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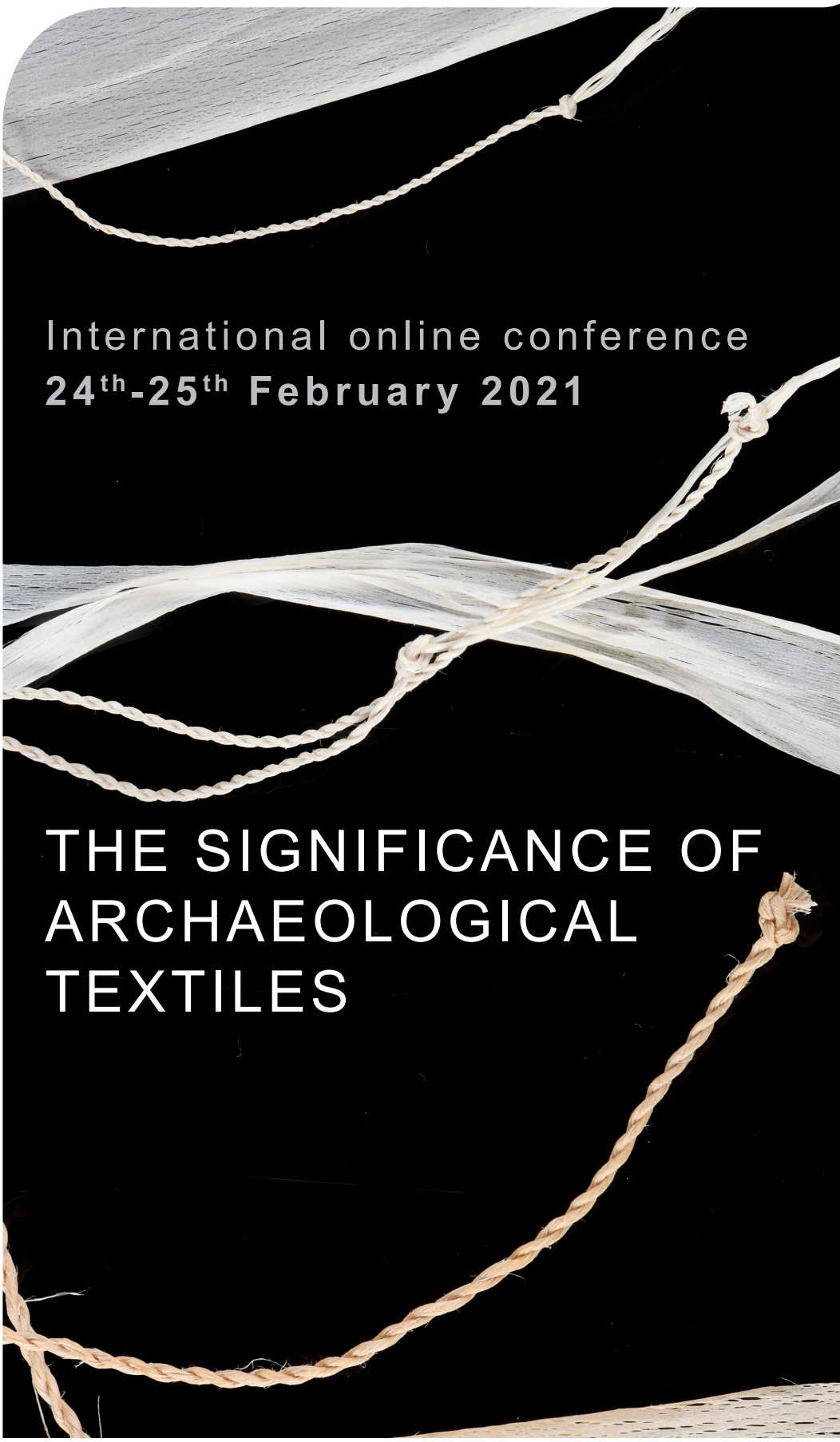

International online conference

**24th-25th February 2021**

# THE SIGNIFICANCE OF ARCHAEOLOGICAL TEXTILES

FAU FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG
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# ABSTRACT

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# SESSION 1

# THE SIGNIFICANCE OF ARCHAEOLOGICAL TEXTILES

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# ABSTRACT

**The THEFBO-project: First insights into analysis and results on the Neolithic finds and natural sciences**

SEBASTIAN MILLION[1], DORIS MISCHKA[2], SEBASTIAN BÖHM[2], ANJA PROBST-BÖHM[3], MILA ANDONOVA[4], INGRID STELZNER[5], JOHANNA BANCK-BURGESS[6]

Since October 2018 the Federal Ministry of Education and Research (BMBF) is financing the project THEFBO „Textile craftsmanship in the prehistoric wetland settlements on Lake Constance and Upper Swabia – requirements for textiles and their perception“. This interdisciplinary project is performed by five co-partners from the universities of Erlangen-Nürnberg and Würzburg, the Archaeological State Museum of Baden-Württemberg, the Curt-Engelhorn-Center for Archaeometrie and the State Office for the Preservation of Historical Monuments in Esslingen as coordinator. Within the presentation first results will be presented.

Textiles made of plant fibres from the Neolithic pile-dwellings within the research area build the basis of the studies. The project objective is to find out more about the role of textiles like coiled baskets, bark containers, cords/ropes or nets in Neolithic everyday life. Therefore the manufacturing techniques, the textile´s functionality and use-contexts as well as the used raw materials is analysed in the project. At the beginning the archaeological finds and its context are described. The previous analysis has revealed a wide variance within the manufacturing techniques, which is highlighted in the presentation.

Then, we focus on the conservation of textiles from prehistoric wetland sites and its impact on the determination of the raw materials. Further, first results and also possibilities and limits of the determination of the processed raw materials are shown, especially of lime bast and bark. Last but not least, it turned out, that quite more different species of monocotyledons were used for the production of certain objects as expected.

Keywords:
THEFBO project, prehistoric, wetland settlement, textile's functionality, raw material, lime bast, bark, South-Germany.

[1] State Office for Cultural Heritage Baden-Württemberg, Treering Laboratory / Germany

[2] Institut für Ur- und Frühgeschichte Friedrich-Alexander-Universität Erlangen-Nürnberg / Germany

[3] Institut Römisch-Germanisches Zentralmuseum, Leibniz-Forschungsinstitut für Archäologie, Mainz, Germany

[4] Archaeological State Museum of Baden-Württemberg, Konstanz / Germany

[5] Curt-Engelhorn-Center for Archaeometrie GmbH, Mannheim / Germany

[6] State Office for Cultural Heritage Baden-Württemberg, Textilarchaeology / Germany

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# ABSTRACT

## The significance of some terms in textile archaeology

JOHANNA BANCK-BURGESS[1]

The diversity within the research and analysis of archaeological textiles in Europe and America shows how difficult it is to justifiably demonstrate the importance of textiles from the prehistoric period. Textiles here means: two- or three-dimensional objects made of stiff or flexible but perishable elements.

There are various reasons why researchers have different understanding of the same term. For example, translation difficulties, language barriers and differing evaluation as well as relevance given to textile-related aspects. All this causes some inconsistency in terminology.

This contribution provides a short overview of the technical classifications, the textile terminologies, and their diverse meanings. The explanations for the previous focus of woven textiles of linen and wool and the lack of or no consideration that other techniques and or materials receive.

The field of archaeological textile-research is still too diverse to find one technical classification that suits every researcher and his or her intension. It is unlikely that these differences about terms used can be satisfactory resolved. However, relate the prehistoric textiles and their benefit to human history it is necessity to have “one common term“, that, at least, unites all textiles and will not continue to cause or create a difficulty where, for example, baskets or other non-woven materials are seen as second-rate objects. The term “textile” seems to be suitable for this purpose.

Keywords:
Textile terminologies, archaeological textile research, textiles.

[1] State Office for Cultural Heritage Baden-Württemberg, Textilarchaeology / Germany

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# ABSTRACT

**Manufacturing prehistoric threads: some practical knowledge about splicing and spinning**

HILDEGARD IGEL[1] AND JOHANNA BANCK-BURGESS[2]

The ongoing debate about prehistoric linen threads found at archaeological sites around central Europe, is one about preparation of the raw materials and their processing. The opinion is generally leaning towards the theory that plied yarn from the first centuries of the 4th millennium B.C. were produced by hand i.e., not produced using spindles.

The assessments are based largely on observing the physical features that have been preserved in fossilised form and that are only visible under the microscope. This assumption appears to be supported by the archaeological recordings of scattered clay spindle whorls that have, so far, been discovered and which only frequently turn up on sites dated towards the end of the Neolithic period.

For the manual processing of linen plied yarn, the term “splicing” is mostly used to define the process of joining spliced bast strips into simple yarns by joining them continuously and twisting them in the opposite direction to complete this process.

The use of the spindle is linked with the preparation process of flax fibres, which were prepared for spinning by retting, scutching and heckling.

It is part of the joint THEFBO project that involves documenting the material properties of linen and woody bast. This analysis of sample material has yielded new and exciting information about the production of spliced and spinning yarn from linen and woody bast. Results that might also reassess the archaeological record.

Keywords:
THEFBO project, Neolithic, pile dwellings, plied yarn, flax fibres, lime bast, spinning, splicing.

[1] Boms / Germany

[2] State Office for Cultural Heritage Baden-Württemberg, Textilarchaeology / Germany

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# ABSTRACT

**The properties of textiles: what do the raw materials and the manufacturing techniques of prehistoric textiles tell us about their properties?**

SUSANNA HARRIS[1]

Textiles, taken here in a broad sense to include fabrics such as twining, are highly processed materials. Across Europe from the Neolithic to Bronze Age the fibrous raw materials for textiles and twining came from plants such as tree bast and flax, or animal fibres such as sheep's wool and cow hair. Fibres are the primary material of textile and their properties influence the final fabric. Raw materials were processed into fibres, fibres into yarns, yarns into textiles. The manner of processing, by retting, stripping, spinning or splicing and then weaving into different structures and finishing all further influence the properties of the fabrics. The contrasting material properties of the finished fabrics offered a wide range of material opportunities to the people who used them.

For archaeologists, methods originating from engineering, design and actualistic studies (experiments) provide opportunities to investigate the material properties of textiles and twining. At the same time, materials, such as textiles and twining are complex and multifaceted. Theories such as JJ Gibson's theory of affordances highlight the situational nature of materials in relation to the way people use them. Theories of the sensory nature of the world forefront bodily engagement with materials as a means of being and acting. This paper will use case studies to examine how the raw materials and the manufacturing techniques of prehistoric textiles provide clues to their properties, and through this provide a deeper understanding of the role of textiles in societies of the Neolithic and Bronze Age.

Keywords:
Textiles, Neolithic, Bronze Age, raw material, manufacturing techniques, properties, affordance.

[1] University of Glasgow, Great Britain

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## SESSION 2

# THE SIGNIFICANCE OF ARCHAEOLOGICAL TEXTILES

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# ABSTRACT

**Early Holocene tree bast cords, ropes and nets from Friesack, Brandenburg**

BERNHARD GRAMSCH[1]

In the 1980s, excavations at the Early Holocene, Mesolithic-Neolithic bog site of Friesack in the Berlin Urstromtal found, among other things, numerous cords, ropes and nets remain made of tree bast. The finds originate from sandy and humic layers, which were deposited from the middle Preboreal to the Early Boreal (layer complexes I, II and III = 9100-7800 cal. BC) in the former riparian zone and have since been preserved in groundwater-soaked sediments. There are fragments of simple yarn and plied yarn, remains of knotless and knotted nets as well as twisted and braided rope pieces. Botanical-microscopic evidence of willow bast has been found for six material samples. The material found in layer complexes I and III is mostly from knotless nets. The twine remains are between 2 and 3 mm thick. The mesh size of the nets can only be determined more precisely in a few cases; on the largest, largely intact net so far, 61 cm long and 26 cm wide, plied yarn thicknesses between 2.0 and 3.5 mm are found; the loop or mesh size is 1.7-2.0 cm. Only very few fragments of knotted nets are available, and these are from layer complex II.

The knots are made in the technique of the “pile-dwelling knot”. Ropes made of twisted yarn-strands are only available from the younger Preboreal, including a longer specimen 1.8 m long and 1.3 cm thick. The braid rope fragments made of three strands have different thicknesses, they belong exclusively to the Early Boreal. The variety and quantity of bast products from the Old Mesolithic site of Friesack suggests that the use of suitable tree bast from - willow, poplar, lime, elm - for the manufacture of plied yarn, cordage and rope as well as nets was common in the Mesolithic of Europe, even if this has only been archaeologically documented in isolated instances.

Keywords:
Friesack, Mesolithic-Neolithic bog site, tree bast, plied yarn, braided robs, cords, nets, Germany.

[1] Berlin-Postdam / Germany

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# ABSTRACT

**Approaching raw materials used in prehistoric fibre-based implements in the north-eastern part of the Iberian Peninsula**

MARIA HERRERO-OTAL[1], SUSAGNA ROMERO-BRUGUÉS[1],
RAQUEL PIQUÉ HUERTA[1]

Fiber-based implements are considered one of the first technologies used in human populations playing an important role in all societies. Even so, due to it is a perishable material the objects usually disappear in archaeological contexts except for some specific environmental conditions that permit their conservation. Those materials have been excluded from analysis because of the lack of suitable identification methodologies. Here we explore different techniques to determine raw material used to produce vegetal fibers tools as baskets, mats, and ropes from different prehistoric archaeological sites from the north-eastern part of the Iberian Peninsula. The material studied was recovered in the waterlogged site of La Draga in Banyoles (Girona, Spain, dated 5300-5000 cal BC), Coves del Fem in Ulldemolins (Tarragona, Spain, dated 4941-4545 cal BC) and Cova des Pas in Ferreries (Balearic Islands, Spain, dated 1100-800 cal BC).

The chronological range is justified by the scarcity of materials. The aim is to analyze the variability of documented techniques and to explore new methods for more accurate raw material identification. The results show variability concerning manufactures techniques and the use of several monocots families and basswood as raw materials in fiber-based productions.

[1/2/3] Prehistory Department, Universitat Autònoma de Barcelona (UAB). 08193 Bellaterra, Spain.

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# ABSTRACT

**Lime trees (Tilia spec.) in prehistoric vegetation and landscapes of Europe**

OLIVER NELLE[1], ELENA MARINOVA[2]

Lime trees, present in Europe with the native species *Tilia cordata*, *T. platyphyllos* and *T. tomentosa*, were invaluable sources for prehistoric societies. Their bark and bast have very suitable properties for making ropes and containers, inter alia. On the opposite, the wood of *Tilia* is soft and does not suit construction purposes but is light and was used to build log boats. After the last glaciation, Lime spread northwards from southern and southeastern refugia, complementing the deciduous tree woodland composition of the Holocene climatic optimum (c. 6000-2000 BCE). *Tilia*, preferring moist and nutrient rich sites, can grow fast and regenerates easily from cut-down stumps. It was a component of the so-called mixed oak forests.

Reading the pollen diagrams, it decreased on the continent continuously until it became rare in the landscapes around 500 BCE, also known as the „lime decline“. Here, we present an overview of this development which is known from pollen diagrams all over Europe, and add macrofossil evidence to local Tilia utilization “stories“. One of the questions for future research is whether people actively managed woodland to promote the growth of lime trees, and whether the steady decrease of *Tilia* in the European woodlands reflects the change of the land use practices and abandonment of lime bast as raw material for the production of textiles.

Keywords:
Lime trees, bark, bast, Holocene, pollen diagrams, “lime decline”, woodland management, Europe.

[1] State Office for Cultural Heritage Baden-Württemberg, Tree-ring Laboratory / Germany

[2] State Office for Cultural Heritage Baden-Württemberg, Laboratory for Archaeobotany / Germany

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# ABSTRACT

**„Plant management during the northern German Early Mesolithic – which direct and indirect indicators do we have?"**

DANIEL GROSS[1], MARCO ZANON[2], ULRICH SCHMÖLCKE[1], HARALD LÜBKE[1]

The Early Mesolithic in northern Germany is most commonly known for the extensive use of hazelnuts by the sites at ancient Lake Duvensee. Since the first investigations in the area, almost a hundred years ago, several sites with extensive hazelnut roasting facilities have been excavated. The abundance of these structures lead to the assumption that ancient Lake Duvensee was mainly used for hazelnut harvesting and maybe early forms of environmental management.

In the contribution we want to address the likeliness for environmental management in the area of ancient Lake Duvensee and evaluate how likely it is that hazel was promoted in growth. Additionally, we want to discuss to what extend certain finds can overprint archaeological interpretations of prehistoric behaviours and what problems might arise from a fading archaeological record.

Moreover, the presentation will show selected examples from other Early Holocene sites in northern Germany that show direct or indirect indications for environmental management and fabrication of textiles. It will be discussed why there are so few textile finds from the timeframe under consideration even though the comparably high number of wetland sites in the area would provide good chances for the recovery of prehistoric fabrics.

Keywords:
Early Mesolithic, Lake Duvensee, hazel, hazelnut roasting facilities, textiles, environmental management, Germany.

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[2] Institute of Pre- and Protohistoric Archaeology, Christian-Albrechts-Universität zu Kiel, 24118 Kiel, Germany

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## SESSION 3

# THE SIGNIFICANCE OF ARCHAEOLOGICAL TEXTILES

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# ABSTRACT

**Wood beyond building. Diverse use of bast in Early Neolithic LBK culture**

HARALD STÄUBLE[1]

Wood, which was sufficiently available in Early Neolithic central Europe, was surely the most often used construction material. However, until a few years ago, only large amounts of small pieces of charcoal were known, these mostly recovered from botanical samples taken from the infill of settlement pits. This picture changed completely after the excavation of several deep pits, which were interpreted as wells because of the preserved wood linings.

So far 13 wells from the LBK-culture dating between 53rd to 51st century BC, were documented in Saxony. The analyses of the planks and their joining parts as well as the tool-traces on them help us to better understand the Neolithic woodworking techniques, which are believed to have been used in house building as well. These wells also were a treasure trove of lots of other organic finds, which are generally not preserved in regular settlement pits. Among the biofacts, for the first time products of bast from Early Neolithic contexts were recovered.

The spectrum reaches from worked sheets cut into different sizes to hundreds of fragments of cords and ropes varying in diameter and technique, as well as some containers manufactured out of both: bast sheets stitched together with cords. So far two types of bast containers can be distinguished, the construction of both I will present in detail. The obvious abundant use of bast and bark in Early Neolithic life suggests that these materials were used for a broad range of other purposes. One possibility is the use of bark as roof covering of the large houses typical for the LBK-culture. This is quite plausible, especially as all proposed reconstructions so far are not convincing.

Keyword:
Wells, biofacts, bast sheeds, container, cords, ropes, Linear Band Culture, Saxony, Germany.

[1] Archaeological Heritage Office, Saxony, Dresden / Germany

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# ABSTRACT

**Birch bark - the material and its processing with regard to the examination of the earliest known Neolithic bow case**

JOHANNA KLÜGL, GIOVANNA DI PIETRO, ALBERT HAFNER

During prehistory times birch bark was an easily available resource thanks to the widespread presence of the birch tree in the natural landscape. Due to its perishable nature, archaeological objects made of birch bark like containers, hats, fishing equipment and torches are rare, but they do demonstrate the versatile uses of this material. Birch bark is water-repellent, lightweight, durable and can be worked similar to leather.

Between 2003 and 2005 the earliest known protective case for a bow was recovered out of a melting ice patch at the Schnidejoch Pass in the Bernese Alps, Switzerland and represents a new example of the use of birch bark. The so-called bow case is made of differently oriented, superimposed birch bark strips, measures 1.7 m in lengths and is dated between 2880 and 2640 BC. This outstanding object – which lacks comparable parallels - was the focus of an interdisciplinary four years research project aiming to understand the choice of birch bark as construction material and the technology available to Neolithic hunter-gatherers. Fundamental for this was an intensive study of the object itself. Information on the harvesting and processing were gained by reviewing the published literature about indigenous knowledge and by interviewing craftspeople working with birch bark.

The presentation/paper will present principal conclusions concerning the material properties, the harvesting process and the use of birch bark. The deep understanding of this material and its processing allows for a better interpretation of the manufacture traces found on the bow case and on other objects made of birch bark.

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# ABSTRACT

**Trees and ice. Prehistoric wood, bast and bark objects from ice patches in the Bernese Alps (Switzerland)**

REGULA GUBLER[1]

The Bernese Alps separate the Swiss plateau with its many lake-side villages from the alpine valley Valais and by extension Northern Italy. This mountain range was never a barrier. Archaeological evidence shows that people crossed a number of passes regularly in both prehistoric and historic times.

On two of these mountain passes, ice patches have yielded a multitude of archaeological objects, many of them organic. From both the Schnidejoch and the Lötschenpass artefacts made of bast, birch bark and various kinds of wood have been recovered since 2003 and 2011 respectively. Some have been published, others are still awaiting further study.

This presentation will, on the one hand shed light on the two sites and the preservation of organic artefacts in ice patches. On the other hand, it will present some of the objects made of organic materials such as a sewn splint wood box, fragments of woven bast and an object, probably a bag, made out of birch bark.

Keywords:
Ice patches, mountain passes, Bernese Alp, prehistoric, wood, bast, birch bark, Swiss.

[1] Bildungs- und Kulturdirektion des Kantons Bern, Amt für Kultur,
Archäologischer Dienst / Swiss

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# ABSTRACT

**Baskets made of clay – The strong basketry skeuomorphism in pottery around 6.000 BC at Çatalhöyük/Central Turkey and the "Painted Pottery Revolution"**

INGMAR FRANZ[1]

Around 6.000 BC there is a massive increase in the manufacture of mostly decorated pottery at Çatalhöyük observable. The pottery assemblage from the latest occupation phase on the West Mound is dominated by light colored serving and storage vessels painted with red geometric decoration patterns resembling basketry decoration. In general, the vessels show a much wider range of shapes and sizes than the vessels from the earlier occupation phases on the East Mound.

Detailed techno-stylistic analyses based on the Chaîne Opératoire approach in combination with a contextual feature analysis clarify besides a strong basketry skeuomorphism also a strong technological relation between basketry and pottery at this basketry-imitating blooming stage of Neolithic pottery manufacturing traditions. With the introduction of "baskets made of clay" and a probable subsequent replacement of basketry containers over time the manufacture of such most likely decreased.

This could explain the much larger quantities and higher diversity of pottery during the latest occupation phases at Çatalhöyük between 6.000 and 5.800 BC. Based on the fact that this Central Anatolian painted Neolithic pottery shares many similarities and parallels with contemporary assemblages in the region, considerations on the "Painted Pottery Revolution" phenomenon from this perspective would be compelling and could lead to new explanation models.

Keywords:
Çatalhöyük, Neolithic pottery, basketry skeuomorphism, "Painted Pottery Revolution", Central Anatolian.

[1] Germany

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# ABSTRACT

**Vessels made of pottery and organic materials in settlements of the 4th millennium BC at Lake Constance**

IRENÄUS MATUSCHIK[1]

The composition of the pottery inventories at Lake Constance in the 4th millennium BC varies greatly. In the early 4th century, they included bottles, jugs, cups, beakers, bowls, and spoons in addition to pots. During the 4th millennium there was a depletion of forms, and in the late 4th millennium they consisted almost exclusively of pots. In addition to pottery vessels, containers made of organic materials also survived, including bark vessels, variously shaped wooden vessels, coiled basketry in the form of conical baskets and twine braiding in the form of pouches. In addition, there are materials that have not been preserved, such as animal skins and cattle horn sheaths. There is evidence from salt mines that animal bladders were used for transporting and storing liquids, and cattle horns were used as drinking horns in many cultures.

As for the relationship between ceramic vessels and those made of organic materials, the different proportions of shapes in the ceramic inventories suggest that it was complementary. However, with one exception - only ceramics were fireproof. Pottery vessels were therefore used for cooking. For the other functions, the organic materials are sometimes even more advantageous, as they are lighter and more resistant to breakage. With the finding that the ceramic inventories of the late 4th millennium consist almost exclusively of pots, it can therefore be assumed that the other forms were replaced by vessels made of organic materials.

Keywords:
Potteries inventories, 4th millennium at lake Constance, organic containers, Germany.

[1] Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart / Germany

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# ABSTRACT

**Cross-craft interaction between cordage and pot-making, 2600-1600 BC in Central Europe**

KARINA GRÖMER[1]

In prehistory, textiles have also been used for the decoration of pottery, serving as good example, how different handcrafts interact. Textile decoration is made with cord imprints or even imprints of textiles (e.g. Sprang). Creating patterns with cords, pressed in the wet clay goes back to Late Neolithic, where this special decoration gave the name to the Corded ware Culture (2600-2200 BC). For the Bronze Age “Litzenkeramik” (about 17th/16th cent. BC) unlike first imaginations not woven Bands (“Litzen”) were used to do that, but perfectly arranged cords were impressed.

A system for the technical description of cord imprints has been defined, additionally SEM-Analysis and Experimental Archaeology was carried out to get data about the raw materials used for such cords and the decision-making processes at the production. Different questions arise:

What surface-quality is given by the cords? Was the cord-design merely a technological detail of the making-process, because they give a structured surface within the impression (more “grip” for an inlay)?

It was also noted, that for Litzenkeramik a band was imitated by doing impressions with single cords. Also, sometimes metal wire was used to imitate organic cords. Why was this done? Does this point to a symbolic use of the cord-design? What do bands and cords do in prehistoric daily life? Did they have a certain meaning in their functional and practical aesthetic properties?

Keywords:
Cord and textile imprints, Corded ware Culture, Neolithic, Litzenkeramik, Bronze Age, practical or symbolic use.

[1] Naturhistorisches Museum Wien, Prähistorische Abteilung / Austria

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## SESSION 4

# THE SIGNIFICANCE OF ARCHAEOLOGICAL TEXTILES

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# ABSTRACT

## Flax and wool. Textile production in the Early Bronze Age Aegean

MAŁGORZATA SIENNICKA[1]

It is assumed that introduction of woolly wool (or long-staple wool) occurred in the Aegean in the Early Bronze Age (3rd millennium BCE). At that time, plant-based fibres had already been exploited for generations for making clothes, household fabrics, and other commonly used textiles, and they continued to be broadly used ever after. There is no doubt that the new wool fibres have considerably changed textile production, not only in the Aegean, but also in other areas of prehistoric Europe and the Eastern Mediterranean. Novel types of textiles, such as garments of different properties than these made of plant-based fibres, could be now woven on looms, and therefore produced on a large scale, both for private purpose, and for exchange or redistribution by political and economic centres.

The new fabrics must have been attractive as they were warm, soft, fine, dense, and water-resistant, and they could be dyed in a range of colours and hues. All this may have changed fashion, while textiles and textile production gained new social and economic significance. The great economic role of textile production in the Aegean can be studied through much later, Late Bronze Age (Mycenaean) Linear B texts, and we could assume that its beginnings took place already in the Early Bronze Age. Various sources are studied in order to better understand innovations, changes, and developments of textile production in its early stages. In case of the Early Bronze Age Aegean, where practically no archaeological textiles have been preserved, we can only focus on plentiful textile tools, and refer to archaeozoological and archaeobotanical remains, in order to discuss the issue of wool introduction.

The spread of this innovation must have been a process, which took a fair amount of time. The question arises how far these changes can be traced through modification of textile tools, particularly of spindle whorls, as we know that wool requires different types of spinning tools than flax. The paper will also discuss who and where made textiles in this period, and what social meaning textile production may have had then.

[1] Institute of Archaeology, University of Göttingen / Germany

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# ABSTRACT

**Why not wool? The evidence for raw materials and technical uses of textile products from imprints on the undersides of clay sealings from Bronze Age Greece**

AGATA ULANOWSKA[1]

Textile imprints on clay are commonly viewed as a useful source for analysing the properties of actual spun fibres and textiles. The quantity and quality of information that can be retrieved from a specific impression varies due to its preservation, clearness, size and properties of the clay fabric, as well as due to the adopted methodology. A substantial collection of imprints of threads, cords and textiles, as well as other organic products is preserved on plasticine and silicone casts of the undersides of clay sealings from Bronze Age Greece (e.g. sealings securing pots, chests, baskets or doors, coverings of jars, wrapped packets of parchment, etc.), stored in the *Corpus der minoischen und mykenischen Siegel* (CMS) in Heidelberg. Those imprints are currently being analysed as part of my research project 'Textiles and Seals. Relations between Textile Production and Seal and Sealing Practices in Bronze Age Greece'.

In this paper, impressions from the CMS casts are discussed as a potential source of information about the raw materials and types of products used in multiple sealing practices in Early and Middle Bronze Age. Challenges in identifying specific fibres on the basis of their impressions on clay (e.g. various plant fibres and animal origin products, but apparently not wool), as well as the selection of raw materials used for making 'technical textiles', i.e. the ones used in a daily routine of closing and securing household objects, are the main focus of this presentation.

Keywords:
Textile imprints, "Textiles and Seals", technical textiles, raw materials, Bronze Age Greece.

[1] Institute of Archaeology, University of Warsaw / Polen.

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# ABSTRACT

**Textile finds from the excavations at Lucone di Polpenazze del Garda (Brescia) in the context of textile production in prehistoric northern Italy**

MARCO BAIONI[1], MARGARITA GLEBA[2], CLAUDIA MANGANI[3], ROBERTO MICHELI[4]

Some of the earliest evidence of textile production in Northern Italy comes from an advanced stage of the Neolithic (V-IV millennium BC). It is at this time that loom weights and spindle whorls become widespread on numerous archaeological sites. The contexts that have provided useful information are primarily located in humid areas and are often of pile-dwelling type. Recent information comes from the currently excavated site of Palù di Livenza (UD). After a decline in data during the third millennium BC, the evidence for textile production increases significantly with the beginning of the Early Bronze Age (2200-1600 BC), when the pile-dwelling model spreads across the region, particularly in the area around Lake Garda, where the surrounding pile-dwelling sites, datable primarily to Early Bronze Age, provide important evidence regarding the spinning and weaving of linen and other vegetable fibres. In these settlements, not only tools for textile production in clay, bone-antler and wood, but also fragments of fabrics have been found. In addition to the Trentino site of Molina di Ledro, well known for the numerous fragments of linen fabrics, the site of Lucone di Polpenazze is gaining considerable importance thanks to the new excavations underway since 2007.

Various settlements have been identified in the inframorenic basin of the Lucone. To Lucone A, excavated from 1965 to 1971, which had already yielded various relevant materials, including numerous fragments of fabric, has now been added Lucone D, where several fragments of fabric, a spool with wound thread and various tools for spinning and weaving have been found. In this contribution, we present the preliminary results of the analysis of the textile tools, the fabric and textile fragments, as well as the thread preserved on a spool, which attests the intermediate stage of splicing at Lucone. The material will be placed in the wider context of textile production in prehistoric northern Italy.

Keywords:
Neolithic, Early Bronze Age, pile dwellings, textile tools, linen fabrics, textile fragments, splicing, Italy.

[1] Museo Archeologico della Valle Sabbia, Gavardo (Italy)

[2] Ludwig-Maximilians-Universität, München (Germany)

[3] Museo Civico Archeologico G. Rambotti, Desenzano del Garda (Italy)

[4] Soprintendenza Archeologia, belle arti e paesaggio del Friuli Venezia Giulia, Trieste (Italy)