienna, Austria.

### **2019 Activities of the Austrian DEEPDEAD-Team**

Following the acceptance of the book proposal 'Interdisciplinary Explorations of Postmortem Agency: The Uses of Dead Bodies, Funerary Objects, and Burial Spaces through Time' by Springer Nature, the editors Estella Weiss-Krejci, Sebastian Becker and Philip Schwyzer started to prepare the book. This volume is one of the main outputs of the DEEPDEAD-project and



Fig. 80 Top left: sketch of Gemeinlebern A, Grave 215 (after Szombathy 1929, fig. 33), bottom: reconstruction of skeleton as found in the grave, anthropological collection, NHM, Vienna (photos and graphics: E. Weiss-Krejci); centre: thin section production and microscopic analysis (photos and micrograph: K. Mandl)

developed from one international workshop and two conference sessions: The workshop *Beyond Death: Exploring the Uses of Dead Bodies, Funerary Objects, and Burial Spaces through Time* took place in May 2018 at the Austrian Academy of Sciences in Vienna and the two conference sessions took place in September 2017 at the 23<sup>rd</sup> EAA Annual Meeting in Maastricht and in September 2018 at the 24<sup>th</sup> EAA Annual Meeting in Barcelona. Chapters were commissioned from several of the presenters. The completed manuscript will be submitted to Springer in early 2020. Kirsten Mandl and Estella Weiss-Krejci spent several weeks at the Natural History Museum's Anthropology Department, investigating the Early Bronze Age skeletal remains from the cemetery of Gemeinlebarn A, which was excavated by Josef Szombathy from the late 19<sup>th</sup> to the early 20<sup>th</sup> century (published in 1929 'Prähistorische Flachgräber bei Gemeinlebarn in Niederösterreich', Römisch-Germanische Forschungen III, Berlin and Leipzig). Like other Bronze Age cemeteries, Gemeinlebarn A holds a high number of disturbed graves (grave manipulation is one of the topics investigated by the DEEPDEAD-project). We conducted post-hoc archaeothanatological investigation of body position, the effects of grave disturbance on the corpse, and postmortem bioerosion and diagenetic alterations (Fig. 80). Anthropological recording and histotaphonomic analysis were done by Kirsten Mandl. Thin sections were prepared at the University of Basel in cooperation with David Brönnimann from the Research Group Integrative Prehistoric and Archaeological Science (IPAS). A pathological hyoid bone from one of the graves was investigated in cooperation with the Department of Anatomy and Biomechanics, Division Biomechanics, Karl Landsteiner University of Health Sciences, Krems.

Additional activities include histotaphonomic analysis of thin sections from the Neolithic site of Asparn/Schletz and the Late Iron Age sites of Göttlesbrunn and Roseldorf (by Kirsten Mandl). Seventeen samples from Gemeinlebarn, Göttlesbrunn and Roseldorf were submitted for radiocarbon dating to the Curt-Engelhorn-Zentrum Archäometrie gGmbH and four samples from Göttlesbrunn for DNA analysis to the DNA Laboratory, Department for Evolutionary Anthropology, University of Vienna.

### Talks and poster presentations 2019

- Estella Weiss-Krejci, Der politische Totenkult von der Urgeschichte bis zur Gegenwart. Anthropologische Gesellschaft in Wien, Natural History Museum, Vienna, Austria (23.1.2019) (talk)
- Maria Teschler-Nicola, Kirsten Mandl, Sebastian Becker, Stefanie Stelzer, Dieter Pahr and Estella Weiss-Krejci, A 'perforated' human hyoid bone: Bone artefact or thyroglossal duct cyst? 6<sup>th</sup> International Anthropological Congress of Dr. Aleš Hrdlička. Humpolec, Czech Republic (3.9.2019) (poster)
- Estella Weiss-Krejci, The burial vaults of the royal houses of central Europa, past and present. XXV<sup>th</sup> Annual Meeting of the European Association of Archaeologists. Bern, Switzerland (5.9.2019) (talk)
- Estella Weiss-Krejci, Uses of the Dead. HERA JRP Uses of the Past & Public Spaces Conference, Panel 4. Gdansk, Poland (12.9.2019) (talk)
- Philip Schwyzer, Estella Weiss-Krejci, Andrew James Johnston, Ladislav Šmejda, Naomi Howell, Patricia Murrieta-Flores, Sebastian Becker, Sarah Briest, Miriam Edlich-Muth, Jan-Peer Hartmann, Jan Horák, Erica Askew-Jones, Kirsten Mandl, Harald Meller and Maria Teschler-Nicola, Deploying the Dead: Artefacts & Human Bodies in Socio-Cultural Transformations. HERA JRP Uses of the Past & Public Spaces Conference, Panel 4. Gdansk, Poland (11.–12.9.2019) (poster) (Fig. 81)
- Maria Teschler-Nicola, Kirsten Mandl, Sebastian Becker, Stefanie Stelzer, Dieter Pahr and Estella Weiss-Krejci, A 'perforated' human hyoid bone: Bone artefact or thyroglossal duct cyst?

and HERA JRP Uses of the Past & Public Spaces Conference, Panel 4. Gdansk, Poland (11–12.9.2019) (poster)

- Estella Weiss-Krejci, Von der Trauer zum Konflikt. Konkurrierende Akteure bei Herz- und Eingeweidebestattungen des 17. und 18. Jahrhunderts. ‘Concurrence and Competition’. 13<sup>th</sup> conference of the Historians of the Early Modern period. Rostock, Germany (20.9.2019) (talk)
- Kirsten Mandl, Histotaphonomie – eine neue Methode zur Analyse von Leichenbehandlung und funerären Praktiken in der Prähistorie. Vortragsreihe “Neue bioarchäologische Forschungen“, Universität Wien (15.10.2019) (talk)



Fig. 81 The DEEPDEAD poster at the HERA JRP Uses of the Past & Public Spaces Conference (September 11–12, 2019), European Solidarity Centre, Gdansk, Poland (photo: E. Weiss-Krejci)

### Supervision

In 2019 Saskya Tschebann (Faculty of Social Sciences, Department of Social and Cultural Anthropology, University of Vienna) submitted her Master's Thesis ‘Till Death do us Part: Ethnographic account of the cemetery Cimetière Naturel de Souché in Niort, France’ and successfully completed her master's studies.

Estella Weiss-Krejci

**OREA-Team 2019**

Eva Alram-Stern	Monika Griebel	Elisa Perego
Patrick Aprent	Roman Gundacker	Irene M. Petschko
Edeltraud Aspöck	Marc Händel	Julian Posch
David A. Aston	Irmtraud Hellerschmid	Elisa-Maria Praxmarer
Natasha Ayers	Felix Höflmayer	Silvia Prell
Bettina Bader	Barbara Horejs	Elisa Priglinger
Marlon Bas	Hermine Huber	Katharina Rebay-Salisbury
Sebastian Becker	Jasmin Huber	Barbara Rendl
Benedikt Biederer	Lucia Hulková	Maria Röcklinger
Manfred Bietak	Valentin Jovanovic	Gabriela Ruß-Popa
David Blattner	Reinhard Jung	Roderick Salisbury
Dominik Bochatz	Elefteria Kardamaki	Natalie Savic
Mario Börner	Michael Konrad	Oliver Schmitsberger
Michael Brandl	Karin Kopetzky	Ulrike Schuh
Norbert Buchinger	Elke Kraft	Angela Schwab
Teresa Bürge	Nicola Math	Christoph Schwall
Clare Burke	Rosa Matic	Martina Simon
Laura Burkhardt	Dagmar Melman	Ulrich Simon
Karl Burkhardt	Bogdana Milić	Michaela Spannagl-Steiner
Ernst Czerny	Nicole Mittermair	Roswitha Thomas
Aaron DeSouza	Constanze Moser	Sarah Vilain
Bibiana Dernec	Anna-Latifa Mourad	Lukas Waltenberger
Birgitta Eder	Sandra Müller	Lyndelle Webster
Thomas Einwögerer	Vera Müller	Estella Weiss-Krejci
Stefanie Fragner	Mohamad Mustafa	Agnes Woitzuck
Michaela Fritzl	María Antonia Negrete Martínez	Annik Wüthrich
Mario Gavranović	Felix Ostmann	Michaela Zavadil
Silvia Gómez Senovilla	Doris Pany-Kucera	Sophie Zimmermann

**Guests and Associated Scientists 2019**

Katrin Bernhardt	Peter M. Fischer	Brigitta Mader
Gottfried Brehm	Florian Fladerer	Michele Massa
Christopher Britsch	Herwig Friesinger	Uroš Matić
Norbert Buchinger	Stefan Grasböck	Christine Neugebauer-Maresch
Julia Budka	Vasco Hachtmann	Areti Pentedeka
Ciler Çilingiroğlu	Manfred Hainzmann	Annalisa Rumolo
Christine de Vree	Michaela Lochner	Jörg Weilhartner
Sigrid Deger-Jalkotzy	Daria Ložnjak Dizdar	
Veronika Dubcova	Christian Knoblauch	

## OREA Publications 2019

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### Quaternary Archaeology

- M. Anghelinu – L. Nita – M. Händel – E.-C. Cordos – U. Hambach – D. Veres – G. Muratoreanu, From Gravettian to Epigravettian in the Eastern Carpathians. The Bistricioara-Luterie III settlement and its regional context, in: P. Wojtal – J. Wilczynski (eds.), 3<sup>rd</sup> Conference ‘World of Gravettian Hunters’. Krakow, Poland, 20<sup>th</sup>–24<sup>th</sup> May 2019. Abstracts (Kraków 2019) 1.
- M. Anghelinu – G. Popescu – U. Hambach – D. Vereş – M. Händel – L. Niţă – E.-C. Cordos – G. Muratoreanu: Reassessing the formation processes of open-air Paleolithic settlements in the Eastern Carpathians. Case studies in the Ceahlau area, in: E.-C. Cordos – V. Chirica (eds.), *Le Paléolithique supérieur de Roumanie en contexte du Paléolithique supérieur européen*, *Bibliotheca Archaeologica Iassiensis* 33, 2019, 96–119.
- M. D. Bosch – P. R. Nigst – F. A. Fladerer – W. Antl-Weiser, The megafauna bone accumulation of Grub-Kranawetberg, Austria, in: V. Chirica – C. Ichim (eds.), *Les Gravettiens. Leur création matérielle et spirituelle*. *Bibliotheca Archaeologica Iassiensis* 29, 2019, 106–132.
- F. Cappa – M. Händel – U. Simon – T. Einwögerer – V. M. F. Hammer – M. Schreiner, Composition of colour pigments at the Gravettian site Krems-Wachtberg, Lower Austria, in: C. Herm – S. Merkel – M. Schreiner – R. Wiesinger (Hrsg.), *Archäometrie und Denkmalpflege 2019. Jahrestagung an der Akademie der Bildenden Künste Wien, Institut für Naturwissenschaften und Technologie in der Kunst*, 11.–14. September 2019, *Metalla Sonderheft 9* (Bochum 2019) 85–88.
- T. Einwögerer, Die jungpaläolithischen Stationen in der Ziegelei Kargl in Langenlois, Niederösterreich. Die Ausgrabungen von 1961 bis 1963, *Mitteilungen der Prähistorischen Kommission* 88 (Wien 2019).
- T. Einwögerer, Kammern-Grubgraben. Eine Jungpaläolithische Freilandfundstelle mit außergewöhnlichen Befunden, in: F. Pieler – P. Trebsche (Hrsg.), *Beiträge zum Tag der Niederösterreichischen Landesarchäologie 2019* (Asparn/Zaya 2019) 8–15.
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- T. Einwögerer, KG Kammern, *Fundberichte aus Österreich* 56/2017, 2019, 190–191.
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- T. Einwögerer – A. Grebe – M. Händel – D. H. Pahr – R. Plail – U. Simon – S. Stelzer – M. Teschler-Nicola – L. Warnung, Digital reconstruction of the 30,000 year old double burial of newborns from Krems-Wachtberg, in: Karl Landsteiner University of Health Sciences, Department Anatomy and Biomechanics, Division Biomechanics, *Annual Report* 2018, 2019, 10.
- S. M. Groza – U. Hambach – D. Veres – A. Vulpoi – M. Händel – T. Einwögerer – U. Simon – C. Neugebauer-Maresch – A. Timar-Gabor, Optically stimulated luminescence ages for the Upper Palaeolithic site Krems-Wachtberg, Austria, *Quaternary Geochronology* 49, 2019, 242–248. doi: 10.1016/j.quageo.2018.04.005
- M. Händel – U. Simon – A. Maier – M. Brandl – T. Einwögerer: First results from renewed excavations at the well-known LGM site Kammer-Grubgraben, in: P. Wojtal – J. Wilczynski (eds.), 3<sup>rd</sup> Conference ‘World of Gravettian Hunters’. Krakow, Poland, 20<sup>th</sup>–24<sup>th</sup> May 2019. Abstracts (Kraków 2019) 24–26.
- O. Schmitsberger – F. A. Fladerer – M. Händel – K. Saliari – U. Göhlich – R. Hopkins – G. Forstenpointner – W. Davies – C. Neugebauer-Maresch, Hunting horse at the Danube. A Late Pleistocene cannon bone with cut-marks from Vienna-Nussdorf and its (re)discovery, in: D. Nagel – N. Kavcik-Graumann (eds.), *Festschrift zum 80. Geburtstag von emer. Univ.-Prof. Dr. Mag. Gernot Rabeder*, *Berichte der Geologischen Bundesanstalt* 132 (Wien 2019) 155–183. Online <<https://www.geologie.ac.at/produkte-shop/textpublikationen/zeitschriften/berichte-der-geologischen-bundesanstalt/>>.
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- U. Simon – M. Händel – T. Einwögerer – C. Neugebauer-Maresch, Der gravettienzeitliche Begehungshorizont der Freilandfundstelle Krems-Wachtberg, in: M. Baales – C. Pasda (eds.), „All der holden Hügel ist keiner mir fremd ...“, *Festschrift zum 65. Geburtstag von Claus-Joachim Kind*, *Universitätsforschungen zur Prähistorischen Archäologie* 327 (Bonn 2019) 227–239.



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### Prehistoric Phenomena

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- M. Brami – B. Horejs (eds.), *The Central/Western Anatolian Farming Frontier. Proceedings of the Neolithic Workshop held at 10<sup>th</sup> ICAANE in Vienna, April 2016, Oriental and European Archaeology* 12 (Vienna 2019).
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- B. Horejs – A. Bulatović – J. Bulatović – M. Brandl – C. Burke – D. Filipović – B. Milić, New insights into the later stage of the Neolithisation process of the central Balkans. First excavations at Svinjarička Čuka 2018, *Archaeologia Austriaca* 103, 2019, 175–226. doi: 10.1553/archaeologia103s175
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### Prehistoric Identities

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- C. Haselgrove – P. S. Wells – K. Rebay-Salisbury (eds.), *The Oxford Handbook of the European Iron Age* (Oxford 2019).
- C. Haselgrove – K. Rebay-Salisbury – P. S. Wells, Europe in the Iron Age. Landscapes, regions, climate, and people, in: C. Haselgrove – P. S. Wells – K. Rebay-Salisbury (eds.), *The Oxford Handbook of the European Iron Age* (Oxford 2019). doi: 10.1093/oxfordhb/9780199696826.013.21
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- D. Pany-Kucera – A. Kern – H. Reschreiter, Children in the mines? Tracing potential childhood labour in salt mines from the Early Iron Age in Hallstatt, Austria, *Childhood in the Past* 12, 2, 2019, 67–80. doi: 10.1080/17585716.2019.1638554
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- P. C. Ramsel – K. Rebay-Salisbury – P. Trebsche, Ich suche nicht, ich finde!, in: P. C. Ramsel – K. Rebay-Salisbury – P. Trebsche (eds.), *Schichtengeschichten. Festschrift für Otto H. Urban, Universitätsforschungen zur Prähistorischen Archäologie* 328 (Bonn 2019) 15.
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### Levantine and Egyptian Histories

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