Projekt Goldschatz von Ebreichsdorf

naturhistorisches museum wien nhm

Programme of the International Symposium

The Gold Treasure of Ebreichsdorf

Prehistoric Gold Finds in the 2nd and 1st Millennium BC in Europe

August 18–20, 2023
Natural History Museum Vienna

Organising Institutions
Natural History Museum Vienna (NHM)
University of Vienna
Austrian Federal Monuments Authority (BDA)
Novetus GmbH

Supported by
Österreichische Bundesbahnen AG (ÖBB)
Austrian Society of Pre- and Early History (ÖGUF)

On August 18, 2023, the Late Bronze Age Gold Treasure from Ebreichsdorf, Lower Austria, discovered in 2020/2021, will be officially gifted to the Natural History Museum in Vienna and thus made permanently accessible to the public. In order to place the prehistoric gold finds from Ebreichsdorf into a wider context, contributions by international expert colleagues have been invited to shed light on the distribution, use and manufacture of gold artefacts of the 2nd and 1st millennium BC in Europe in a symposium on August 18–20, 2023.
The research results of an international and interdisciplinary team of experts, which has been investigating numerous aspects of the production, processing, cultural significance and origin of the Gold Treasure from Ebreichsdorf since 2020, will also be presented for the first time at the symposium.
On August 18, 2023, the ÖBB-Infrastruktur AG (ÖBB) will celebrate the donation of the Gold Treasure from Ebreichsdorf to the Natural History Museum Vienna. The ceremony will further include the presentation of a book on the Ebreichsdorf Gold Treasure.

* * *

Am 18. August 2023 wird der 2020/2021 entdeckte spätbronzezeitliche Goldschatz von Ebreichsdorf, Niederösterreich, offiziell dem Naturhistorischen Museum Wien übergeben und damit der Öffentlichkeit dauerhaft zugänglich gemacht werden. Zu diesem Anlass sollen die Goldobjekte aus Ebreichsdorf im Rahmen eines internationalen Symposiums durch Beiträge zu aktuellen Forschungen in den Kontext prähistorischer Goldfunde des 2. und 1. Jahrtausends v. Chr. in Europa gestellt werden. Auch die Ergebnisse eines internationalen interdisziplinären Expert:innenteams, das seit 2020 zahlreiche Aspekte zu Herstellung, Verarbeitung, kultureller Bedeutung und Herkunft des Goldschatzfundes von Ebreichsdorf untersucht, werden bei der Konferenz vom 18. bis 20. August 2023 erstmals präsentiert. Am Abend des 18. August 2023 finden der Festakt zur Schenkung des Goldschatzes an das Naturhistorische Museum Wien durch die Österreichischen Bundesbahnen (ÖBB) und eine Buchpräsentation zum Goldschatzfund von Ebreichsdorf statt.

Bundesdenkmalamt novetus Archäologische Dienstleistungen Bauhistorische Untersuchungen öguf universität wien ÖBB INFRA

Projekt Goldschatz von Ebreichsdorf

naturhistorisches museum wien nhm

Conference Programme

Friday 18th August 2023

From 12:00 Registration Conference Office, Lecture Hall, Natural History Museum Vienna

Greeting Words and Introduction

13:00–13:15 **Katrin Vohland**, General Director and Scientific CEO of the NHM Vienna, Austria
Karina Grömer, Head of the Department of Prehistory of the NHM Vienna, Austria

13:15–13:25 **Bernhard Hebert**, Director of the Department of Archaeology, Austrian Federal Monuments Authority
Archaeological Heritage Management and (Golden) Treasures

The Gold Treasure of Ebreichsdorf

Chair: ***Martin Krenn****, Department of Archaeology, Austrian Federal Monuments Authority*

13:30–13:55 **Michaela Binder** & **Alexander Stagl**, Novetus GmbH, Austria
The prehistoric settlement of Ebreichsdorf

13:55–14:10 **Murat Yasar**, **Regina Friedl** & **Rudolf Göttlich**, Austrian Federal Monuments Authority, Restoration Atelier Friedl and Göttlich, Austria
Restaurierungs- und Konservierungsarbeiten an dem spätbronzezeitlichen Goldschatz von Ebreichsdorf

14:10–14:25 **Moritz Numrich** & **Ernst Pernicka**, Curt Engelhorn Center Archaeometry Mannheim, Germany
Analyses of the gold objects from the hoard of Ebreichsdorf

14:25-14:35 ***Discussion***

14:35–15:05 Coffee break

15:05–15:20 **Kayleigh Saunderson**, Department of Prehistoric and Historical Archaeology, University of Vienna, Austria
Finding the precious fabric in a tangled bundle – The textile and experimental analyses of the gold threads of Ebreichsdorf

15:20–15:35 **Daniel Oberndorfer**, **Irina Huller** & **Viola Winkler**, NHM Vienna, Austria
Restoration of the Ebreichsdorf „gold textile“

15:35–15:55 **Karina Grömer**, NHM Vienna, Austria
Textiles as prestige goods in the 2nd and 1st millennium BC: special case “gold textiles”

15:55–16:05 ***Discussion***

Bundesdenkmalamt novetus Archäologische Dienstleistungen Bauhistorische Untersuchungen öguf universität wien ÖBB INFRA

16:05–16:30 **Alexandra Krenn-Leeb**, Department of Prehistoric and Historical Archaeology, University of Vienna, Austria
The gold treasure of Ebreichsdorf: the hoard and its archaeological and cultural contextualisation

16:30–16:50 **Barbara Armbruster**, Centre National de la Recherche Scientifique Toulouse, France
Prehistoric precious metal vessels – technology, aesthetics and function

16:50–17:00 ***Discussion***

17:00–17:30 Coffee break and **Poster session**

Ceremony for the Donation of the Gold Treasure of Ebreichsdorf

18:30 **Reinhold Hödl**, Geschäftsbereichsleiter, ÖBB-Infrastruktur AG, Austria
Christoph Bazil, President of the Austrian Federal Monuments Authority
Katrin Vohland, General Director and Scientific CEO of the NHM Vienna, Austria

Book Presentation: *Der Goldschatz von Ebreichsdorf. Veröffentlichungen der Prähistorischen Abteilung 7, Wien 2023 (Editors: Karina Grömer, Michaela Binder & Alexandra Krenn-Leeb)*
Presentation of the Short Film *Der Goldschatz von Ebreichsdorf: Konservierung und Forschung by Crazy Eye (Aenna Linzbauer)*

19:15 **Keynote Speech**
Wolfgang David, Archaeological Museum of Frankfurt/Main, Germany
Goldfunde der Bronzezeit in Mittel- und Südosteuropa

Host: **Andreas Kroh**, Prokurist, Vice Scientific CEO of the NHM Vienna, Austria

Followed by a **buffet** in the Upper Dome Hall of the NHM Vienna

Saturday 19th August 2023

The Origin of Gold

Chair: ***Michaela Binder,*** *Novetus GmbH*

09:00–09:15 **Ruslan Stoychev**, **Stanislav Iliev** & **Hristo Popov**, Institute of Art Studies, Bulgarian Academy of Sciences, Regional Museum of History Haskovo, National Archaeolog. Institute with Museum at the Bulg. Academy of Sciences Sofia, Bulgaria
Ancient gold mines at Stremtsi, Kardzhali Municipality, South Bulgaria

09:15–09:30 **Hristo Popov**, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences Sofia, Bulgaria
The Late Bronze Age gold mine Ada Tepe in the context of interregional contacts in the Northern Aegean and the Eastern Balkans in the 2nd mill. BC

09:30–09:45 **Plamen Georgiev**, **Hristo Popov** & **Ivan Ivanov**, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences Sofia, Bulgaria
Preliminary non-destructive archaeological investigations of mineral deposits in Ancient Thrace

09:45–09:55 ***Discussion***

09:55–10:10 **Wojciech Jenerałek**, National Museum in Poznań, Poland
Interdisciplinary research on gold mining at the Amalara-Peristera archaeological site in Northern Greece – final result

10:10–10:25 **Ernst Pernicka** & **Moritz Numrich**, Curt Engelhorn Center Archaeometry Mannheim, Germany
The SAM gold analysis programme and provenance of ancient gold

10:25–10:35 ***Discussion***

10:35–11:05 Coffee break and **Poster session**

Value and Appreciation of Gold

11:05–11:20 **Albrecht Jockenhövel**, Westphalian Wilhelms-University of Münster, Germany
Where has all the Ada Tepe Gold gone? Bronze Age Gold as raw metal: a missing link and its route from mined ore to finished product. Some remarks on the circulation and recycling of gold

11:20–11:35 **Fraser Hunter** & **Matthew Knight**, National Museum Scotland Edinburgh, Great Britain
A long view of gold objects in Scotland from the Chalcolithic to the Iron Age

11:35–11:50 **Henning Haßmann** & **Daniel Neumann**, Lower Saxony State Office for the Preservation of Monuments, Lower Saxony State Museum Hanover, Germany
Der bronzezeitliche Goldhort von Gessel (Niedersachsen, Norddeutschland) – Niederlegung, rituelle Landschaft, Austausch in der Bronzezeit

11:50-12:05 **Carola Metzner-Nebelsick** & **Ernst Pernicka**, Ludwig Maximilian University of Munich, Curt Engelhorn Center Archaeometry Mannheim, Germany
The hoard finds of Mykhalkiv/Ukraine and comparable finds – their context, composition and results of a laser ablation and QICP-MS analysis

12:05–12:15 ***Discussion***

12:15–13:45 Lunch break

*Chair: **Peter Trebsche**, Department of Archaeologies, University of Innsbruck*

13:45–14:00 **Szilvia Guba**, **János Dani**, **Anikó Angyal**, **Nicklas Larsson** & **Károly Tankó**, Hungarian National Museum Budapest, Déri Museum Debrecen, Eötvös Loránd University Budapest, Eötvös Loránd Research Network Secretariat – Institute for Nuclear Research Debrecen, Hungary
Forging – hoarding – burying: use of gold in Northern Hungary in the Middle and Late Bronze Age

14:00–14:15 **Ivan Drnić**, Archaeological Museum Zagreb, Croatia
Collection of prehistoric gold finds from the Archaeological Museum in Zagreb

14:15–14:30 **Ondrej Chvojka, Daniel Hlásek, Markéta Augustýnova, Jan John & Michal Ernée** Southern Bohemian Museum and Southern Bohemian University of České Budějovice, Czech Republic
Gold der Bronzezeit in Südwestböhmen

14:30–14:40 ***Discussion***

Selected Gold Objects and their Meaning

14:40–14:55 **Regine Maraszek**, State Museum of Prehistory Halle (Saale), Saxony-Anhalt State Office for the Preservation of Monuments and Archaeology, Germany
Late Bronze Age golden double wire spirals in the Lusatia region – classification and cultural context

14:55–15:10 **Nikolaus Boroffka**, **Marin Neagoe** & **Oana Neagoe**, Eurasia Department, German Archaeological Institute, Muzeul Regiunii Porţilor de Fier, Germany-Romania
Şişeşti. A new Late Bronze Age hoard with bronze and gold objects. Preliminary remarks on gold spirals from double wire with looped ends

15:10–15:20 ***Discussion***

15:20–15:50 Coffee break

16:00–17:30 **Guided tour "Gold-artefacts** of the Collection of Greek and Roman Antiquities at the Kunsthistorisches Museum Vienna, Austria"
Beauty, wealth and power: Ancient and early medieval gold

19:00 **Dinner** (optional – registration is requested)

Sunday 20th August 2023

Selected Gold Objects and their meaning

Chair: ***Karina Grömer,*** *Department of Prehistory, Natural History Museum Vienna*

09:00–09:15 **Borislav Borislavov** & **Petya Penkova**, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences Sofia, Bulgaria
The earliest example of gilded silver earrings dated in the Middle Bronze Age from the territory of present-day Bulgaria

09:15–09:30 **Violetta Reiter**, **Robert Linke** & **Karl Großschmidt**, Culex, Austrian Federal Monuments Authority, Medical University of Vienna, Austria
Small is beautiful. Gold from Steyr, Upper Austria – Grave 160 from the beginning of the Late Bronze Age

09:30–09:45 **Jaroslav Peška**, Archeological Center Olomouc, Czech Republic
Ein neuer Hortfund von Golddrahtrollen in Mittelmähren

Projekt Goldschatz von Ebreichsdorf

naturhistorisches museum wien nhm

09:45–10:00 **Tomáš Zachar**, Archaeological Museum of Frankfurt/Main, Germany
Aurum vegetabile. Historische Quellen, Datierung und Herstellungstechnologie der spätbronzezeitlichen Golddrahtrolle aus Zvolen, Slowakei

10:00–10:10 ***Discussion***

10:10–10:25 **Matěj Kmošek**, **Stanislav Stuchlík** & **Nikola Šuhejová**, Institute of Archaeology of the Czech Academy of Sciences Brno, Museum Bruntál, Czech Republic
New finds of gold sheet ornament of Urnfield culture from Opava (CZ)

10:25–10:40 **Harald Meller**, Saxony-Anhalt State Office for the Preservation of Monuments and Archaeology, State Museum of Prehistory Halle (Saale), Germany
Sunshine Drinking. The Krottorf gold bowl and its dating

10:40–10:55 **Heiner Schwarzberg** & **Ina Schneebauer-Meißner**, Bavarian State Archaeological Collection, Germany
Golden Times- Gold Textiles of the Bronze Age in the Bavarian State Archaeological Collection

10:55–11:05 ***Discussion***

11:05–11:35 Coffee break

Gold in the Iron Age

Chair: ***Georg Tiefengraber****, Department of Prehistory, Natural History Museum Vienna*

11:35–11:50 **Christiane Eluère**, C2RMF, Musées de France, Ministère de la Culture Paris, France
The gold jewelry of a presumed forerunner of the Early Iron Age chieftains

11:50–12:05 **Anja Hellmuth Kramberger**, Alma Mater Europaea – Institutum Studiorum Humanitatis, University of Ljubljana, Slowenia
"Skythian" princess in Slovenia? On the gold jewelry from grave 27 in tumulus 48 of Stična

12:05–12:20 **Diana Gergova**, National Academy of Art Sofia, Bulgaria
The gilded hyperborean Myth. The Vulchitrun Treasure a century after its discovery

12:20–12:35 **Birgit Schorer** & **Gerd Stegmaier**, State Office for Cultural Heritage Baden-Württemberg, Tübingen; Department of Pre- and Protohistory, University of Tübingen, Germany
Material Identities: Studies on selected Early Iron Age gold objects from Southwest Germany

12:35-12:50 **Holger Wendling**, Salzburg Museum und Archäologische Staatssammlung München
Gold of the Ancient Celts – The hoard of torc, rings, and coins from Neumarkt near Salzburg

12:50 ***Concluding Discussion***

Lunch break

Bundesdenkmalamt novetus Archäologische Dienstleistungen Bauhistorische Untersuchungen öguf universität wien ÖBB INFRA

Projekt Goldschatz von Ebreichsdorf

naturhistorisches museum wien nhm

14:00–16:00 **Guided tours** through the Prehistoric collections of the Natural History Museum Vienna (Halls XI-XIII and Archives)
Divided into groups of ca. 20–25 persons

Poster presentations

Martin Hristov, National Museum of History – Sofia, Bulgaria
Gold spirals in Balkan region from second half III-first half of II mill. BC

Marina Kalpachka & **Petya Penkova,** National Archaeological Institute with Museum at the Bulgarian Academy of Sciences (NAIM-BAS)
The Rython from Zlatinitza gilding technique

Robert Linke & **Birgit Bühler,** Austrian Federal Monuments Authority, Vienna Institute for Archaeological Science
Herstellungstechnische Untersuchungen am Goldfund von Ebreichsdorf

Julia Mattes, Institutionen för arkeologi och antik historia, Uppsala universitet
Der Goldfund von Onslunda – Ausdruck von Wandel der Kultpraxis in der Spätbronzezeit?

Krasimir Nikov, National Archaeological Institute with Museum – Bulgarian Academy of Sciences
New evidence for relations between southern Thrace and Anatolia in the late third and early second millennium BC

Petya Penkova & **Krastyu Chukalev**, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences (NAIM-BAS)
Technological study on gold finds from Late Chalcolithic period from the collection of National Archaeological Institute with Museum at the Bulgarian Academy of Sciences

Milena Tonkova, National Archaeological Institute with Museum, Bulgarian Academy of Sciences (Department of Thracian Archaeology)
Gold signet rings of Odrysian elite (5^{th} – 4^{th} century BC)

Maria Windholz-Konrad
Der Golddrahthort aus dem steirischen Koppental

Venue
Natural History Museum Vienna, Lecture Hall, Burgring 7, 1010 Vienna, Austria
Homepage: https://www.nhm-wien.ac.at/

Contact
Barbara Hirsch, Natural History Museum Vienna, Burgring 7, 1010 Vienna, Austria
E-mail: barbara.hirsch@nhm-wien.ac.at; Homepage: http://www.nhm-wien.ac.at/

Bundesdenkmalamt novetus Archäologische Dienstleistungen Bauhistorische Untersuchungen öguf universität wien ÖBB INFRA

ABSTRACTS

(in alphabetical order)

Barbara ARMBRUSTER, Centre National de la Recherche Scientifique Toulouse, France

Prehistoric precious metal vessels – Technology, Aesthetics and Function

In the light of the new find from Ebreichsdorf, this lecture will reconsider late prehistoric precious metal vessels. These luxury and ceremonial objects appear in various shapes and dimensions during the Bronze and Early Iron Ages. On the basis of case studies from Spain to Scandinavia, this contribution offers an overview of numerous aspects of the precious metal vessels.

The find circumstances provide insight into various burial contexts or depositions. Various morphological characteristics, the practical as well as the social function of these symbol carriers and the vessel decorations with symbolic representations are further points of view.

The technical aspects of production concern the tool equipment and the "chaîne opératoire", the technical sequence of specialised work processes, from the ingot to the decorated finished product. This includes, in addition to the shaping by casting or plastic deformation of the body of the vessel, the execution of the decorations as well as the bonding techniques for attaching handles or other elements. This part of the history of technology is supported by information from experimental archaeology, ethnoarchaeology, textual sources and iconographic representations relating to the manufacture of metal vessels.

Michaela BINDER & Alexander STAGL, Novetus GmbH, Austria

The prehistoric settlement of Ebreichsdorf

The gold treasure of Ebreichsdorf was recovered from an extensive prehistoric settlement situated on the northern banks of the Fischa river to the east of the modern town. The site was first discovered during a systematic archaeological ground survey prior to the extension of the Pottendorfer Linie in 2014. Excavations commenced in September 2019 and lasted until summer 2022 with a total area of 8 ha being explored over the course of project. Settlement activity at the site took place in three stages: a scarcely evidenced early, Neolithic/Early Bronze Age phase, the main phase of occupation during the Late Bronze Age and a shorter re-occupation in the Late Iron Age.

This presentation focusses on the phase contemporary to the gold treasure during the Late Bronze Age between 1200 and 1000/900 BCE in which the settlement reached its maximal extension. Minimally 26 rectangular post-hole structures representing the remnants of simple houses constructed from timber, waddle, and daub were documented together with a large number of storage and garbage pits, ovens, and wells. Although research is still in its beginning phase, the archaeological record suggests an agriculturally based community with evidence of small-scale metal-working and other forms of manufacture on a household level. Ultimately, with continuing research, the wealth of recorded data and preserved finds from the settlement of Ebreichsdorf will allow for a reconstruction of the complex social, economic and cultural context in which the objects of the gold treasure were used and venerated.

Nikolaus BOROFFKA, **Marin NEAGOE** & **Oana NEAGOE**, Eurasia Department, German Archaeological Institute, Muzeul Regiunii Porţilor de Fier, Germany-Romania

Şişeşti. A new Late Bronze Age hoard with bronze and gold objects. Preliminary remarks on gold spirals from double wire with looped ends

In April 2021 a Late Bronze Age hoard was discovered by metal detectorists in the area of the locality Șișești. This lies east of the Danube Gorges (Iron Gates) in the county of Mehedinți, Romania. The hoard was handed over quickly to the Muzeul Regiunii Porților de Fier, in Drobeta Turnu Severin, by the finders. Archaeologists from the museum visited the site and very probably the hoard was completely recovered.

All together 44 objects, 34 of bronze and 10 of gold, had been deposited in a pottery vessel. The hoard includes tools, weapons and jewellery, all the gold objects belonging to the last category.

Among these, there are several spirals, large and small, made from double wire with looped ends, which find analogies in Romania, but also as far away as Central Germany, as well as in the new treasure from Ebreichsdorf.

Borislav BORISLAVOV & **Petya PENKOVA**, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences Sofia, Bulgaria

The earliest example of gilded silver earrings dated in the Middle Bronze Age from the territory of present day Bulgaria

The recent investigations of the Bronze Age necropolis, close to the village of Izvorovo (SE Bulgaria) – Tumulus 5 (2018) and Tumulus 7 (2021) – added new information in the typology of the jewels from the site with an up to now unknown type of gilded silver earrings. The objects found in a very fragmented state gave us opportunity to study the production technology and more specifically the gilding technique. These particular objects appeared to be the earliest example of the use of a gold leaf gilding found on the territory of present-day Bulgaria. This in itself is an important information for the introduction and development of the technique. The discovery of identical jewels in two different mounts from the same necropolis let us start thinking about possible functioning of a local production center/ atelier with high skilled artisans, who had a very good knowledge in processing the precious metal.

Ondrej CHVOJKA, Daniel HLÁSEK, Markéta AUGUSTÝNOVA, Jan JOHN & Michal ERNÉE, Southern Bohemian Museum and Southern Bohemian University of České Budějovice, Czech Republic

Bronze Age Gold in Southwestern Bohemia

South and West Bohemia are regions with a relatively abundant occurrence of gold both in primary deposits and in secondary alluvium of waterways. In historical times, deep mining and washing of local gold is proven, but for the Bronze Age, however, there is still no clear evidence of the extraction of local gold. Due to the occurrence of gold artefacts in the Bronze Age in graves, hoards, in some settlements, even as isolated finds, and due to the connection of many sites to gold deposits, we assume local gold extraction already in the Early Bronze Age. The aim of our contribution is to map the occurrence of gold artefacts in southern and western Bohemia in the second and early first millennium BC and think about its role in the society of that time (prestigious raw material, symbol of elites, export item?).

Wolfgang DAVID, Archaeological Museum of Frankfurt/Main, Germany

Goldfunde der Bronzezeit in Mittel- und Südosteuropa

Im Gegensatz zur Mehrzahl der bekannten Goldfunde des zweiten Jahrtausends v. Chr. wurde der Goldfund von Ebreichsdorf im Zuge einer planmäßigen Ausgrabung geborgen und dokumentiert, so dass hinsichtlich des Fundortes, des Fundkontextes und der Fundzusammensetzung kein Zweifel bestehen kann.

Aus Form und Ornament der Goldschale und der Reste eines Goldornates ergeben sich neue Aspekte für die Beurteilung schon länger bekannter Goldfunde der späten Bronzezeit. Im Vortrag werden Fragen der chronologischen und kulturhistorischen Einordnung des Goldfundes von Ebreichsdorf und des Symbolguts aufgegriffen. Welche Stellung nimmt dieser außergewöhnliche Neufund ein? Wie ist er vor dem Hintergrund bislang bekannter Goldfunde des Donau-Karpatenraumes, Mittel- und Nordeuropas zu beurteilen und welche neuen Erkenntnisse oder Fragen ergeben sich aus dem Fund von Ebreichsdorf für das Verständnis des bisherigen Bestandes an Goldfunden.

Ivan DRNIĆ, Archaeological Museum Zagreb, Croatia

Collection of prehistoric gold finds from the Archaeological Museum in Zagreb

One of the collections of the Archaeological Museum in Zagreb is the Collection of prehistoric gold finds, which includes about 100 objects from various prehistoric periods. Most of the gold objects in the collection arrived in the early days of the museum in the late 19th and early 20th centuries. Most of the objects were bought from antique dealers, but some finds came from archaeological excavations, as in the case of the famous Dalj - Busija site in the Croatian Danube region. The majority of the finds comes from the territory of today´s Croatia, but some pieces originate from sites in Bosnia and Herzegovina, Hungary, and Serbia.

The oldest find, a pendant from Progar, dates to the Copper Age and is attributed to the Bodrogkeresztúr culture. The Bronze Age is represented by several individual finds, but also by some hoards, such as the Early Bronze Age hoard from Nin near Zadar or the Late Bronze Age hoard from the vicinity of Zagreb. Most of the finds from the Late Iron Age come from the Syrmia region, with the most elaborated pieces coming from destroyed graves in Srijemska Mitrovica. These are a golden necklace and a pair of earrings decorated with filagran and granulation, dated to the 4th century BC.

The aim of the presentation is to give a brief overview of the collection and to place the finds in a chronological and regional context.

Christiane ELUÈRE, C2RMF, Musées de France, Ministère de la Culture Paris, France

The gold jewelry of a presumed forerunner of the Early Iron Age chieftains

In 1987 in St-Romain-de-Jalionas (Isère, French Alps) a male grave was discovered, dated IXth-VIIIth century B.C. In this tomb, which, among other things, contained the most Western example of bronze situla type Hajdúböszörmény, were also discovered three gold jewels: a torc, a bracelet and a pin.

A detailed examination of these three items in precious metal, involving a research of their cultural affinities confronted with information from the rest of the context, underlines the importance of this particular find, raising at the same time some questions about the social position of the dead within a rising „elite".

Diana GERGOVA, National Academy of Art Sofia, Bulgaria

The gilded hyperborean Myth. The Vulchitrun Treasure a century after its discovery

The most remarkable Thracian gold treasure, discovered a century ago near the village of Vulchitrun in Northern Bulgaria, continues to arouse discussions today. It consists of 13 objects of a total weight of 12.5 kilograms of pure gold, which belong to three groups: a ritual drinking set of kantharos, kiathos and three cups, a triple ornitomorphic vessel for burning of narcotics and five small and two big sun discs. The amber pieces embedded in the two big disks are an outstanding illustration of the amber as a sun symbolism. The paper presents the long-standing discussions on the chronology and the interpretations of the hoard, although its connection with sun worship rituals and its dedicatory character are generally accepted. New observations are proposed in favor of the dating and interpreting the Vulchitrun treasure as the golden realia of the Hyperborean myth on the amber road from the Baltic to Delos in the early Iron Age in Thrace.

Karina GRÖMER, Natural History Museum Vienna, Austria

Textiles as prestige goods in the 2nd and 1st millennium BC: special case "gold textiles"

The Old Testament, whose oldest passages were probably written down in the 9th century B.C. according to a long oral tradition, tells us in the Book of Exodus (Ex 39:1-3) about the production of priestly garments. The Greek poet Homer also praises golden garments in his works Odyssey and Iliad, whose creation historians date to the end of the 9th century BC.

Woven fabrics in which, for example, gold wires or strips were included for decoration are found in Central Europe primarily in the Late Bronze Age and Hallstatt Period. A new find with gold threads comes from the gold treasure of Ebreichsdorf in Austria, whose structure clearly indicates that they were once woven into a textile. Interdisciplinary analyses of the gold and handcraft techniques have been applied to understand the complex interplay between the material, socially assigned values and trade as well as social networks. Comparative objects from c 1200-1000 BCE are known from other sites in Austria, Hungary and Bavaria, such as Vösendorf, Óbuda or Várvölgy.

The gold textile from Ebreichsdorf thus fits into a series of very high-quality textiles, which understandable as trans-cultural language of luxury, in ancient times were virtually the symbol of royalty and divinity. Even cross-chronological, in modern times, gold threads were used for coronation robes or liturgical vestments, for example.

Szilvia GUBA, **János DANI**, **Anikó ANGYAL**, **Nicklas LARSSON** & **Károly TANKÓ**, Hungarian National Museum Budapest, Déri Museum Debrecen, Eötvös Loránd University Budapest, Eötvös Loránd Research Network Secretariat – Institute for Nuclear Research Debrecen, Hungary

Forging – hoarding – burying: use of Gold in Northern Hungary in the Middle and Late Bronze Age

Gold has been seen over many millennia as a material representing social status or prestige, and due to its nature and value it was often perceived as treasurable matter. Gold artefacts from the Bronze Age in Central Europe are known from cemeteries, settlements and hoards, although many of them missing any archaeological context. In recent years, the increasing use of metal detector within the frame of archaeological research has multiplied the number of prehistoric gold objects in Northern Hungary. At the same time, the development of non-destructive analytical methods for determining the composition and provenience of precious and non-ferrous metal objects provided new possibilities on understanding prehistoric metallurgy. Therefore, in this paper newly found gold jewellery from N-Hungary and the result of their analytical examinations (PIXE, XRF, SEM) are presented.

The finds come from different sites and circumstances, what they have in common is, that they evidently present highly developed skills of gold alloying and casting. Grave goods (sheet and wire ornaments) are presented from 3 sites dating from MBA to LBA. Gold objects from settlements are a rare feature, their number in this presentation is also limited. Nonetheless, the excavation of a bronze melting and producing workshop and in connection with it clay and stone moulds and a small droplet of gold could be the first testimony of gold melting in the Carpathian Basin during the Bronze Age. Lastly, also a unique ensemble of a gold, amber and bronze hoard will be presented from an LBA site, which is exceptional not only by the number of finds (1400 pieces), but also by the extraordinary quality and value of its composition.

Henning HASSMANN & **Daniel NEUMANN**, Lower Saxony State Office for the Preservation of Monuments, Lower Saxony State Museum Hanover, Germany

Der bronzezeitliche Goldhort von Gessel (Niedersachsen, Norddeutschland) – Niederlegung, rituelle Landschaft, Austausch in der Bronzezeit

Bei systematischen archäologischen Untersuchungen vor dem Bau der „Nordeuropäischen Erdgasleitung“ wurde 2011 im niedersächsischen Gessel einer der umfangreichsten prähistorischen Goldhorte Mitteleuropas entdeckt und im Block geborgen. Dank der computertomographischen Durchleuchtung des Sedimentblocks ist die exakte Anordnung der Goldartefakte in dem kompakt niedergelegten Ensemble präzise dokumentiert. Die Dokumentation der Befundsituation und die Freilegung erfolgte unter Laborbedingungen. Der bronzezeitliche Hort im Gesamtgewicht von 1,7 kg enthält eine Fibel, zwei Armringe und 114 Spiralringen unterschiedlicher Größe, viele von ihnen sind girlandenartig zu Ketten verbundenen. Oberhalb des Goldensembles lag ein Bündel aus sechs Bronzenadeln mit hervorragend erhaltener Leinenumwicklung. Der Fundkomplex wird in seiner regionalen bronzezeitlichen Fundlandschaft sowie vor dem Hintergrund überregionaler Verbindungen kontextualisiert. Grundlage sind Vergleiche anhand der Zusammensetzung des Fundkomplexes sowie morphologische Betrachtungen einzelner Objekte und erste materialanalytische Bestimmungen des Goldes. Die sichere Überlieferungslage trägt zum besseren Verständnis der Niederlegung, der rituellen Landschaft sowie der Austauschprozesse in der Bronzezeit bei.

Anja HELLMUTH KRAMBERGER, Alma Mater Europaea – Institutum Studiorum Humanitatis, University of Ljubljana, Slovenia

"Skythian" princess in Slovenia? On the gold jewelry from grave 27 in tumulus 48 of Stična

Zu den bedeutendsten Funden der Älteren Eisenzeit in Slowenien gehört das Grab 27 im Hügel 48 der Nekropole von Stična in der historischen Landschaft Dolenjska/Unterkrain. Das Grab 27 enthielt der anthropologischen Analyse zufolge die Skelettbestattung einer 18-25 Jahre alten Frau und umfasste eine bemerkenswerte Anzahl an Schmuckbeigaben sowie mehrere Grabgefäße. Neben den zahlreichen Schmuckgegenständen wie Bronzefibeln (Kahn- und Schlangenfibeln), Arm- und Fußringen, bronzenen Manschetten sowie unzähligen Glas- und Bernsteinperlen verdienen besonders das Gewand und der Kopfputz besondere Aufmerksamkeit. Während auf dem Kleid der Verstorbenen zahllose aus Bronzeknöpfen zusammengesetzte Zierstücke in Rosetten- und Dreiecksform aufgenäht waren, schmückte den Kopf ein aufwändiger Kopfputz mit Applikationen aus goldenen Zierplättchen- und Goldstreifen, um den Hals trug die Frau eine Kette aus Perlen anorganischen Materials, die mit Goldfolie ummantelt waren. Das Schmuckensemble aus Grab 27 von Stična stellt den bis dato umfangreichsten Fund von Goldobjekten aus der Älteren Eisenzeit in Slowenien dar. Bereits an sich exzeptionell, ist der goldene Kopfputz jedoch auch aus einem weiteren Grund bemerkenswert, denn einige der goldenen Zierbleche finden ihre Parallelen in Fundstücken aus dem reiternomadisch geprägten Kulturkreis zwischen dem Karpatenbecken und dem Steppenraum nördlich des Schwarzen Meeres bis hin zum Kaukasus.

Martin HRISTOV, National Museum of History – Sofia, Bulgaria

Gold spirals in Balkan region from second half f III-first half of II mill. BC *(Poster)*

The text examines gold spirals with reverse curves from the second half of the 3rd and the first half of the 2nd millennium BC. found in the Balkans. Their typology, chronological position and territorial distribution are presented. Attention is paid to their high concentration in some of the archaeological sites, the possibility of local production, as well as their limited distribution in the second half of the mentioned period. In the context of their discovery, two main groups are distinguished - settlement and ritual, as well as their almost complete absence of similar ones outside the territory of the Balkans.

Wojciech JENERAŁEK, National Museum in Poznań, Poland

Interdisciplinary research on gold mining at the Amalara-Peristera archaeological site in Northern Greece – final result

Amalara is a site located on the northern slopes of the Anthemous Valley, about 40 km east of Thessaloniki. The first confirmed settlement on this site dates back to the Bronze Age and continued in various forms until the Ottoman period. The most characteristic element of the site is extensive rock debris that may be the remain of gold mining.

The aim of the project was to determine the technology of gold mining and understand related settlement processes. For this purpose, a number of non-invasive research methods have been applied including geological mapping, SEM analysis of fluvial sediments, spatial analyses, surface surveys and hydrographic network analysis. The data was interpreted in the context of the region (Macedonia and Thrace) and more broadly in the European context.

Fraser HUNTER & Matthew KNIGHT, National Museum Scotland Edinburgh, Great Britain

A long view of gold objects in Scotland from the Chalcolithic to the Iron Age

Amalara is a site located on the northern slopes of the Anthemous Valley, about 40 km east of Thessaloniki. The first confirmed settlement on this site dates back to the Bronze Age and continued in various forms until the Ottoman period. The most characteristic element of the site is extensive rock debris that may be the remain of gold mining.

The aim of the project was to determine the technology of gold mining and understand related settlement processes. For this purpose, a number of non-invasive research methods have been applied including geological mapping, SEM analysis of fluvial sediments, spatial analyses, surface surveys and hydrographic network analysis. The data was interpreted in the context of the region (Macedonia and Thrace) and more broadly in the European context.

Plamen GEORGIEV, **Hristo POPOV & Ivan IVANOV**, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences Sofia, Bulgaria

Preliminary non-destructive archaeological investigations of mineral deposits in Ancient Thrace

Non-destructive archaeological investigations of ancient mines on the territory of modern Bulgaria have a relatively short history. Although the exploitation of mineral deposits in the past has been attested in scientific publications since the 1970s, information on the territories, chronology and technological characteristics of the ancient mining process suffers from some deficits in terms of direct field data. The archaeological research of the Late Bronze Age gold mine at Ada Tepe provided a solid base and outlined the main non-destructive methods used in the preliminary archaeological investigations of the traces of ancient mining in different areas of the country. In the last decade, a qualitative leap has been made in the registration and initial accumulation of information on the exploitation of various ore deposits in antiquity. This report presents the results achieved and the methodology used in the field survey of newly registered ancient mines in gold and copper deposits on the territory of the Eastern Rhodopes and Strandzha in southeastern Bulgaria. Along with the conventional survey and registration methods, emphasis is marked on the importance of airborne laser scanning (LIDAR) in the initial accumulation of field information, its verification and interpretation. The archaeological results achieved so far in the research of some of the newly registered ancient gold mines in the eastern Rhodopes and the exploitation of the copper deposits in the area of the Zidarov ore field in the Strandzha mountain are presented.

Albrecht JOCKENHÖVEL, Westphalian Wilhelms-University of Münster, Germany

Where has all the Ada Tepe Gold gone? Bronze Age Gold as raw metal: a missing link and its route from mined ore to finished product. Some remarks on the circulation and recycling of gold

Up to the discovery and excavation of the Late Bronze Age gold mine at Ada Tepe (2005), it was the prevailing opinion that Bronze Age gold was won mainly as placer gold (wash gold). However, Hartmann's more than 3800 analyses already pointed to the use of rock gold. Where these mines were located in Europe, whether in the "Golden Quadrangle" of Romania, in the Eastern Alps, in Spain, Wales or Ireland, is unknown, and so one had to rely exclusively on hypotheses. Ada Tepe opens up new possibilities of the prospection and recognition of ancient mines, even though the much older mine of Sakdrisi in Georgia must also be mentioned as a signpost. The importance of Ada Tepe does not only lie in the first evidence of gold mining in Europe, but above all in the relatively short period of its operation. This opens up the possibility of recording the rock gold of Ada Tepe analytically and tracing its way to artifact-gold from the 16th century BC (until today!?). We will discuss some aspects of the circulation of European Bronze Age gold from the mining sites to the finished products. The focus of our interest is – in contrast to bronze metallurgy – on the so far most neglected *missing links* in the *chaîne opératoire*, in particular on the intermediate products such as ingots/bars, cakes, semi-finished, weight-regulated and re-melted artefacts, gold scrap, etc. in a broader socio-economic context.

Marina KALPACHKA & **Petya PENKOVA**, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences (NAIM-BAS)

The Rython from Zlatinitza gilding technique *(Poster)*

The silverware from the 5th-4th century BC excavated from present day Bulgaria - regardless if it was made by Thracian artisans in a local atelier or imported - was often gilded. This particular technique was used in order to create more vibrant decoration but not only. The use of gold has also its symbolic meaning – to underline, reveal the divine connection or simply make the decoration colorful. In the period we are focusing on all the main metalworking techniques are well developed and adopted by the artisans. Anyway, there is some diversity in the preferences of the applying the gold leaf on the surface. The present work is focused namely on this topic, trying to put the above mentioned rython in the context of other previously studied examples of the Thracian toreutics.

Matěj KMOŠEK, **Stanislav STUCHLÍK** & **Nikola ŠUHEJOVÁ**, Institute of Archaeology of the Czech Academy of Sciences Brno, Museum Bruntál, Czech Republic

New finds of gold sheet ornament of Urnfield culture from Opava (CZ)

Die früheisenzeitliche Hallstattkultur ist vor allem in ihrem westlichen Verbreitungsgebiet für ihren Goldreichtum und die Herstellung filigran gearbeiteter und technisch aufwändiger Schmuckobjekte bekannt. Dies belegen außerordentlich reiche Grabinventare, wie sie unter anderem aus Eberdingen-Hochdorf (Kr. Ludwigsburg) oder aus dem Umfeld der Heuneburg bei Hundersingen (Kr. Sigmaringen) bekannt geworden sind. Neben diesen herausragenden Prunkbestattungen kommen Goldobjekte aber auch in zahlreichen weiteren Grablegen der frühen Eisenzeit Südwestdeutschlands vor.

Ein Großteil dieser Funde konnte zwischen 2012 und 2015, im Rahmen eines deutsch-französischen Forschungsprojekts, untersucht und ausgewertet werden. Dabei zeigten sich anhand einzelner Gräber bzw. daraus stammender „Ringe des Kopfschmucks“ große Ähnlichkeiten in Bezug auf die Herstellungstechnik und Formgebung. Überraschend war darüber hinaus der Nachweis einer Verwendung identischen Rohmaterials für die Anfertigung der Schmuckstücke.

Vor allem letzterer liefert einen konkreten Hinweis darauf, dass die genannten Ringe sehr wahrscheinlich in ein und derselben Werkstatt hergestellt wurden, obwohl die Fundorte zum Teil relativ weit voneinander entfernt liegen. Neben detaillierten Analysen und Ergebnissen zur Materialbeschaffenheit, Machart und Handwerkstechnik sollen daher auch kulturanthropologische Überlegungen zu den Fundplätzen selbst sowie zu möglichen Produktionsorten und regionalen Verteilungsmustern vorgestellt werden.

Alexandra KRENN-LEEB, Department of Prehistoric and Historical Archaeology, University of Vienna, Austria

The gold treasure of Ebreichsdorf: the hoard and its archaeological and cultural contextualisation

The gold find complex from Ebreichsdorf consists of two fragments of an extensively decorated, dome-shaped gold sheet bowl as well as two interlocked large gold wire spiral hoops found inside. There are also eight smaller interlocked gold wire spiral hoops. Three loose, bent gold wires may have belonged to a compact gold thread bundle consisting of at least three tightly folded textiles with woven in gold threads, wrapped by several thicker gold wires.

Gold sheet bowls are mainly found in hoards, often along with other artefacts. Despite the differentiation in detail, a broad basic concept with regard to basic shape, size and dimension, the use of the raw material gold as well as a symbolic decorative motif developed in the Late Bronze Age. In less than 50 find complexes from the Iberian Peninsula to the Carpathian region and from Scandinavia to the Mediterranean region around 150 relatively small drinking bowls (capacity of a quarter to a maximum of half a litre) have been found.

This means we are dealing here with supra-regionally comparable ritual acts and ceremonial objects. This indicates comparable ritualised practices equally understood by all persons involved (ritual-religiously or political-ideologically motivated), where the bowls could have been used during libation acts. Comparative finds are concentrated in the Late Bronze Age/Early Hallstatt Period (1200-1000 BCE).

At the time of the discovery two large interlocked gold wire spirals were found inside the bowl. There are comparable examples for this way of deposition. The relatively intact condition indicates rare use and little movement, maybe mounted on a statue.

Furthermore, the find complex includes eight smaller interlocked gold wire spiral hoops arranged as a chain according to circumference and size. All are complete and follow a uniform concept. Despite the compact bundling the assemblage was found in, hardly any marks of compression or deformation can be detected.

The compact gold thread ball is a convolute of a least three different textiles, tightly folded and woven in with gold threads, wrapped and held together by several thicker gold wires.

Three loose bent gold wires could have been part of the wrapping. However, all show damages at the ends and could also be regarded as semi-finished products. They cannot be attributed to the gold find complex with absolute certainty.

With the exception of these three gold wires and a small gold wire spiral hoop from another find complex in Ebreichsdorf, all gold artefacts are finished products with a recognisable concept of composition, arrangement and, in some cases, manufacture.

Based on the selection of objects and their completeness, a raw material hoard is highly unlikely. The composition of the complex speaks for a highly symbolic ensemble, adorning a person or a figural statue, comparable to complexes from the same period. The intentions of the people responsible for the deposition cannot be determined today or only in a speculative manner.

Alexandra KRENN-LEEB, Department of Prehistoric and Historical Archaeology, University of Vienna, Austria

Der Goldschatz von Ebreichsdorf: der Hort und seine archäologische und kulturelle Einordnung

Der Goldfundkomplex von Ebreichsdorf besteht aus zwei Fragmenten einer flächig verzierten, kalottenförmigen Goldblechschale, darin befindlich 2 ineinander gehängte große Golddrahtspiralreifen. Ferner zählen acht ineinander gehängte kleinere Golddrahtspiralreifen dazu. Drei lose aufgebogene Golddrähte könnten zu einem kompakten Goldfadenknäuel gehört haben, bei dem mindestens drei eng gefaltete und mit Goldfäden durchwirkte Textilien von mehreren Golddrähten umwickelt sind.

Goldblechschalen finden sich vorwiegend in Depotfunden, häufig mit mehreren Beifunden vergesellschaftet. Trotz der Differenziertheit im Detail hat sich ein weiträumiges Grundkonzept hinsichtlich Grundform, Größe und Dimension, Verwendung des Rohstoffes Gold sowie einer symbolträchtigen Dekormotivik in der Spätbronzezeit entwickelt. In weniger als 50 Fundkomplexen von der Iberischen Halbinsel bis in den Karpatenraum und von Skandinavien bis zur Mittelmeerregion finden sich rund 150 relativ klein dimensionierte Trinkschalen (Fassungsvermögen ein Viertel bis maximal ein halber Liter). Das bedeutet, dass wir es hier mit überregional vergleichbaren, sehr hochrangigen rituellen Handlungen bzw. zeremoniellen Ausstattungsgegenständen zu tun haben. Voraussetzung ist daher eine von allen Beteiligten verstandene, vergleichbare ritualisierte Praktik (kultisch-religiös oder politisch-ideologisch motiviert), bei der die Schalen für Trankopferhandlungen gedient haben könnten. Die Vergleichsfunde konzentrieren sich auf den Zeithorizont Spätbronzezeit/beginnende Hallstattzeit (1200-1000 v.Chr.). In der Goldblechschale haben sich zum Zeitpunkt der Auffindung zwei ineinander gehängte, große Golddrahtspiralreifen befunden. Für diese Art der Deponierung existieren Vergleichsfunde. Ihr relativ unversehrter Zustand spricht für eine seltene und bewegungseingeschränkte Nutzung (möglicherweise an einer Statue).

Weiters zählen zum Fundkomplex acht kettenartig ineinander gehängte kleinere Golddrahtspiralreife, angeordnet nach Umfang und Größe. Alle sind vollständig und folgen dem gleichen Konzept. Trotz der kompakten Bündelung bei der Auffindung sind kaum Stauchungsspuren oder Deformationen nachweisbar.

Bei dem kompakten Goldfadenknäuel handelt es sich um ein Konvolut von mindestens drei unterschiedlichen, eng gefalteten und mit Goldfäden durchwirkten Textilien, umwickelt und zusammengehalten von mehreren massiveren Golddrähten. Zur Umwicklung könnten auch drei lose gefundene, aufgebogene Golddrähte gehört haben. Sie weisen Bruchstellen an den Enden auf und könnten auch als Halbfertigprodukte betrachtet werden. Sie sind nicht völlig einwandfrei dem Fundkomplex zuzuordnen.

Bis auf die drei losen Golddrähte und einen eindeutig zu einem anderen Befundkontext gehörigen kleine Golddrahtspiralreif handelt sich bei allen Goldartefakten um Fertigprodukte mit einem erkennbaren Konzept der Zusammensetzung, Anordnung und möglicherweise Herstellung.

Aufgrund der Objektauswahl und der Vollständigkeit ist ein Rohmaterialdepot unwahrscheinlich. Die Zusammensetzung des Komplexes spricht für ein Ensemble mit hohem Symbolgehalt, möglicherweise zur Ausstattung einer Person oder Statue, sehr gut vergleichbar mit zeitgleichen Goldfundkomplexen. Die Motivation der handelnden Personen, die für die Deponierung verantwortlich waren, kann heute nicht oder nur spekulativ ermittelt werden.

Robert LINKE & **Birgit BÜHLER**, Austrian Federal Monuments Authority, Vienna Institute for Archaeological Science

Herstellungstechnische Untersuchungen am Goldfund von Ebreichsdorf *(Poster)*

Mittels naturwissenschaftlicher Untersuchungsmethoden wie 3D-Digitalmikroskopie, Rasterelektronenmikroskopie und Röntgenfluoreszenzanalyse konnten Fragen zum Erhaltungszustand und zur Herstellungstechnik des sog. Goldschatzes von Ebreichsdorf beantwortet werden. Die zerstörungsfrei durchgeführten Untersuchungen betrafen sowohl die Goldschale als auch die Golddrähte und den in Textilien eingearbeiteten Goldlahn. Vermessungen und Vergleiche der unterschiedlichen Punzierungsarten geben Aufschluss über die verwendeten Werkzeuge und die einzelnen Arbeitsschritte. Vergleiche mit anderen bekannten Objekten dieser Zeit bieten einen Einblick in den Forschungsstand zum sehr hoch entwickelten urnenfelderzeitlichen Goldschmiedehandwerk. Neben den ausschließlich kalt bearbeiteten Fabrikaten liefert ein einzelnes kleines Fragment möglicherweise einen Hinweis auf Lötarbeiten. Die Tatsache, dass der Fund auch Halbfabrikate beinhaltet, weist darauf hin, dass der Fund aus dem Besitz eines Goldschmieds stammen könnte.

Regine MARASZEK, State Museum of Prehistory Halle (Saale), Saxony-Anhalt State Office for the Preservation of Monuments and Archaeology, Germany

Late Bronze Age golden double wire spirals in the Lusatia region – classification and cultural context

A considerable number of new finds of golden double wire spirals (loop rings) during the last decade in Central and Northern Germany offers reason to take a new look at these objects and to evaluate them in a wide-ranging comparison.

The different designations of the mostly finger- to arm-ring-sized spirals used in research so far are discussed and a new unified classification is proposed. For the first time, the gold finds will be contrasted with their bronze counterparts. This comparison makes it possible to delimit regional and temporal differences in function and use of the spirals quite clearly. A precise chronological classification of the finds often remains difficult. However, new insights can be gained into the cultural context of this specific ring jewelry. This leads to the question whether we should actually interpret these spirals as a continuation of the iconic golden hair jewelry of the "great men" of the Early Bronze Age.

Julia MATTES, Institutionen för arkeologi och antik historia, Uppsala universitet

Der Goldfund von Onslunda – Ausdruck von Wandel der Kultpraxis in der Spätbronzezeit? *(Poster)*

Während zwei großangelegter Ausgrabungen in Mittelschweden wurden neuerlich außerordentliche Gold- und Edelmetallfunde geborgen. Der bronzezeitliche Fundplatz Onslunda, mit Kontinuität vom Neolithikum bis ins 18. Jh., barg eine Goldspirale (Periode II-IV) mit ungewöhnlich hohem Goldgehalt von 83 %. Dies ist der größte bislang in Schweden gefundene Goldring. Das schlichte Artefakt ähnelt Spiralen des Goldhortfundes von Eberswalde (D) und Golddrahtringen aus Tranegård (DK). Das eisenzeitliche Lunda gab im Gegensatz zum o.g. abstrakten Artefakt figürliche Darstellungen anthropomorpher Ausprägung aus Gold und Silber frei, was für diese Fundgattung außergewöhnlich ist. Die hier genannten Artefakte stammen jeweils aus Siedlungen. Ihnen ist die Nähe zu rituellen Gebäuden bzw. Kulthäusern gemein sowie dass anhand der langen Platzkontinuitäten zu beobachten ist, dass sich die Befunde der jüngeren Bronze- und älteren Eisenzeit deutlich von denen der älteren Bronzezeit unterscheiden, sodass hier ein beginnender Wandel der Kultpraxis absehbar scheint, in dessen Kontext die Goldfunde zu interpretieren sein könnten.

Harald MELLER, Saxony-Anhalt State Office for the Preservation of Monuments and Archaeology, State Museum of Prehistory Halle (Saale), Germany

Sunshine Drinking. The Krottorf gold bowl and its dating

The gold bowl was found in 1909 near Krottorf, c. 30 km southwest of Magdeburg, in central Germany. Its dome-shaped form is rather rare and makes it difficult to date the find within the Middle or Late Bronze Age. A comparison with the decoration of the bottle-like gold vessel from Lienewitz forest in Brandenburg, reveals a close connection to this find. The Lienewitz forest vessel was purchased by the Royal Prussian Art Collection together with two gold bracelets with double spirals and two gold spiral rings from the art market in 1889. It is assumed that the finds were found together, whereby they can be dated to the late Middle Bronze Age (14th century BC). Due to the close connection, the Krottorf bowl probably also date to the same period.

Presumably, the Krottorf bowl, as well as other gold vessels, represents the sun or was used in the context of a sun cult. However, its exact function remains unclear and can be discussed in terms of cult vessel or symbol of the sun.

Carola METZNER-NEBELSICK & Ernst PERNICKA, Ludwig Maximilian University of Munich, Curt Engelhorn Center Archaeometry Mannheim, Germany

The hoard finds of Mykhalkiv/Ukraine and comparable finds – their context, composition and results of a laser ablation and QICP-MS analysis

Some of the most intriguing finds in the collection of the Department of Prehistory in the Natural History Museum Vienna are parts of two gold hoards which were discovered in 1878 and 1897 in the village Mykhalkiv in modern Ukraine that was then part of the Austro-Hungarian Empire. These finds dating to the eighth c. BC are unique in many ways. In my contribution, I will concentrate on their composition, context and briefly on the history of their discovery and subsequent destiny. I will discuss comparable finds and in particular, introduce the results of a so far unpublished laser ablation analysis of some artefacts from Mykhalkiv, now in Vienna, and a similar find of uncertain provenance, labelled "Czernowitz" in the Museum für Archäologie, Schloss Gottorf, Landesmuseum Schleswig-Holstein, Germany.

Krasimir NIKOV, National Archaeological Institute with Museum – Bulgarian Academy of Sciences

New evidence for relations between southern Thrace and Anatolia in the late third and early second millennium BC *(Poster)*

Part (pendant) of a gold composite ornament was discovered during rescue excavations in the central part of Southern Thrace. The site of discovery consists of a system of ditches and ground structures dated to the Early and Middle Bronze Ages. The pendant itself can be dated to the late third or early second millennium BC. The way it was made and the features of the overall design brings it close to some of the ornaments (diadems and earrings) from the treasures of Troy and Poliochni. Its discovery in inland Thrace throws new light on contacts with the region of Anatolia at the turn to the second millennium

Moritz NUMRICH & Ernst PERNICKA, Curt Engelhorn Center Archaeometry Mannheim, Germany

Analyses of the gold objects from the hoard of Ebreichsdorf

The gold objects from the hoard of Ebreichsdorf were analysed using an innovative method that combines virtually non-destructive sampling via portable laser ablation with the most sensitive analytical method, namely mass spectrometry. The details of this technique will be explained in the presentation. The gold from Ebreichsdorf shows a rather uniform chemical composition with a silver content ranging from about 15 to 20 % and copper contents in the low percentage range. Only the vessel fragment contains more silver (25%) and about 6% copper, which was probably intentionally added to change the colour of the gold. As comparative material, the contemporaneous hoard from Arikogel was analysed with the same method. These samples show a very similar chemical composition. In all cases alluvial gold was used, as evidenced by the relatively high contents of tin, platinum and palladium. For the possible origin of the gold, deposits in the Bohemian Massif and especially the Krkonoše Mountains (Riesengebirge) come into question, where a suitable mineral association is known and where at least medieval gold mining was going on.

Daniel OBERNDORFER, Irina HULLER & Viola WINKLER, Natural History Museum Vienna, Austria

Restoration of the Ebreichsdorf „gold textile“

The “gold textile” from Ebreichsdorf was recovered in a lump of earth. Due to its largely untouched state, it represented a rich source of information. From the very beginning, the conservation and restoration of the gold object could be carefully planned, together with the necessary analyses and involved sampling, to gather any information about structure, material, etc.

For further research as well as for museum display a good readability of the object is important. Thus, the conservation goal was to remove the sediment and any mineral crusts as far as possible. In order to avoid exposing the fine wires and the soft material to mechanical impact, a minimal invasive method was chosen. For uncovering the fine gold threads atomised water with compressed air in a specially modified device was used. Firmly adhering calcareous mineral crusts were removed with a complex agent.

Petya PENKOVA & Krastyu CHUKALEV, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences (NAIM-BAS)

Technological study on gold finds from Late Chalcolithic period from the collection of National Archaeological Institute with Museum at the Bulgarian Academy of Sciences *(Poster)*

The technological skills, respectively the social development of the Prehistoric societies in the Chalcolithic East Balkan Peninsula lead to a complete transformation related to the early metallurgy. The process of the mining of copper ores, the extraction of the metal and its transformation into copper tools, weapons and jewels is in development and simultaneously starts the process of the use of gold. In the beginning, the objects are simple in shape and production technology – hoop rings, beads, pendants – but later on they evolve into more complicated artifacts which display the complexity of the skills of the artisans.

The gold artifacts from the Late Chalcolithic in the collection of the NAIM-BAS, the focus of the present study, can be interpreted as jewels and anthropomorphic amulets. Most of them are found by accident but there are some with clear context, found during archaeological excavations.

Ernst PERNICKA & Moritz NUMRICH, Curt Engelhorn Center Archaeometry Mannheim, Germany

The SAM gold analysis programme and provenance of ancient gold

The first large-scale program for the analysis of prehistoric gold objects was undertaken by Axel Hartmann at the Württembergisches Landesmuseum in Stuttgart using atomic emission spectrometry. Almost 5000 objects were analysed ranging in date from The Chalcolithic to the Late Iron Age. The analytical method used will be described and compared with modern techniques like X-ray fluorescence and laser ablation combined with mass spectrometry (LA-ICP-MS). The analyses were grouped according to the concentrations of silver and copper, tin, and platinum. The classification method will be described and some results will be presented, especially relating to the Late Bronze Age in central Europe. Since the results of this program were heavily criticized, especially in the Anglo-Saxon world, the achievements and limitations of this program will be assessed combined with general considerations concerning the possibility to determine the provenance of ancient gold.

Jaroslav PEŠKA, Archeological Center Olomouc, Czech Republic

Ein neuer Hortfund von Golddrahtrollen in Mittelmähren

Im Jahr 2019 wurde in Mittelmähren (Domašov bei Šternberk) in der Nähe von zwei Burgwällen aus der Urnenfelderzeit und im Kontext von 7 weiteren Bronzedepots ein monotypisches Depot von 4 Paaren Goldarmbändern aus Doppeldraht entdeckt, die aus sog. Endlosdraht zu einer Spirale mit zu einer Schlaufe gebogenen Enden und einer Tordierung gedreht wurden, mit einem Gesamtgewicht von 630,28 g. Es handelt sich um den ersten mährischen Fund mit einer nicht sehr großen Anzahl von Analogien aus Südeuropa (Ägäis, Adria, Italien) bis Norddeutschland und Großpolen mit mehreren Fundenklaven. Die nächsten Analogien finden sich in den Depotfunden aus Ost- (Hradec Králové, Kolín, Lžovice, Mlázovice, Olešnice u Červeného Kostelce) und Südböhmen (Nová Telib). Zusammen mit Varianten in Form von schmalen Ringen oder Haarschmuck oder breiten Armbändern mit wenigen Windungen werden sie meist auf die ältere Urnenfelderzeit mit einer Häufung in HA2 (12.-11. Jh. v. Chr.) datiert, wobei ein Überleben bis in die frühe Spätbronzezeit (HB1) nicht auszuschließen ist. Es überwiegen Depotfunde, wobei Grabfunde vor allem in Südeuropa vorkommen. Wir betrachten die so genannten Goldenen Achten von Hradec Králové mit gleicher Datierung und der Funktion einer stabilisierten Form einer Halbfertig- oder Vormünze, die geographisch durch die Region Ostböhmen definiert ist, als eine spezifische verwandte lokale Form. Aufgrund der Tatsache, dass südeuropäische Funde tendenziell älter datiert sind, schließen wir einen Ursprung in dieser Region nicht aus.

Hristo POPOV, National Archaeological Institute with Museum at the Bulgarian Academy of Sciences Sofia, Bulgaria

The Late Bronze Age gold mine Ada Tepe in the context of interregional contacts in the Northern Aegean and the Eastern Balkans in the 2nd mill. BC

The research of the Late Bronze Age goldmine on Ada Tepe hilltop near modern Krumovgrad in the Eastern Rhodope has provided, over the last two decades, numerous data on the chronological framework, the technological characteristics of ore mining and the structure of the precious metal mining society in these parts of the Eastern Balkans in the middle of the 2nd millennium BC.

This information fits into a much more complex general picture. It corresponds to increasingly numerous data from various archaeological sites on the territory of the Eastern Balkans and in the northern Aegean area, which present this part of the Ancient World as an area of active transregional contacts through which important communications passed during the Middle and Late Bronze Ages.

In this context, Ada Tepe can be seen not as a rare exception but rather as a model and as one of the examples of the creation of transregional networks related to the extraction, distribution and transport of basic raw materials.

Violetta REITER, **Robert LINKE & Karl GROSSSCHMIDT**, Culex, Austrian Federal Monuments Authority, Medical University of Vienna, Austria

Small is beautiful. Gold from Steyr, Upper Austria – Grave 160 from the beginning of the Late Bronze Age

With the spread of bronze throughout Europe, the shiny yellow gold lost importance in copper-rich areas, as the similarly-coloured bronze is more resistant and harder. The discovery of a piece of gold wire in a grave inventory from Steyr was therefore all the more surprising.

The gold find, which was salvaged in 1999 during a rescue excavation by the Federal Monuments Authority, was only discovered in 2020 during cleaning work in preparation for the scientific presentation of a small group of graves. The piece of wire was part of a cremation burial from the early Late Bronze Age (Ha A, Baierdorf-Velatice, earlier Urnfield culture), which can now be presented in detail with its inventory for the first time thanks to the advanced state of processing. The careful construction of the tomb and the numerous splendid vessels indicate a distinctive mortuary culture and highly developed care of the dead.

The piece of gold wire now discovered was probably overlooked during a robbing of the grave. The archaeological analysis is supplemented by metallurgical and anthropological analyses.

Kayleigh SAUNDERSON, Department of Prehistoric and Historical Archaeology, University of Vienna, Austria

Finding the precious fabric in a tangled bundle – The textile and experimental analyses of the gold threads of Ebreichsdorf

During the Late Bronze in Central Europe, a multitude of more advanced textile techniques had already been established, as is evidenced by the chevron twill and striped tablet-woven finds as well as dyed threads from the salt mines of Hallstatt, all of which are decorative elements. A unique form of decoration occurs between 1200 and 1000 BCE: gold threads with specific twists and bends. Though the organic components are no longer preserved, but the bends of the gold threads, which are very similar across multiple finds from Austria and Hungary, indicate a flexible woven structure. These could represent ribbons or even larger fabrics in the case of Ebreichsdorf. interwoven or embroidered. This paper examines these structures, especially those of the thread bundle from Ebreichsdorf, from a textile-technological perspective, along with textile experiments. These could indicate a larger, imposing fabric, which was densely interwoven with gold threads.

Birgit SCHORER & Gerd STEGMAIER, State Office for Cultural Heritage Baden-Württemberg, Tübingen; Department of Pre- and Protohistory, University of Tübingen, Germany

Material Identities: Studies on selected Early Iron Age gold objects from Southwest Germany

Die früheisenzeitliche Hallstattkultur ist vor allem in ihrem westlichen Verbreitungsgebiet für ihren Goldreichtum und die Herstellung filigran gearbeiteter und technisch aufwändiger Schmuckobjekte bekannt. Dies belegen außerordentlich reiche Grabinventare, wie sie unter anderem aus Eberdingen-Hochdorf (Kr. Ludwigsburg) oder aus dem Umfeld der Heuneburg bei Hundersingen (Kr. Sigmaringen) bekannt geworden sind. Neben diesen herausragenden Prunkbestattungen kommen Goldobjekte aber auch in zahlreichen weiteren Grablegen der frühen Eisenzeit Südwestdeutschlands vor.

Ein Großteil dieser Funde konnte zwischen 2012 und 2015, im Rahmen eines deutsch-französischen Forschungsprojekts, untersucht und ausgewertet werden. Dabei zeigten sich anhand einzelner Gräber bzw. daraus stammender „Ringe des Kopfschmucks“ große Ähnlichkeiten in Bezug auf die Herstellungstechnik und Formgebung. Überraschend war darüber hinaus der Nachweis einer Verwendung identischen Rohmaterials für die Anfertigung der Schmuckstücke.

Vor allem letzterer liefert einen konkreten Hinweis darauf, dass die genannten Ringe sehr wahrscheinlich in ein und derselben Werkstatt hergestellt wurden, obwohl die Fundorte zum Teil relativ weit voneinander entfernt liegen. Neben detaillierten Analysen und Ergebnissen zur Materialbeschaffenheit, Machart und Handwerkstechnik sollen daher auch kulturanthropologische Überlegungen zu den Fundplätzen selbst sowie zu möglichen Produktionsorten und regionalen Verteilungsmustern vorgestellt werden.

Heiner SCHWARZBERG & Ina SCHNEEBAUER-MEISSNER, Archaeological State Collection of Munich, Germany

Golden Times- Gold Textiles of the Bronze Age in the Bavarian Archaeological State Collection

The five "golden" centuries of the Late Bronze Age and Urnfield Period left rich sources, such as settlements, graves and hoards in the area of today's Federal State of Bavaria, Germany. The latter often include particularly spectacular finds such as the golden vessels from Bullenheimer Berg in Franconia or Heroldingen in Swabia.

However, with these prominent finds, another kind of golden artefact is usually overlooked. The rich historical holdings of the Bavarian State Archaeological Collection in Munich contain precious evidence of fine Bronze Age craftsmanship in the form of numerous gold fibers from different sites, which are presented here for the first time in summary. They will undergo detailed examination in the future.

Ruslan STOYCHEV, **Stanislav Iliev & Hristo POPOV**, Institute of Art Studies, Bulgarian Academy of Sciences, Regional Museum of History Haskovo, National Archaeolog. Institute with Museum at the Bulg. Academy of Sciences Sofia, Bulgaria

Ancient gold mines at Stremtsi, Kardzhali Municipality, South Bulgaria

From the point of view of mining research, the Eastern Rhodope Mountains have a high scientific value and have a huge potential, which is expressed in the large number of areas with remains of the exploitation of natural resources in different historical periods.

One of these areas is the gold deposit located south of the village of Stremtsi, municipality Kardzhali. In 2017, field excavations and registration of various types of remains of ancient gold mining were carried out, and in 2018-2019 regular archaeological excavations were organized.

The registered galleries, shafts, dumps, open ore mines and technological places outline the mines at the village of Stremtsi as a very large technological complex that functioned over a long period of time. The pottery discovered during the excavations so far allow to place the most intensive work in the mine in the period of the 2nd - 5th centuries. After a break it continued in the Middle Ages – 11-13.th centuries AD.

Milena TONKOVA, National Archaeological Institute with Museum, Bulgarian Academy of Sciences (Department of Thracian Archaeology)

Gold signet rings of Odrysian elite (5th – 4th century BC) *(Poster)*

Golden signet rings are among the most characteristic insignia of the Odrysian elite. Almost all Classical gold examples found in Thrace come from the territories associated with them. Among them are the rings from the aristocratic necropoleis at Duvanlii, Kaloyanovo-Chernozemen, Ezerovo, Starosel, Brezovo and Rozovets. The focus of this study is on their appearance around the middle of the 5th century BC in the rich burials of the Thracian aristocracy as well as on their development within the local context. At the beginning are the gold scaraboid rings and entirely metal signet rings with images characteristic of Greek glyptic. They are prestige imports. The second trend is related to the development of own Thracian patterns **–** horseman, portrait images of kings, investiture scene. These rings became recognizable signs of the power of the Odrysian elite.

Holger WENDLING, Salzburg Museum und Archäologische Staatssammlung München

Gold of the Ancient Celts - The hoard of torc, rings, and coins from Neumarkt near Salzburg

In 2021, archaeologists from the BDA Salzburg recovered 28 Celtic silver coins (tetradrachms), four finger rings, a massive bracelet and a twisted gold torques near Neumarkt am Wallersee (Salzburg, AT). With an excellent notice of discovery from the finders, most of the objects were uncovered and documented in their original position. For its 100th anniversary in 2022, the Salzburg Museum Society was able to acquire the archaeological centennial discovery which will complement the archaeological collection of the Salzburg Museum as a permanent loan.

The hoard belongs to a group of deposits of golden jewellery with silver or gold coins known from the last centuries before the turn of the era throughout Europe. The coins date the treasure to around the middle of the 1st century BC, its deposition probably took place only a few decades later. The analysis of the find context as well as formal and numismatic comparisons aim to clarify the background and motives of the deposition and to allow a cultural-historical contextualisation in the East Celtic area of the late 1st century BC, which is considered a time of economic, social and political crises. Perhaps, therefore, the treasure was hidden under threat in a time of danger and therefore with little care. However, it is also possible that cultic motives, for example as offerings, led to the burial in the ground. There is no doubt that the coins and the magnificent gold jewellery belonged to a high-ranking person, perhaps a large landowner from Salzburg's Flachgau. The Boii coins point to the area of today's Czech Republic and Slovakia, where the oppidum of Bratislava was probably acutely involved in Celtic-Dacian conflicts. Archaeological and archaeometric analyses will reveal whether the Salzburg hoard is connected to these events.

Maria WINDHOLZ-KONRAD

Der Golddrahthort aus dem steirischen Koppental *(Poster)*

Im Jahr 1994 wurde im »Unteren Koppental« der Überrest eines prähistorischen Golddrahthortfundes notgeborgen. Die repräsentativen Golddrähte wurden im Jahr 2008 bei der oberösterreichischen Landesausstellung in Traunkirchen ausgestellt und werden heute im Kammerhofmuseum Bad Aussee verwahrt.

Im Juli 1995 konnte unter Leitung des Bundesdenkmalamtes eine Grabung zur Bergung der Drähte durchgeführt werden. Rund 90 % der Golddrähte waren zum Weiterverarbeiten vorbereitet, der Rest kann wohl als „Abfallprodukte der Metallverarbeitung“ gedeutet werden. Repräsentativ sind die beinahe vollständig erhaltenen „Lockenringe“.

Der chemischen Zusammensetzung nach könnten die beiden Golddrahtdepots vom oberösterreichischen Arikogel und dem steirischen Koppental, die aus Naturgold hergestellt sind, der Früh- bzw. Mittelbronzezeit zugehörig sein. Bei den beiden Golddrahtfunden aus dem Salzkammergut, die höchstwahrscheinlich aus derselben Lagerstätte kommen, könnte es sich sogar um die ältesten Kerbdrähte Mitteleuropas handeln.

Murat YASAR, Regina FRIEDL & Rudolf GÖTTLICH, Austrian Federal Monuments Authority, Restoration Atelier Friedl and Göttlich, Austria

Restaurierungs- und Konservierungsarbeiten an dem spätbronzezeitlichen Goldschatz von Ebreichsdorf

Die urnenfelderzeitlichen Goldobjekte von Ebreichsdorf in NÖ sind bei Baggerarbeiten durch geringfügige Erdverschiebungen zu Tage gekommen. Die Objekte wurden durch RestauratorInnen nach den Richtlinien für archäologische Maßnahmen bzw. den Standards für die konservatorische Behandlung von archäologischen Funden entsprechend geborgen. Der Golddepotfund aus Ebreichsdorf besteht aus mehreren Fragmenten von Golddrähten, Spiralarmreifen und einer reich verzierten Goldschale inklusive eines dazugehörigen Fragmentes.

Auf Grund der kulturgeschichtlichen Besonderheit und der überregionalen künstlerischen Bedeutung dieses Fundkomplexes wurden die Restaurierungs- und Konservierungsarbeiten in der Abteilung für Konservierung und Restaurierung des Bundesdenkmalamtes im Zuge einer Projektarbeit durchgeführt.

Das Hauptziel der Konservierung und Restaurierung war Sicherung und Erhaltung des Bestandes. Alle Maßnahmen wurden unter Rücksichtnahme auf die Erhaltung der originalen Oberfläche, sowie der Herstellungs- und Benutzungsspuren durchgeführt. Zudem sollten in jedem Fall anhaftende Sinterkrusten für weitere Untersuchungen erhalten bleiben.

Tomáš ZACHAR, Archaeological Museum of Frankfurt/Main, Germany

Aurum vegetabile. Historische Quellen, Datierung und Herstellungstechnologie der spätbronzezeitlichen Golddrahtrolle aus Zvolen, Slowakei

Aurum vegetabile or "growing gold" presents an interesting phenomenon between modern alchemy and prehistoric archaeology. The alchemists of the 18th and 19th centuries in the former Habsburg monarchy believed that the gold wires, often found wrapped around the vine or grain, grew from the gold-bearing soil. Precise analysis of historical and archaeological sources shows that the phenomenon of “growing gold” lies largely in present-day Slovakia and northern Hungary and constitutes predominantly the Late Bronze Age gold finds of the Piliny culture. An important site of "growing gold", little known in the literature, is located in central Slovakia near the town of Zvolen (Altsohl). Since the 17th century, several gold and bronze finds have been found in the "Borová hora" area and still embellish the archaeological collections in the national museums in Budapest and Vienna. In 2001, during a test excavation, a gold wire (420 g) was found, which was examined with the modern methods (SEM, EPMA, pXRF) and presented in a cultural-chronological context.

In 2000, during a discovery excavation, a gold wire (422 g) was found, which was examined with the modern methods (SEM, EPMA, pXRF) and dated in the cultural context.