2nd International Conference on the Emergence of the Neolithic in Europe

Conference Programme and Book of Abstracts

Zadar, 22-25 May 2025

ene2025

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conference.unizd.hr/ene2025

Zadar 2025

ÖAW Austrian Academy of Sciences

Austrian Archaeological Institute

University of Zadar

Archaeological Museum Zadar

Croatian Archaeological Society

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General info

Following the highly successful 1st Conference on the Early Neolithic in Europe (ENE2019) in Barcelona, we are delighted to invite you to Zadar for the 2nd Conference on the Emergence of the Neolithic in Europe (ENE2025), which will take place from May 22–25, 2025, hosted at the University of Zadar, Croatia.

The conference is jointly organised by the Austrian Archaeological Institute, the Archaeological Museum of Zadar, the Croatian Archaeological Society, and the University of Zadar.

Zadar, situated in the heart of the Adriatic, serves as the administrative and cultural center of Zadar County in northern Dalmatia, a region extending from the slopes of the Velebit Massif to the Adriatic coast, encompassing numerous islands and inland plains. With over 2,000 years of rich and dynamic history, Zadar is a city deeply intertwined with the sea. However, the region's interior, characterized by fertile plains, a favourable climate, and mild terrain, is among the most productive agricultural areas in Dalmatia. This area hosts the largest concentration of Neolithic sites in the region, with the earliest agricultural settlements dating back to c. 6000 cal BC.

Recognizing the complexity of the Neolithisation process in Europe—its arrhythmic nature, regional variations, and the prolonged coexistence of the first farmers and the last hunter-fisher-gatherers in some regions—we have slightly adjusted the conference title. While retaining the acronym ENE, the term "Early Neolithic" has been replaced with "Emergence of the Neolithic" to more accurately reflect the broader scope and nuanced dynamics of this transformative process.

Despite this adjustment, the conference retains the same objectives as those established in Barcelona in 2019. It aims to provide a platform for discussing the Neolithisation process in Europe in all its diversity and complexity, balancing regional specificities with the shared Near Eastern origins of the Neolithic way of life.

To address these topics comprehensively, the conference is structured around eight thematic sessions (for details see "Sessions"):

1. Mesolithic–Neolithic Transition: Dynamics of Interactions among Hunter-Fisher-Gatherers and Farming Communities
2. Modelling and Population Dynamics: Formal Approaches for the Understanding of European Late Hunter-Gatherers and Farmers
3. People, Settlement and Territory: Constructing Communities from Local to Regional Scale
4. Human-Environment Dynamics: Environmental Archaeology and Paleoclimate
5. Subsistence and Health: Archaeology of the Emerging Food Systems, Dietary Patterns and Lifestyle Maladies
6. Innovation and Tradition: Technological Perspectives on Europe's Neolithisation
7. Figurative Expressions and Socio-Symbolism
8. Intersecting Identities and Social Dynamics during the Neolithisation of Europe

Exibitions

Recent archaeological research at Neolithic sites by the University of Zadar

Exibition co-organizers: Kristina Horvat Oštrić[1], Mate Parica[1] & Mario Bodružić[1]

[1] University of Zadar, Department of Archaeology

A large number of important prehistoric archaeological sites have been found in the eastern Adriatic, among which those from the Neolithic period certainly stand out in terms of their number and level of research. The Department of Archaeology of the University of Zadar has investigated many Neolithic sites and multi–layered sites where traces of life from the Neolithic period have been identified. These are mainly sites located in northern Dalmatia, while a smaller number are located in southern Dalmatia.
Research has contributed to a better understanding of the Neolithic of the eastern Adriatic, both in terms of settlement and economic aspects of Neolithic communities in that area. The new radiocarbon dates made it possible to see more clearly the mechanisms and effects of the expansion of farming, as well as the questions of the dynamics of the development of certain Neolithic cultures, i.e. styles. At the same time, knowledge about the daily life of Neolithic inhabitants and their spiritual culture was improved. Thanks to the research conducted, new questions have been raised that indicate the need for further, systematic archaeological research. In this way, it will be possible to re–examine older archaeological hypotheses and material remains within the framework of contemporary theoretical discussions. An interdisciplinary approach will allow the study of environmental and anthropogenic processes.
The exhibition presents four sites where research is currently underway: Graduša – Lokve, Pod Jarugom, Ždrilo Cave and Soline.

LASER AIDED PROFILER

Laser Aided Profiler

Precision pottery drawings made fast

HIGH - TECH

For busy archaeologists struggling with processing of large find assemblages, the Laser Aided Profler (LAP) device employs the latest technology for high-quality, rapid, digital documentation of ceramic fragments. The LAP alleviates the tedious drawing task, allowing you to fully concentrate on your research. Resulting data are stored in an easily accessible database, so you can feed them into data-analytic pipelines and take your research to the next level.

ROBUST

You can use the LAP in the lab as well as in the field. The device is built on industrial-grade components that can withstand dusty environments and temperatures of over 40 degrees Celsius. It is easily portable, with assembly and disassembly taking just a few minutes.

RELIABLE

For extreme robustness in long-term usage, there are no moving parts and the data acquisition is purely optical. Thanks to advanced synchronization technology, image capturing is reliable even in places with strong ambient sunlight. Still, the lasers are kept eye-safe for the operator.

PORTABLE

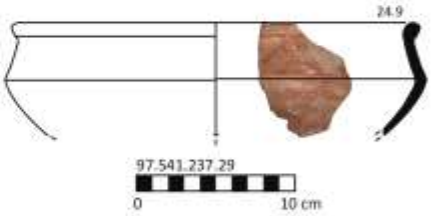
The LAP comes packed in a handy suitcase. Measuring 50 x 40 x 14 cm (20 x 16 x 5.5 inches) and weighing under 8 kg (16 lb.), its size and weight fall within standard airplane cabin baggage limits, so you can keep the LAP safely with you while travelling.

RAPID

The bundled sofware application streamlines the drawing process for you to work at maximum efficiency while achieving high-quality outputs. On average, about 20 drawings per hour can usually be produced by a skilled operator. The digital data, metadata and complete drawings are saved into an open-source database for later querying or processing.

HANDY

All drawings are in scale and immediately ready to be published. The acquired data are readily available for subsequent processing, e.g. shape-matching or morphometric analysis.



www.laseraidedprofiler.com

Zadar

Zadar is one of the oldest historical cities in Croatia, the former capital of Dalmatia. Old town, located at the end of a low-lying peninsula (Poluotok), is almost an open-air museum. The material remains of human existence and culture in the Zadar region date back to the Middle Palaeolithic Age. In the city itself, there are finds from the late Neolithic period in the Puntamika and Arbanasi districts of Zadar. In the late prehistoric period, Zadar was a Liburnian settlement, an important port, although the town as we know it developed under Roman control. The layout of the city, its walls, gates and important buildings were all built during this period. After the collapse of the Roman Empire, Zadar became the administrative centre of Dalmatia and flourished under Byzantine, Croatian and Venetian rule, under which it remained until the end of the 18th century.

Its turbulent history left many traces in the city's architecture and culture. In the centre you will find the remains of the largest Roman forum on the eastern Adriatic coast. In 2017, the fortified city of Zadar (Muraj) was inscribed on the UNESCO World Heritage List as part of the Venetian defensive fortifications from the 16th and 17th centuries. The main entrance to the city (Land Gate) is located on the south side of the city in Foša harbour and is decorated with a winged lion and St. Chrysogonus. Old Zadar is especially known for its many beautiful churches. The remarkable round church of St. Donat dates back to the 9th century, the Church of St. Mary (1091) houses one of the most important church treasures in Croatia and the Romanesque church of St. Krševan was consecrated in 1175. There is also the Cathedral of St. Stošija (Anastasia) from the 13th century, the largest and most beautiful Romanesque church in Dalmatia, as well as the Franciscan church and monastery (1282). Zadar is also famous for its palaces. Of the 5 palaces, two stand out in particular: the Rector's Palace and the Procurator's Palace. Not far from these palaces are Petar Zoranić Square and the Renaissance Five Fountains Square, which are surrounded by the city walls, the Captain's Tower and Queen Jelena Park.

The most popular street in the city is Kalelarga, or officially Široka ulica. It is a symbol of the city. Kalelarga begins at the People's Square, the city centre of Zadar, famous for its clock tower. There is also an old city quarter Varoš, the main place for socialising and everyday rituals such as drinking your morning coffee. When it comes to modern architecture and attractions, Zadar has a unique blend of architecture and music to offer, the world-famous Sea Organ, which is located right next to another modern installation, the Greeting to the Sun. Both of these facilities are easily accessible via the Riva, Zadar's famous seafront promenade, which connects it to the University of Zadar and Foša harbour.

Venues

University of Zadar
Mihovila Pavlinovića 1, 23000, Zadar
https://www.unizd.hr/eng

International Centre for Underwater Archaeology in Zadar
Božidara Petranovića 3, 23000, Zadar
https://www.icua.hr/en

Archaeological museum Zadar
Trg opatice Čike 1, 23000, Zadar
https://amzd.hr/en

Museum of Ancient Glass Zadar
Poljana Zemaljskog odbora 1, 23000, Zadar
https://www.mas-zadar.hr/en

University of Zadar

The University of Zadar is the oldest higher education institution in Croatia and one of the oldest in Europe. The centuries-old university tradition began in 1396 with the founding of the Dominican *Studium Generale*, which was later called *Universitas Jadertina*. The modern development of higher education in Zadar began with the founding of the Faculty of Philosophy in 1955, which was rounded off by the founding of the University of Zadar in 2002. Today, the University of Zadar is a modern international educational and scientific institution dedicated to academic excellence and innovation in research. It places great emphasis on international cooperation and maintains numerous partnerships with institutions around the world.

The University of Zadar has 27 departments which makes it the largest fully integrated university in the Republic of Croatia. It offers a wide range of study programme in the fields of humanities, social sciences, natural sciences and engineering. This interdisciplinary approach fosters a dynamic learning environment and encourages collaboration between students and faculty.

The Department of Archaeology is one of the oldest at the University. The wealth of archaeological sites in the immediate vicinity is the reason for the long tradition of archaeological research in Zadar and the professional and scientific approach to defining, understanding and preserving the information recorded in the cultural landscape. Accordingly, the aim of the department is to train staff who will successfully respond to the demands placed on them and correctly assess the value of archaeological heritage in everyday life.

The University is located on the Old Campus, in the centre of the city, on the Peninsula, at the end of the Zadar waterfront. The unique location of the campus in the immediate vicinity of the sea, which is inspiring for all the senses, perfectly reflects the vision of the University as a Mediterranean source of knowledge, but also shows the central position of the University and students in the life of the city.

University archaeological collection

One of the specialties of the Department of Archaeology is the archaeological collection. Archaeological research has produced a large number of finds from early prehistory to recent times, some of which are now presented in the exhibition on the Department of Archaeology to give students and other visitors to the University an understanding of the work of the department. With the creation of the archaeological study collection, the trend began to expand the basic activities of the department with the aim of improving the scientific, professional and educational processes, but also to promote studies and archaeology in general by participating in various popularization programs, from the Museum Night to the Science Festival. Today, almost 800 objects are on display. The oldest date from the Middle Palaeolithic, the most recent from the modern era.

Archaeological Museum

The museum was founded in 1832, making it the second oldest museum in Croatia and one of the oldest in this part of Europe. Completed in 1897, the Museum's first permanent exhibition was located in St. Donat's Church. In 1974, the Museum moved to its present-day premises in Zadar's historical core. Today it exhibits prehistoric archaeological material from the Palaeolithic and Neolithic periods, the Metal Age (Bronze and Iron Ages), the Roman and Byzantine periods and archaeological finds from the 7th to 15th centuries.

Since its founding – almost 200 years now – Archaeological Museum Zadar has been relentlessly accomplishing its mission: preserving the identity of the area and community it belongs to and cooperates with. The interesting and educative exhibitions organized in the Museum help the people of Zadar and their guests expand their knowledge of the rich history of the city and its surroundings.

The stained glass windows of the Archaeological Museum in Zadar reflect the remains of the Roman forum and the early medieval church of St. Donat, with which the museum is inextricably linked.

If you are looking for a unique and original gift for someone or if you merely want a souvenir to remind you of your visit to Zadar, come to museum shop. You will surely find something you like.

Museum of Ancient Glass

The Museum of Ancient Glass is a contemporary cultural institution that is unique in the world. It is located in the renovated palace of the Cosmacendi family from the second half of the 19th century, whose original architecture was supplemented by an extension on the north side due to the requirements of the museum concept of the permanent exhibition and the daily museum activities. It is an archaeological museum, but it specialises in antique glass. Its exhibition presents a unique collection of over 5000 different glass objects from antiquity, i.e. from the 1st century BC to the 5th century AD. Over 1500 complete glass objects are presented in the permanent exhibition, which is divided into eight thematic sections. In addition to the permanent exhibition, various glass workshops are organised throughout the year. The Museum of Ancient Glass in Zadar has a luxurious souvenir store where you can buy publications and exclusive souvenirs made by hand in the museum’s glass workshops by glass blowing, which are replicas of real antique glass objects.

International Centre for Underwater Archaeology

The International Centre for Underwater Archaeology in Zadar was founded in 2007 in the frame of the Croatian Conservation Institute and soon – pursuant to an international agreement signed between UNESCO and the Republic of Croatia in 2009 – became an independent public institution and gained the status of a UNESCO category II centre. ICUA's core tasks are to conduct activities and education in the fields of research, conservation and restoration and the promotion of underwater cultural heritage, in particular at the international level. Through its activity ICUA is also a strong proponent of the ratification and implementation of UNESCO's 2001 Convention on the Protection of the Underwater Cultural Heritage. ICUA works in accordance with the principles laid out in the Convention and its annex and contributes to expanding opportunities in other European and Mediterranean countries. Through its

work in developing and disseminating the latest methods of investigation in underwater archaeology, conservation and restoration, training and the exchange of knowledge, ICUA Zadar has become an important focal point for these activities in this part of Europe. Centre is located in the complex of the former church and monastery of St. Nicholas on Zadar peninsula. It is a complex whose remains lie on numerous archaeological layers originating from the Prehistoric times, through the Ancient Period, Middle Ages and Modern period.

Programme timetable

Sessions:

1. Mesolithic–Neolithic Transition: Dynamics of Interactions among Hunter-Fisher-Gatherers and Farming Communities
2. Modelling and Population Dynamics: Formal Approaches for the Understanding of European Late Hunter-Gatherers and Farmers
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5. Subsistence and Health: Archaeology of the Emerging Food Systems, Dietary Patterns and Lifestyle Maladies
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Locations:

1 University of Zadar, Main Hall - session 1,3 and 5
2 Archaeological Museum of Zadar - session 6 and 7

3 University of Zadar, Department of Archaeology (Room 101) - session 2, 4 and 8
4 Museum of Ancient Glass - Welcoming party
5 International Centre for Underwater Archaeology in Zadar (ICUA Zadar) - exhibition, dinner and closing party

Date	Time Slot	Location 1 - University of Zadar Main Hall	Location 2 - Archaeological Museum of Zadar	Location 3- University of Zadar, Department of Archaeology - Room 101
Thursday, 22 May	08:00 - 09:30	Registration and coffee		
	09:20 - 10:00	Opening Ceremony		
	10:00 - 10:45	Keynote Lecture (E. Bánffy)		
	10:45 - 11:00	Short break		
	11:00 - 11:10	Session 1: Introduction		
	11:10 - 11:25	01_Robb	Session 6: Introduction	
	11:25 - 11:40	02_ Horejs & Ostmann	01_Hamon	
	11:40 - 11:55	03_Borić	02_Rajković	
	11:55 - 12:10	04_ Chapman & Gaydarska	03_Trampota et al.	
	12:10 - 12:25	05_ Forenbaher et al.	04_Gurova	
	12:25 - 12:40	06_Pessina et al.	05_Jovanović	
	12:40 -	07_Mazzucco et al.	06_Ruka et al.	

	12:55			
	12:55 - 13:10	08_Martini et al.	07_Milić & Brandl	
	13:10 - 14:40	Lunch break	Lunch break	
	14:40 - 14:55	09_Perhoč	08_Gjyshja & Quinones	
	14:55 - 15:10	10_Arzelier et al.	09_Sani et al.	
	15:10 - 15:25	11_Perrin et al.	10_Terradas	
	15:25 - 15:40	12_Barrera Cruz & García Puchol	11_Castañeda et al.	
	15:40 - 15:55	13_Martínez Sevilla et al.	12_Kiosak	
	15:55 - 16:10	14_Vondrovský	13_Santaniello et al.	
	16:10 - 16:25	15_Raemaekers	14_Denis et al.	
	16:25 - 16:40	16_Halbrucker et al.	15_Vitezović et al.	
	16:40 - 17:00	Coffee break	Coffee break	
	17:00 - 17:15	17_Tkach & Malyutina	16_Papadogianni	
	17:15 - 17:30	18_Andreev	17_Ivančić et al.	
	17:30 - 17:45	19_Shnaider et al.	18_Hansen et al.	
	17:45 - 18:00	Discussion	19_Malyutina & Skorobogatov	

	18:00 - 18:15	Discussion	Discussion	
	18:15 - 18:30		Discussion	
	19:00	Welcoming party! Museum of Ancient Glass		
Friday, 23 May	08:00 - 09:00	Registration and coffee		
	09:00 -09:10	Session 3: Introduction	Session 6: Introduction	Session 2: Introduction
	09:10 - 09:25	01_ Mlekuž Vrhovnik	20_Đuričić	01_Cortell-Nicolau & Pardo-Gordó
	09:25 - 09:40	02_Hamilakis et al.	21_Muntoni et al.	02_Sprißler
	09:40 - 09:55	03_ Apostolikas & Kyparissi	22_Tsurev	03_Fort & Pérez-Losada
	09:55 - 10:10	04_Papadakou & Kotsakis	23_Dzhanfezova	04_Wirtz & Gronenborn
	10:10 - 10:25	05_ Ruka et al.	24_Eulenberg	05_Hilpert et al.
	10:25 - 10:40	06_Webster & Stojanovski	25_Opriș	06_Mazzucco et al.
	10:40 - 10:55	07_Grębska-Kulow	26_Demoule	07_Triozzi
	10:55 - 11:10	08_Nikolov & Takorova	27_Burke	08_Miguel Godinho et al.
	11:10 - 11:30	Coffee break	Coffee break	Coffee break
	11:30 - 11:45	09_Nikolova	28_Ciela et al.	Discussion
	11:45 -	10_Perić et al.	29_Cubas et al.	Discussion

	12:00			
	12:00 - 12:15	11_Kočić et al.	30_Cámara Manzaneda et al.	Session 4: Introduction
	12:15 - 12:30	12_Lazar	31_Pyzel	01_Huet & Mazzucco
	12:30 - 12:45	13_ Czekaj-Zastawny et al.	32_Gomart	02_Vybornov & Kulkova
	12:45 - 13:00	14_ Pilař & Květina	Discussion	03_Gerasimov
	13:00 - 14:30	Lunch break	Lunch break	Lunch break
	14:30 - 14:45	15_Ševčík et al.		04_Erdem & Arikan
	14:45 - 15:00	16_ Fischer et al.		05_Baiges & Antolín
	15:00 - 15:15	17_Hamon et al.		06_Ongaro
	15:15 - 15:30	18_ Gibaja et al.		07_Huisman
	15:30 - 15:45	19_Biagi & Starnini		08_Connolly & Healy
	15:45 - 16:00	20_Cattiaux		09_Arniz-Mateos et al.
	16:00 - 16:15	21_ Gassin et al.		10_Portillo et al.
	16:15 - 16:30	22_Manen		11_Idrizi & Allen
	16:30 - 17:00	Coffee break		Coffee break
	17:00 - 17:15	23_Gassiot-Ballbè &Clemente-		12_Petrinelli Pannocchia et al.

		Conte		
	17:15 - 17:30	24_ Martínez Sánchez et al.		13_Pizziolo et al.
	17:30 - 17:45	25_ Rodrigues et al.		14_Krauß & Ciobotaru
	17:45 - 18:00	26_Almeida et al.		15_Botić
	18:00 - 18:15	27_Smyth et al.		Discussion
	18:15 - 18:30	Discussion		Discussion
	18:30 - 18:45	Discussion		
	19:00	Presentation of the journal *Archaeologia Adriatica* published by the Department of Archaeology of the University of Zadar (Location 1 - University of Zadar Main Hall)		
Saturday, 24 May	08:00 - 09:00	Registration and coffee		
	09:00 - 09:10	Session 5: Introduction	Session 7: Introduction	Session 8: Introduction
	09:10 - 09:25	01_Živaljević	01_Marangou	01_M. Furholt
	09:25 - 09:40	02_Marković et al.	02_Gaydarska	02_Robb
	09:40 - 09:55	03_Čubrić-Čurik et al.	03_Bristow	03_Vassanelli et al.
	09:55 - 10:10	04_Sierra et al.	04_Grębska-Kulow	04_Kurzawska et al.
	10:10 - 10:25	05_Trimmis & Drnić	05_K. Furholt	05_Kirushin et al.

	10:25 - 10:40	06_Novak et al.	06_Doga & Gilyazov	06_Nyland & Hofmann
	10:40 - 10:55	07_Blanz et al.	07_Filipowicz	07_Guzmán Arnedo & Martínez Sánchez
	10:55 - 11:10	08_Bălășescu et al.	08_López-Montalvo	08_Lorenzo-Barrio et al.
	11:10 - 11:30	Coffee break	Coffee break	Coffee break
	11:30 - 11:45	09_Zavodny et al.	09_Collado Giraldo	09_Morell et al.
	11:45 - 12:00	10_Hudson	10_López-Montalvo	10_Demchenko
	12:00 - 12:15	11_Kavak & Türkcan	11_Türkcan	11_Myriam Croze et al.
	12:15 - 12:30	12_Salavert et al.	12_Weissensteiner & Horejs	12_Capuzzo et al.
	12:30 - 12:45	13_Filipović et al.	13_Sobkowiak-Tabaka et al.	Discussion
	12:45 - 13:00	14_Obradović et al.	Discussion	Discussion
	13:00 - 14:30	Lunch break	Lunch break	Lunch break
	14:30 - 14:45	15_Reed et al	Discussion	
	14:45 - 15:00	16_Filipović et al.		
	15:00 - 15:15	17_Dimitrijević & Obradović		
	15:15 - 15:30	18_Bezić		
	15:30	Discussion		

	- 15:45			
	15:45 - 16:00	Discussion		
	16:00 - 16:30	Coffee break and Posters Session		
	16:30 - 17:15	Conference Wrap-up and and Selection of the Next Host		
	19:00 -19:15	Opening of the exhibition: *Balkan Archaeology in Focus* by Austrian Archaeological Institute (OeAI) - International Centre for Underwater Archaeology in Zadar (ICUA Zadar)		
	19:15 -01:00	Closing party and dinner - International Centre for Underwater Archaeology in Zadar (ICUA Zadar)		

Thursday, May 22

Session 1. Mesolithic–Neolithic Transition: Dynamics of Interactions among Hunter-Fisher-Gatherers and Farming Communities

Location 1 - University of Zadar Main Hall

01-01
John Robb
Decolonising the Meso-Neo Transition: the (assumed) politics of mobility

01-02
Barbara Horejs & Felix Ostmann
New data and old gaps: linking the emerging Neolithic in the central Balkans with southwest Asia

01-03
Dušan Borić
The Early Neolithic of Southeastern Europe: A Synthesis

01-04
John Chapman & Bisserka Gaydarska
"Frogs around the Adriatic pond": a framework for the spread of the Neolithic in the Eastern Adriatic

01-05
Stašo Forenbaher, Giovanni Boschian, Nikola Vukosavljević, Dinko Radić, Siniša Radović, Preston T. Miracle
Adriatic Hunters, Herders, and In-Betweeners: The Transition to Farming at Žukovica Cave

01-06
Andrea Pessina, Federico Bernardini, Andrea Fragiacomo, Gigliola Antonazzi
Mesolithic-Neolithic transition in Northeastern Italy: new data and perspectives for future research

01-07
Niccolò Mazzucco, Katerina Pavloglou, Arobba Daniele, Adriano Ribollini, Lionello Morandi, Jacopo Gennai, Gerard Remolins, Marta Colombo, Juan Franscisco Gibaja
New Research at Monte Frignone II (Lucca, Italy): Reassessing the Mesolithic-Neolithic Transition in the Northern Apennines

01-08
Fabio Martini, Lapo Baglioni, Chiara De Marco, Isabella Matera, Gaia Mustone, Pasquino Pallecchi, Lucia Sarti
Mesolithic tradition and Early Neolithic in Northern Tuscany (Italy): Stability and Transformation in Techno-Typological Trends of Lithic Productions

01-09
Zlatko Perhoč
Lithic Traces of Trans-Adriatic Migrations – The Neolithic change. A Retrospective of Twenty Years of Research

01-10
Ana Arzelier, Didier Binder, Pauline Garberi, Maïté Rivollat, Mélanie Pruvost, Marie-France Deguilloux, Wolfgang Haak
Refining the chronology of admixture events between early farmers and hunter-gatherers in the Central and Western Mediterranean

01-11
Thomas Perrin, François-Xavier Le Bourdonnec, Stéphanie Bréhard, Camille Daujeard, Marie-France Deguilloux, Mathilde Papot, Sylvie Philibert, Aurore Schmitt
Evidence of very early contacts between Mesolithic and Neolithic groups in the hinterland of southern France at Roquemissou (Aveyron, France)

01-12
Maria Barrera & Oreto García Puchol
Decoding the Past: Revealing Innovation and Tradition Dynamics through Sickles, Projectiles, Plants and Prey (or subsistence resources) in the Neolithic of the Iberian Peninsula

01-13
Francisco Martínez-Sevilla, Maria Herrero-Otal, María Martín Seijo, Miriam Cubas, Pedro Henríquez Valido, Rafael María Martínez Sánchez, Jonathan Santana, Antonio Peralta Gómez, José Antonio Lozano Rodríguez, Ingrid Bertin, Raquel Piqué Huerta
The Mesolithic-Neolithic necropolis of Cueva de los Murciélagos (Albuñol, Granada, Spain): Continuity or change?

01-14
Václav Vondrovský
The Devil is in the Details: The Role of Inner Peripheries in the Neolithization of Central Europe

01-15
Daan Raemaekers
A missing North Sea connection? The Neolithisation of southern Scandinavia and the Low Countries compared

01-16
Éva Halbrucker, Ian Engels, Maarten Dhaenens, Emanuela Cristiani, Philippe Crombé
Transitioning to the Neolithic in Belgium: a multidisciplinary anaylsis of stone tools

01-17
Evgeniia Tkach, Anna Malyutina
Bone-antler artifacts technology in the hunter-fisher-gathering communities during the Vth mil BC in the SE Baltic coast (Zedmar culture)

01-18
Konstantin Andreev
The emergence of clay pottery (Neolithization) in the forest-steppe Volga region (Eastern Europe)

01-19
Svetlana Shnaider, Percy Hey Chun Ho, Artem Yakovlev, Alexei Kasparov, Anna Molodtseva, D. Kim, Taylor Hermes, C. Chon, Grigorii Markovsky, Saltanat Alisher Kyzy, Aida Abdykanova, Temirlan Chargynov, William Rendu, Christina Warinner
Neolithization in central Asia

Session 6. Innovation and Tradition: Technological Perspectives on Europe's Neolithisation

Location 2 - Archaeological Museum of Zadar

06-01
Caroline Hamon
Approaching the social organization of grinding tools production: a case study from the early Neolithic of the Paris Basin

06-02

Dragana Rajković
The Emergence and Development of Polished Stone Tools from Starčevo Culture Sites in Northeastern Croatia

06-03
František Trampota, Petr Šída, Pavel Burgert, Václav Kachlík, Antonín Přichystal
Metabasite of the Jizera Mountain Type (Czech Republic): an important player in the Neolithisation of temperate Europe

06-04
Maria Gurova
Neolithic flint assemblages in transition and transformation: Bulgarian case study

06-05
Ivana Jovanović
The role of Balkan flint in the neolithisation of the western Balkans

06-06
Rudenc Ruka, Bogdana Milić, Mirco Brunner, Martin Hinz, Kristi Anastas, Ilir Gjipali, Adrian Anastasi, Albert Hafner
Just daily business: Long blades from Lin 3 (Albania) in their wider context

06-07
Bogdana Milić & Michael Brandl
No Single Way Forward: Rethinking Lithic Technological Strategies in the Early Neolithic Balkans

06-08
Zhaneta Gjyshja & Jhon Cruz Quinones
The Social Aspect of Stone Blade Exchange Among the Early Villages in Southeast Europe

06-09
Simone Sani, Niccolò Mazzucco, Vincenzo Palleschi, Denis Mengoli, Denis Guilbeau, Marco Serradimigni, Anna Maria De Francesco, Linda Alderighi, Marta Colombo, Juan F. Gibaja, Enrico Maria Giuffré, Mario Mineo, Stefano Legnaioli, Carlo Tozzi, Elisabetta Starnini
Obsidian economy in Early Neolithic Central Italy: New insights through technological and provenance analysis

06-10
Xavier Terradas
Raw materials, territories and technical productions on the Early Neolithic of north-eastern Iberian Peninsula

06-11
Nuria Castañeda, Fernando Tapias, Beatriz Ugarte, Cristina Cabrera, Raúl Márquez, Santiago Clemente, Carmen Valenciano, José Polo
Growing bigger: the Early Neolithic flintmining activities at the Casa Montero-Los Cerros mining complex (Madrid, Spain) (6th mill cal ane)

06-12
Dmytro Kiosak
Trypillian Rhomboid Points: a Mesolithic Heritage or a Neolithic innovation?

06-13
Fabio Santaniello, Giulia Deimichei, Juan F. Gibaja, Silvia Amicone, Niccolo Mazzucco, Maurizio Zambaldi, Annaluisa Pedrotti
Technological and functional news from Adige Valley between late Mesolithic and early Neolithic

06-14
Solène Denis, Pierre Allard, Louise Gomart, Caroline Hamon, Branko Hossa, Bibiana Hromadova, Johana Malíšková, Jaroslav Novotný, Pavel Tomek, Peter Tóth
Living in the LBK Village of Těšetice-Kyjovice (Czech Republic): A Multi-Proxy Approach to

Socio-Technical Organization

06-15

Selena Vitezović, Krum Bacvarov, Georgi Katsarov, Nikolina Nikolova, Atanas Tsurev

Innovations in the Early Neolithic bone technology: the case study of Nova Nadezhda (eastern Bulgaria)

06-16

Anastasia Papadogianni, Katerina Douka, Danica Grujić, David Blattner, Barbara Horejs

Palaeoproteomic approaches to the study of Neolithic bone tool industries; the case of Svinjarička Čuka (Serbia)

06-17

Tomislav Ivančić, Selena Vitezović, Leo Arbutina, Mario Bodružić, Dario Vujević

Bone industry from the site of Ždrilo (Croatia): preliminary results of the technological and use wear analyses

06-18

Jakob Hansen, Krista McGrath, José María Rodanés Vicente, Pilar Utrilla, Ragnheiður Diljá Ásmundsdóttir, Mar Martínez Miralles, Max Ramsøe, Martha Munoz Alegre, Tina Ravnsborg, Ole Nørregaard Jensen, Dídac Román Monroig, Gustavo Aguilella, Mònica Olivia Poveda, Miriam de Diego, Raquel Piqué, Ignacio Clemente Conte, Frido Welker, Maria Saña Seguí

Taxonomic selection strategies in the production of Early Neolithic bone objects, NE Iberian Peninsula

06-19

Malyutina Anna & Skorobogatov Andrey

The development of the bone industry in the Neolithic — Eneolithic of the Middle Don river

Friday, May 23

Session 3. People, Settlement and Territory: Constructing Communities from Local to Regional Scale
Location 1 - University of Zadar Main Hall

03-01
Dimitrij Mlekuž Vrhovnik
Space as the Machine: Spatial Processes and the Formation of the Balkan Neolithic Settlement Systems

03-02
Yannis Hamilakis, Aikaterini Kyparissi-Apostolika, Stella Katsarou, Merkourios Georgiadis, Aris Politopoulos, Vasileios Tsamis, Thomas Loughlin
Perimeter ditches and the social construction of community and space at Early-Middle Neolithic Koutroulou Magoula, Thessaly, Greece

03-03
Orestis Apostolikas & Nina Kyparissi
A unique Early-Middle Neolithic settlement at the mountainous landscape of LakePlastiras, Western Thessaly, Greece

03-04
Trisevgeni Papadakou & Kostas Kotsakis
The earliest Neolithic settlements in Europe, habitational patterns in Early Neolithic Greece

03-05
Rudenc Ruka, Vincenzo Stasolla, Edlira Andoni, Cristina C. Ancona, Eduard Shehi, Custode Silvio Fioriello
Where Are the Blades? The 'Vjosa Project' and a Preliminary View of the Lithic Assemblage from the Newly Discovered Neolithic Open-Air Site of Qesarati-Thelëza (Tepelena, Albania)

03-06
Lyndelle Webster & Darko Stojanovski
Everyday life at early Neolithic Amzabegovo: preliminary evidence from soil micromorphology

03-07
Małgorzata Grębska-Kulow
Early Neolithic architecture in South-western Bulgaria

03-08
Desislava Takorova
Outward and Upward: Strategies for Space Utilization in the Early Neolithic settlement site Slatina-Sofia

03-09
Nikolina Nikolova
Selection and Evolution of Depositional Practices at Yabalkovo, an Early Neolithic Settlement in Upper Thrace

03-10
Slaviša Perić, Olga Bajčev, Đurđa Obradović, Ivana Dimitrijević, Ružica Savić
Pit Houses and Early Farmers: Architectural Insights from Starčevo Settlements

03-11
Miroslav Kočić, Ana Kočić, Marija Kaličanin Krstić, Bryan K. Hanks
A Ditch Too Far - Obscured large scale Starčevo earthworks on the site of Jovanovac, Serbia

03-12
Catalin Lazar
The Second Neolithisation of the Balkans? Revisiting the Early Neolithic Communities in Romania

03-13
Agnieszka Czekaj-Zastawny, Anna Rauba-Bukowska, Agnieszka Kukułka
Crossing the Carpathians. The oldest settlement of the first farmers in Poland

03-14
Daniel Pilař & Petr Květina
Chronological re-evaluation of the beginning of the Neolithic in Bohemia

03-15

Filip Ševčík, David Hons, Barbora Strouhalová, Peter Tóth
Elemental Insights: Unveiling Daily Life in an LBK House at Těšetice-Kyjovice (Czech Republic) Through XRF Analysis

03-16
Anna-Leena Fischer, Silviane Scharl, Martin Nadler, Thi My Hien Nguyen
Dispersal of the earliest Linear Pottery Culture in Bavaria – Upscaling from local to regional scale

03-17
C. Hamon, P. Allard, S. Denis, M. Gabriele, L. Gomart, E. Herrscher
A family affair? The economic pattern of western LBK societies, the view from diet and craft activities

03-18
Juan F. Gibaja, Berta Morell, Mario Mineo, Amaia Arranz-Otaegui, Laura Caruso-Fermé, Niccolò Mazzucco
Refining the Chronology of the Early Neolithic Lake-shore Settlement of La Marmotta at Lake Bracciano (Anguillara Sabazia, Rome, Italy)

03-19
Paolo Biagi & Elisabetta Starnini
The emergence of the Neolithic in the central Po Valley (northern Italy): the Vhò aspect

03-20
Méline Cattiaux
Exploring Neolithic diffusion in southern France: insights from the Early Neolithic ceramic production at La Baume de Ronze (Orgnac-l'Aven, Ardèche)

03-21
Bernard Gassin, Juan F. Gibaja, Elsa Defranould, Ingrid Sénépart, Niccolo Mazzucco
Territorial organization of Early Neolithic settlements: insights through the lithic analysis of two major sites of the Rhône valley

03-22
Claire Manen
Settlements and connectivity in the context of the pioneer's neolithisation in Southern France

03-23
Ermengol Gassiot-Ballbè & Ignacio Clemente-Conte
An unexpected Early Neolithic? The Emergence of Agropastoral medium and high Mountain Territories in the Central Pyrenees

03-24
Rafael M Martínez Sánchez, Manuel Altamirano García, Dolores Bretones Garcí, Jesús Gámiz Caro, Santiago Guillamón Dávila, Zita Laffranchi, Alexis Maldonado Ruiz, M José Martínez Fernández, Francisco Martínez-Sevilla, Cornelius Meyer, Marco Milella, María Pastor Quiles, Juan Carlos Vera Rodríguez, Laura Vico Triguero
The emergence of the Neolithic in the central Po Valley (northern Italy): the Vhò aspect

03-25
Filipa Rodrigues, António Faustino de Carvalho, Sofia Ligeiro, Pedro Souto, Armando Lucena, João Zilhão
Settlement patterns during the Early Neolithic in the central Limestone Massif of Estremadura (Torres Novas, Portugal)

03-26
Nelson J. Almeida, Cristina Ferreira, Luiz Oosterbeek
There and back again. The neolithisation of inland Central Portugal

03-27
Jessica Smyth, Graeme Warren, Lilly Olet, Richard P. Evershed
Constructing communities: the Early Neolithic Céide Fields, northwest Ireland (3900-3700 BC)

Session 6. Innovation and Tradition: Technological Perspectives on Europe's Neolithization

Location 2 - Archaeological Museum of Zadar

06-20
Ana Đuričić
Stone, clay or earth: Technological choice and Early Neolithic ovens from the site of Lepenski Vir

06-21
Italo M. Muntoni, Giacomo Eramo, Philippe Della Casa
Exploitation, Identification and circulation of Gargano chert in the Adriatic region during the Neolithic

06-22
Atanas Tsurev
Diverging and converging traditions: Identifying early Neolithic communication networks in Thrace through pottery analysis

06-23
Tanya Dzhanfezova
Early Neolithic colour palettes decoded by painted pottery analysis: examples from the Eastern Balkans

06-24
Thorben Michel Eulenberg, Silvia Amicone, Raiko Krauß
A closer look – Petrographic analysis on the early neolithic ceramic of the site Movila lui Deciov

06-25
Vasile Opriș, Valentina Voinea, Adrian Irimia, Dragoș Mirea
Breaking Ground: Insights into Dobrogea's Earliest Neolithic Site through Ceramic Technology

06-26
Jean-Paul Demoule
Origins and spread of impressed ceramics in the Balkan Peninsula

06-27
Clare Burke, Elena Stojanova Kanzurova, Zoran Rujak, Pero Sinadinovski, Darko Stojanovski
The Ideas We Take With Us: The Crafting Choices of Neolithic Potters in North Macedonia

06-28
Marika Ciela, Silvia Amicone, Paola Salzani, Annaluisa Pedrotti
Shaping Through Ceramics: New Insights into Pottery Production and Social Dynamics in Northeast Italy (6th–5th Millennia cal. BCE)

06-29
Miriam Cubas, Izaro Quevedo-Semperena, Urko Santamaría-Díaz, Néstor Lozano Lópe, Marta Francés Negro, Estíbaliz Espada-Martín
Pottery innovations in the onset of farming in Iberia: an overview

06-30
Javier Cámara Manzaneda, María Dolores Camalich Massieu, Dimas Martín-Socas, Salvador Pardo Gordó, José Luis Caro Herrero
Diachronic persistence's and changes during the Neolithic in South Iberian Peninsula (mid-6th to early 3rd millennium BCE): new advances through the angle of ceramic technological practices

06-31

Joanna Pyzel, Marcin Szeliga, Maciej Urban, Gabriela Gdula, Maksymilian Łuszcz
One-Note Culture - Variability of Early Kuyavian Farming Communities through the Lens of Pottery Technology and Use

06-32
Louise Gomart, Oliver Craig, Marzia Gabriele, Alexandre Lucquin, Claire Manen, Michael Ilett
Early farmer interactions: rethinking "non-LBK" ceramic assemblages in the early Neolithic of central-western Europe through the reconstruction of Limburg pottery manufacture and uses

Session 2. Modelling and Population Dynamics: Formal Approaches for the Understanding of European Late Hunter-Gatherers and Farmers

Location 3 - University of Zadar, Department of Archaeology - Room 101

02-01
Alfredo Cortell-Nicolau & Salvador Pardo-Gordó
Where are we? A current insight into modelling approaches for the Early Neolithic

02-02
Jonas Sprißler
Better together: LBK chronology in the Ammer valley (SW Germany) based on the combination of correspondence analysis and radiocarbon dating

02-03
Joaquim Fort & Joaquim Pérez-Losada
The Neolithic spread in Europe: modeling population dynamics and interactions

02-04
Detlef Gronenborn & Kai Wirtz
Multicentennial Cycles: Combining Continental, Regional and Local Perspectives

02-05
Johanna Hilpert, Anna-Leena Fischer, Oliver A. Kern, Silviane Scharl, Christian Wegener
Early Neolithic Population Dynamics and Settlement Potential in Central Europe (LBK; 5400 – 4950 BCE)

02-06
Niccolo Mazzucco, Giada Pirrone, Simone Sani, Claudia Finocchiaro, Elisabetta Starnini
Modelling obsidian circulation in the Central Mediterranean through network analysis

02-07
Nicholas Triozzi
Assessing risk-sensitive herd culling strategies in Neolithic Northern Dalmatia, a demographic modeling approach

02-08
Ricardo Miguel Godinho, Patrícia Simão, Cláudia Umbelino, Célia Gonçalves, João Cascalheira, Nuno Bicho, Zsuzsanna Siklósi, Alexandra Anders, Pál Raczky, Anett Gémes, Karin Wiltschke-Schrotta, Patrick Semal, Caroline Polet, Sándor Évinger, Tamás Hajdu, Patricia Smith, Noreen von Cramon-Taubadel
The impact of population history and diet on mandibular morphology in the transition from Upper Palaeolithic/Mesolithic hunting-gathering to Neolithic agro-pastoralism

Session 4. Human-Environment Dynamics: Environmental Archaeology and Paleoclimate

Location 3 - University of Zadar, Department of Archaeology - Room 101

04-01
Thomas Huet & Niccolò Mazzucco

Climates during the spread of the Neolithic in the Central and Western Mediterranean

04-02

Alexander Alekseevich Vybornov & Marianna Alekseevna Kulkova

The climate and Neolithic cultures of the Northern Cis-Caspian and steppe Volga River basin

04-03

Dmitriy V. Gerasimov

The Early Neolithic period in Eastern Fennoscandia: Structure and Chronological Boundaries

04-04

Neriman Erdem & Bülent Arikan

Simulation of Environment and Human Relationships via Agent-Based Modeling: Alternative Agropastoral Production Scenarios and Their Effects in Çatalhöyük, Turkey

04-05

Guillem Salvador-Baiges & Ferran Antolín

A computational analysis of crop dynamics during the Neolithic in NW Mediterranean area: a response to climate changes or to the neolithization process?

04-06

Samuele Ongaro

A Brackish Frontier? The Neolithic Transition in the Northern Adriatic and the Role of the Palaeolandscape

04-07

D.J. Huisman, E. Familetto, A. Smuk, K.M. Cohen, W.Z. Hoek, M.Madella, L. Kubiak Martens, M. Schepers

Finding Suitable Grounds: Investigating the onset of crop cultivation in the lowlands of the Netherlands

04-08

Rory Connolly & Alan Healy

Human-environment dynamics and marine resource exploitation in NW Ireland from the fifth to third millennia BC

04-09

Rosa Arniz-Mateos, Danai Theodoraki, Niklas Hausmann

Tracing climatic impacts on early agriculture through shell-based isotope and LIBS analysis

04-10

Marta Portillo, Marta Mateu, Victoria García-Martínez, Sofia Pejoan Quiroga, Laia Macià, Gerard Remolins, Niccolò Mazzucco, Mario Mineo, Juan F. Gibaja

Phytolith evidence for harvesting, grinding and building from Early Neolithic La Marmotta, Italy

04-11

Olta Idrizi & Susan E. Allen

Plant Resource Use and Agriculture in Early Neolithic Albania: New Results from Pogradec

04-12

Cristiana Petrinelli Pannocchia, Daniele Arobba, Younes Naime, Alice Vassanelli

Base subsistence strategies in the Early Neolithic of Central Italy: insights from Rio Tana (AQ, Abruzzi)

04-13

Giovanna Pizziolo, Angelo Gismondi, Alessia D'Agostino, De Marco C., Gabriele Di Marco, Domenico Lo Vetro, Fabio Martini, Paul Mazza, Gaia Mustone, Mario Federico Rolfo, Lucia Sarti, Nicoletta Volante

Back to the wild: a multidisciplinary approach to investigate the persistence of wild plants in the subsistence strategies of Early Neolithic communities in Tyrrhenian central Italy

04-14

Raiko Krauß & Dan Ciobotaru

Saturday, May 24

Session 5. Subsistence and Health: Archaeology of the Emerging Food Systems, Dietary Patterns and Lifestyle Maladies

Location 1 - University of Zadar Main Hall

05-01
Ivana Živaljević
More-than-Human Assemblages: a Multispecies Perspective on the Neolithic

05-02
Jelena Marković, Jelena Jovanović, Alejandro Romero, Sofija Stefanović
Dietary patterns of Mesolithic-Neolithic communities in the Central Balkans: data from stable isotope and buccal microwear analyses

05-03
Vlatka Čubrić-Čurik, Rajna Šošić Klindžic, Goran Tomac, Maja Grgurić Srzentić, Maja Krznarić Skrivanko, Ivana Drzaić, Vladimir Brajković, Ivana Kersić, Ino Čurik, Preston Thor Miracle
Unraveling the Genetic History of Cattle in Balkans

05-04
Alejandro Sierra, Marie Balasse, Siniša Radović,
A closer look at the orientation and seasonal rhythms of sheep economies in the early Neolithic of the Adriatic region

05-05
Konstantinos P. Trimmis & Ivan Drnić
Early Dairying and Long-Range Connectivity in the Adriatic Early Neolithic food systems. Deciphering the Early Neolithic Assemblage of Mala Pećina

05-06
Mario Novak, Valentina Martinoia, Ivor Janković, Dinko Tresić Pavičić, Maja Krznarić Škrivanko, Darko Komšo, Dženi Los, Goran Tomac, Dragana Rajković, Michael Richards
From shore to land: a comparative isotopic study of Neolithic dietary practices in coastal and inland Croatia

05-07
Magdalena Blanz, Danica Grujić, Günther Grabner, Barbara Horejs
Animal husbandry practices in Southeast Europe: New zooarchaeological and stable isotope ratio insights from Early Neolithic Svinjarička Čuka, Serbia

05-08
Adrian Bălășescu, Valentina Voinea, Valentin Radu
The exploitation of animal resources by the first Neolithic human communities in Dobrogea (6th millennium BC)

05-09
Emily Zavodny, Cassie Hausdorf, Victoria Nuccio, János Dani, Danielle J. Riebe
Where the Wild Things Are: Reassessing Late Neolithic Socio-Cultural Variation on the Great Hungarian Plain through Isotopic Analyses

05-10 Mark Hudson
Neolithic maritime dispersals in comparative perspective

05-11

Salih Kavak, Ali Umut Türkcan
Crops in the burials from Late Neolithic graves in Anatolia

05-12
Salavert Aurélie, Martin Lucie, Zazzo Antoine, Baly Isabelle, Oliveira Hugo, Antolín Ferran
New insights on the beginning of the opium poppy domestication in Early Neolithic Europe

05-13
Dragana Filipović, Ivana Jovanović, Djurdja Obradović, Anne de Vareilles
Plants and blades: harvesting techniques and diet in the Neolithic of the central-western Balkans

05-14
Đurđa Obradović, Hanna Aleksandrova, Mihaela Golea, Amalia Sabanov, Dragana Filipović
Valued wild: non-cultivated edible plants across the Neolithic Balkans

05-15
Kelly Reed, Sarah McClure, Emil Podrug
First evidence of Neolithic crop husbandry practices along the Dalmatian coast of Croatia

05-16
Dragana Filipović, Max Luger, Andreas Heiss, Dragana Perovanović, Barbara Horejs
In with the new: Plant foodstuffs in an early Neolithic village in southeastern Serbia

05-17
Ivana Dimitrijević & Djurdja Obradović
Early Neolithic Farmers of the Middle Morava Valley, Serbia: Evidence of Plant and Animal Exploitation

05-18
Ana Bezić
Assembling the Natural: Forests, Ethnobotany, and Socialist Modernization in Montenegro

Session 7. Figurative Expressions and Socio-Symbolism

Location 2 - Archaeological Museum of Zadar

07-01
Christina Marangou
Neolithic figurines and miniatures: (un)reality, correlations, divergences, narratives

07-02
Bisserka Gaydarska & John Chapman
Fragments as a unit of analysis for early Neolithic figurines

07-03
Rebecca Bristow
Breaking with Tradition: on the disappearance of figurative representations in Central Europe during the Middle Neolithic

07-04
Małgorzata Grębska-Kulow
Early Neolithic anthropomorphic figurines made of daub, their function and symbolism

07-05
Kata Furholt, Ildiko Medović, Martin Furholt
Visual and contextual analysis of Neolithic anthropomorphic clay figurines along the southern reaches of the Tisza River

07-06

Natalya Doga & Filat Gilyazov
The cult of the horse and bull in the Neolithic of the steppe and forest-steppe Volga region

07-07 Patrycja Filipowicz
From monumental bulls to portable motifs: transformation of images in Late Neolithic Central Anatolia

07-08
Esther Lopez Montalvo
Unveiling Social Structures within the Iberian Neolithization Process: Insights from Human depictions in Spanish Levantine Rock Art

07-09
Hipólito Collado Giraldo, Sara Garces, José Julio García Arranz, Hugo Gomes
The rock art of the last hunter gatherers groups in the Iberian Peninsula: pre-schematic art

07-10
Esther López-Montalvo & Guilhem Mauran
Technical Traditions and Cultural Mosaic in the Neolithization of Mediterranean Iberia: Contributions from the chaîne operatoire of Spanish Levantine rock art pigments

07-11
Ali Umut Türckan
Where the Hills have no name: Late Neolithic Rock Art tradition on Rocky Landscape of Asia Minor

07-12
Elisabeth Weissensteiner & Barbara Horejs
Neolithic Stamps between Making and Meaning: The Stamps of Svinjarička Čuka, Serbia

07-13
Iwona Sobkowiak-Tabaka, Aldona Kurzawska, Małgorzata Mrozek-Wysocka
Color matters: investigating the significance of white ornaments in Early Neolithic burial practices in Poland

Session 8. Intersecting Identities and Social Dynamics during the Neolithisation of Europe

Location 3- University of Zadar, Department of Archaeology - Room 101

08-01
Martin Furholt
Power, Politics and social organization in the Early Neolithic period in Europe

08-02
Jess Thompson & John Robb
Interacting with the dead in Neolithic Italy

08-03
Alice Vassanelli, Emil Podrug, Natalija Čondić, Solange Rigaud, Elisabetta Starnini, Niccolò Mazzucco
Exploring Early Neolithic Ornaments: Technical Traditions and Cultural Interaction in Dalmatia

08-04
Aldona Kurzawska, Iwona Sobkowiak-Tabaka, Anna Głód, Danuta Żurkiewicz
Foreign Influence or Local Tradition? The Role of Personal Ornaments in Early Neolithic Social Identity in Central Europe: A Case Study from Poland

08-05

Kiril Yu. Kirushin, Svetlana Shnaider, Vadim B. Borodaev, Dmitry Kuzmenkin, Irina Tolpeko
Shell of the Azov-Black Sea mollusk Trytia nitida in a Neolithic child burial from the Ust-Aleyka 5 cemetery (Barnaul Pri-Ob Region

08-06
Astrid J. Nylan & Daniela Hofmann
Neolithic Norway - meetings with unexpected (?) outcomes

08-07
África Guzmán Arnedo & Rafael M. Martínez Sánchez
From the sea to the (red)neck. Discoidal beads and other small ornaments from the Early Neolithic of Cerro del Cercado (Priego de Córdoba, Spain)

08-08
Ana Lorenzo-Barrio, Sonia Díaz-Navarro, Ana Herrero-Corral, Cristina Tejedor-Rodríguez
Exploring social dynamics and identity constructionthrough the study of non-adults in the funerary contexts of Late Prehistory (Vth to IIIrd millennia BC) in Central Iberia

08-09
Berta Morell, Penny Bickle, Derek Hamilton, Marta Díaz-Zorita Bonilla, Michael Francken, Alba Masclans
Redefining the temporal dynamics of the Linearbandkeramik cemetery horizon: insights from Schwetzingen cemetery (Southwest Germany)

08-10
Olha Demchenko
Ground cemeteries as evidence of Mesolithic resilience in the Northern Pontic region during 7th - mid-5th mil. BC

08-11
Myriam Croze, Alice Paladin, Stefania Zingale, Franco Nicolis, Elisabetta Mottes, Frank Maixner, Annaluisa Pedrotti,Torsten Günther, Albert Zink, Valentina Coia
Genomic diversity and structure of Mesolithic and Neolithic individuals from the Eastern Italian Alps

08-12
Giacomo Capuzzo, Christophe Snoeck, Alice Paladin, Valentina Coia, Alex Fontana, Omar Larentis,Umberto Tecchiati, Annaluisa Pedrotti,Elisabetta Mottes, Clément Bataille, Diego E. Angelucci
Tracing mobility and landscape use in the eastern Italian Alp using oxygen, sulfur, and strontium isotope analyses on Mesolithic and Neolithic burials

Posters Session

Location 1 - University of Zadar Main Hall (16:00 – 17:00)

01
Anna Rauba-Bukowska, Maciej Dębiec, Vasile Diaconu, Katarzyna Drabik
Anthropomorphic figurines of the Precucuteni culture: workshop practices in the light of archaeometric research

02
Anna Rauba-Bukowska, Agnieszka Czekaj-Zastawny, Agnieszka Kukułka, Katarzyna Drabik
Secrets of small-scale sculpture workshops revealed through Computed Tomography. Clay human foot from Early Neolithic site Gwoździec 2, southern Poland

03
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Abstracts

01 Mesolithic–Neolithic Transition: Dynamics of Interactions among Hunter-Fisher-Gatherers and Farming Communities

Session co-organizers: Sonja Kačar[1] & Maïté Rivollat[2]

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The diversity of Neolithic lifeways in Europe arose from a complex interplay of social, environmental, and cultural factors, highlighting the prolonged, arrhythmic, complex and regionally varied dynamics of the Neolithisation processes. Emerging in Southwest Asia, the spread of sedentary farming, accompanied by various technological innovations, expanded across Europe through both migrations and local interactions, as shown by archaeological and archaeogenetic evidence. Migrants originally from Anatolia settled in European regions, and in areas with dense hunter-fisher-gatherer populations, coexistence fostered repeated interactions—ranging from cooperation to conflict—that often persisted over long periods before full integration into the Neolithic paradigm.

This general session focuses on interactions among diverse cultural, social, and biological groups of hunter-fisher-gatherers and farmers, as well as between different farmer groups. We invite papers that explore both interregional and intraregional connections, from the perspective of material culture studies and bioarchaeological sciences. Contributions are also encouraged on the legacy and persistence of hunter-gatherer groups, as well as on connections linking the European Neolithic to Southwest Asia, the Caucasus, and Northern Africa. Regional syntheses, new models of Neolithisation processes, and studies that challenge prevailing narratives are highly welcomed.

01-01 Decolonising the Meso-Neo Transition: the (assumed) politics of mobility

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Although one would think that the post-colonial critique of academic theory would not apply to things happening millennia before colonialism, narratives of prehistoric social change are often structured by assumptions about social interaction which derive from colonial and modern political settings. Conversely, such narratives serve to naturalise the politics of the present as "natural" or "universal". Traditional narratives of the Mesolithic–Neolithic transition in Europe integrate implicit assumptions about identity and mobility which reflect modern political conditions. Among others, these may include the assumption of bounded and stable group identities, of typological associations between economic practices and social identities, of group mobility as a venture into alterity, and of mobility as happening in landscapes of boundaries and scarcity such that mobility is inherently problematic or threatening. All of these characterise modern landscapes of mobility; none is particularly applicable to prehistoric Europe, and if we consider alternative assumptions, possibilities for the transition are quite different.

01-02 New data and old gaps: linking the emerging Neolithic in the central Balkans with southwest Asia

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The role of mobile groups in the emergence of the first Neolithic communities in the Balkans is a pivotal aspect in our current understanding of the subject. This is not only due to the recent findings on the genetic relations of southeast European and Anatolian early farmers, but also because of the significant impact that these findings have had on our current understanding of the subject. While the general models of migrating groups entering the continent are widely accepted, the highly complex process of adopting the new economic, cultural and social Neolithic way of life is only beginning to be understood in detail. New data from state-of-the-art fieldwork at Svinjarička Čuka (Serbia) are discussed in this broader framework to aim a critically re-evaluation of the knowns and unknowns in the emerging Neolithic of the central Balkans. Previous regional syntheses developed by the author for west Anatolia and Çukuriçi Höyük ('maritime colonization model' and 'pioneer model') and the recently presented 'multispecies mobility' model for the Balkans will be connected based on hard data and the 'invisible' with focus on the role of potential connectivity of hunter-gatherers and farmers. The discussion of scientific gaps and inconsistencies in current narratives will serve as a guide through incomplete archaeological datasets from the early to mid-Holocene. The primary focus of this paper will be on pre-Neolithic networks and the emergence of new communication clusters in relation to longue durée mobility between Anatolia, the Aegean and the Balkans.

01-03 The Early Neolithic of Southeastern Europe: A Synthesis

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The earliest Neolithic sites in Europe are found in the Balkan Peninsula, which includes Greece, within southeastern Europe. While the chronological resolution for the spread of early farming, Neolithic groups in southeastern Europe needs further microregional refinements, a broad-brush outline of the directionality of this spread has become increasingly well-established, with the south/southeastern to north/northwestern axis of the movement being identified. Moreover, the most recent contributions of aDNA analyses, isotope studies, and other science-based methodologies have made it possible to observe nuanced details of migration routes, mobility, and interactions between early farmers and indigenous Mesolithic foragers within the Aegean, Danube, and Eastern Adriatic catchment zones. Much has changed in this field of research over the last 25 years. While at the end of the previous century in our explanations of this major culture change it was still possible to argue for a diffusion of materials and practices rather than populations, the evidence that has accumulated over the last quarter of a century leaves no doubt that it was new people on the ground who brought with them new artefacts, materials, and novel ways of being in the world. In this paper, I review these most recent developments with the goal of providing a new synthesis about the spread of the Neolithic way of life here, with important ramifications for our understanding of similar processes taking place in the adjacent regions and elsewhere.

01-04 “Frogs around the Adriatic pond”: a framework for the spread of the Neolithic in the Eastern Adriatic

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Recent studies of the spread of farming lifeways in the Eastern Adriatic zone have focussed on regional patterns of change shown at dated Late Mesolithic and Early Neolithic sites. The results confirmed the key conclusion of archaeo-genomic histories of Southern Europe for this period – strong support for the interactionist model of hunter-gatherer / farmer relationships rather than an indigenist development or a population replacement model. But in which land/sea-scapes did people interact?

An unfortunate by-product of embedded disciplinary practices has left us with a problematic comparison between uncalibrated bp chronologies for palaeo-environment sequences and calibrated BC chronologies for archaeological studies. Adjustment of the palaeo-environmental dates using the most recent Reimer et al. (2020) calibration curve allows direct comparison of these two data sets, with intriguing results. The end of the long rapid phase of sea-level rise (up to 7mm p.a.) immediately pre-dated the spread of Neolithic lifeways North from Corfu, at 6510 – 6210 cal BC (95% confidence), ushering in over a millennium of more stable Adriatic sea-level which may have reached modern levels by 5209 – 4687 cal BC (95% confidence).

In this paper, we assess the implications of this framework in terms of the development of the islands in the Adriatic archipelago, the affect of insularization on Late Mesolithic communities, the expansion of their sea-faring skills in this region and the impetus on trans-Adriatic exchange networks in the early farming period.

01-05 Adriatic Hunters, Herders, and In-Betweeners: The Transition to Farming at Žukovica Cave

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Excavations at Žukovica, a stratified cave site on an island in the eastern Adriatic, yielded extensive evidence of Late Mesolithic and Early Neolithic occupations. A layer dated to the transition from the 7th to the 6th millennium BCE contained commingled lithics, potsherds, wild and domesticated animal bones, mollusk shells, personal ornaments and scattered human remains attributable to the latest hunter-gatherers and the earliest farmers in the region. We argue that the people who practiced these different subsistence strategies occasionally came into contact. We discuss the possibility that these activities sometimes may have been practiced by a singular group of people who were neither hunter-gatherers nor farmers, but something in-between. The people buried at Žukovica at the very end of the 7th millennium BCE had led lives fed by hunting, gathering and fishing; lives that also featured certain cultural behaviors evidently adopted from newly arrived farmers.

01-06 Mesolithic-Neolithic transition in Northeastern Italy: new data and perspectives for future research

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This contribution presents a summary of the state of research on the Late Mesolithic and Early Neolithic in Northeastern Italy, focusing on Friuli and the Karst region. In addition to long-known sites, new data have been obtained for both open-air settlements and cave sites, including recently available radiocarbon (14C) dates for the Early Neolithic in both areas. The general framework of raw material circulation, including greenstones and obsidian, has been enriched thanks to further discoveries and provenance analyses. The beginning of new excavations in caves of the Trieste Karst, which show evidence of occupation during both the Late Mesolithic and Early Neolithic, offers the opportunity to collect new data in this key area. This is crucial for understanding the formation processes of early Neolithic communities in the Karst and the Friulian plain, where Danilo- and Hvar-style pottery is frequently found, alongside ceramics characteristic of the Early Neolithic of the Po Plain. New research perspectives also concern the use of caves for ritual activities during the Neolithic and the existence of a network for the circulation of prestigious objects, such as long blades made from allochthonous flint.

01-07 New Research at Monte Frignone II (Lucca, Italy): Reassessing the Mesolithic-Neolithic Transition in the Northern Apennines

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The transition from hunting and gathering to a productive economy based on agriculture and animal husbandry occurred rapidly in Mediterranean Europe, leading to significant shifts in subsistence strategies, social organization, and symbolic practices. Despite increasing knowledge of the spread of Neolithic farming communities from the Near East into Europe, our understanding of indigenous Late Mesolithic populations remains limited due to the scarcity of well-preserved archaeological contexts. The interaction between these hunter-gatherers and incoming Neolithic groups remains difficult to reconstruct due to the fragmentary nature of the material record.

The Northern Apennines provide a unique opportunity to investigate this transition. Recent excavations and surveys have revealed that this region hosted some of the latest Mesolithic occupations in the Italian Peninsula, including sites such as Lama Lite, Piazzana, and Monte Frignone II, all in close proximity to Early Neolithic settlements such as Verrucole, Muraccio, and Pian di Cerreto.

This article contributes to the ongoing debate by presenting new excavation data from Monte Frignone II, a high-altitude site in the Italian Apennines that exhibits a transitional sequence with both Mesolithic and Neolithic contexts. An ongoing reassessment of its stratigraphy, material culture, and paleoenvironmental context aims to provide fresh insights into the complex and dynamic processes of interaction between the last hunter-gatherers and the first farming communities.

01-08 Mesolithic tradition and Early Neolithic in Northern Tuscany (Italy): Stability and Transformation in Techno-Typological Trends of Lithic Productions

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Authors present here an overview of the current studies on lithic productions of Early Neolithic contexts, useful for the historical evaluation of the Neolithisation process of Northern Tuscany. The reliable reference contexts from Tuscany are eight, joined by six contexts from Liguria and Emilia. The radiometric chronology ranges from 6.900 to 5.300 cal BC and the archaeological facies are defined by ceramic assemblages. The faunal remains, althought very rare, and the limited information from use-wear analysis broaden our knowledge on cultural characteristics of these neolithic groups. The techno-typological features of lithic industries show, in a comparative assessment of the elements of stability and transformation, the strong weight of the Mesolithic preceding tradition. An important identifying character is linked to the features of bladelets production and to the trapezoidal arrowheads, which refer to models of Late Mesolithic. Stability and transformation are the two keywords that lead to the configuration of a techno-typological structure that must be evaluated within the framework of the Tuscan-Ligurian-Emilian geographical area gravitating around the Apennine ridges. As a matter of fact, in this region, both in the high-altitude sites and in the foothill ones which fit into the dynamics of the penetration of Neolithic innovations, the Mesolithic lithic tradition shows varying forms of tradition. In this area, the existence of a tradition deeply linked to the Late Mesolithic, althought in different ways, is associated with the arrival of obsidian and the adoption of ceramic techno-types.

01-09 Lithic Traces of Trans-Adriatic Migrations – The Neolithic change. A Retrospective of Twenty Years of Research

Zlatko Perhoč

Tracing of raw material of lithic artifacts allows making a significant contribution to the construction of territories, movements and social relations of Palaeolithic hunter-gatherers and Neolithic farmers.
Our archaeometric contribution to archeology is tracing the provenance of used lithic raw material for lithic artifacts in the Stone Age in the Adriatic regions of Croatia. Geological research includes almost all Adriatic regions.
It seems that the only common element of the phenomenon of the use of lithic resources is the dynamics of changes in space and time. We tried to prove these dynamics by researching the lithic ensembles of numerous Stone Age sites in Adriatic Croatia. The focus of this contribution is the Neolithic change in the lithic material procurement strategy of early East Adriatic farmers. In order to make the radical nature of this change visible, we have also included pre-Neolithic sites in the review.
In the pre-Mesolithic periods, hunters and gatherers mainly used eastern Adriatic lithic resources. Exceptions are conditioned by geomorphological factors. In the Mesolithic isolation in local and regional frameworks occurs. Neolithic farmers prefer the western Adriatic lithic raw materials. Some Bronze Age sites in Croatia indicate the Neolithic continuity of the Adriatic transition.

01-10 Refining the chronology of admixture events between early farmers and hunter-gatherers in the Central and Western Mediterranean

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The spread of the Neolithic lifestyle across Europe was accompanied by interaction between hunter-gatherers and farming populations. The varying modes of cultural and biological interactions between both groups were highlighted in recent studies and the combined archaeological and biomolecular data have shed new light onto the nature and geo-chronological framework of these exchanges. For example, ancient DNA studies confirmed differences between the Mediterranean and Continental routes of Neolithic expansion in terms of migration and interaction dynamics, showing that Mediterranean Neolithic groups had overall higher levels of Western European hunter-gatherer ancestry.
To better understand the mechanisms, intensity, and regional variability of the biological exchanges underlying these interactions, we analyzed published genomic data from more than 70 early farmer individuals originating from 35 sites across the central and western Mediterranean, dating from approximately 6,500 to 4,500 BCE. We determined the sources of ancestry and quantified the relative proportions according to different admixture models. To document the processes of gene flow and admixture during the Mediterranean Neolithic expansion, we further estimated the timing of admixture pulses using the software DATES. Critically, we also conducted Bayesian modelling directly of associated 14C dates using Chronomodel to precisely document the chronology of various mixture events across the Central and Western Mediterranean. In this presentation, we discuss the potential of combining palaeogenomic data and Bayesian modelling of radiocarbon dates in order to clarify the timeframe of interactions between communities, emphasizing the importance of localized and interdisciplinary studies to unravel the complexities of these processes.

01-11 Evidence of very early contacts between Mesolithic and Neolithic groups in the hinterland of southern France at Roquemissou (Aveyron, France)

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The site of Roquemissou (Montrozier, Aveyron, France), on the south-western edge of the Massif Central, in a middle mountainous region, provides one of the most important regional stratigraphy of recent prehistory. Between 11,500 and 2,100 cal BCE, i.e. for more than 9 millennia, human occupations were repeated several times. Within this powerful sequence, several occupations can be linked to the Second Mesolithic and Early Neolithic. Until then, the earliest reliable evidence for the presence of Neolithic groups in the region dates from the early centuries of the 5th millennium BCE. The discovery of four obsidian artefacts from the late Second Mesolithic, dated to around 6000-5800 BCE, i.e. a millennium earlier, represents a major discovery in our understanding of the Neolithisation process in southern France. All these pieces of obsidian come from Monte Arci (Sardinia) and could only have been acquired by these Mesolithic groups through exchanges and contacts with the first groups of Neolithic settlers arriving at the same time on the shores of Languedoc, about 150 km further south. This discovery thus testifies to extremely early contacts between the two groups, strictly contemporary with the very first Neolithic settlements, or even slightly earlier, in a possible process of exploration very far inland. In these same levels, the discovery of several scattered human remains, potentially from the same individual, and bearing anthropogenic cut marks and green bone fractures, raises questions about the identity of the deceased. Palaeogenetic analyses, which have so far been unsuccessful, will perhaps reveal whether this was a member of the Mesolithic community of indigenous hunter-gatherers or a potential Neolithic explorer! These exceptional discoveries illustrate a more complex and, above all, extremely dynamic process of Neolithisation.

01-12 Decoding the Past: Revealing Innovation and Tradition Dynamics through Sickles, Projectiles, Plants and Prey (or subsistence resources) in the Neolithic of the Iberian Peninsula

Maria Barrera[1], Oreto García-Puchol[1]

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When studying the material culture of the last hunter-gatherer societies and the first Neolithic groups, distinct socio-technical trajectories can be identified. These divergences can be explained by various factors, including adaptation to socioeconomic and environmental needs, the socio-economic structures themselves, and the cultural interaction networks that shaped intergroup contacts. To explore these sociotechnical dynamics, we apply an integrative approach that examines diverse materials: (1) two types of lithic tools whose functionality has been confirmed through use-wear analysis—sickle blades and projectile points—and (2) associated records, such as cereals and wild animal taxa. The goal is to differentiate between changes consistent with practical or environmental needs and those resulting from sociocultural processes.

The methodology is structured around three main axes: (A) a detailed characterization of the diversity within the archaeological record, (B) the reconstruction of potential connections that explain the similarities observed across assemblages, and (C) an analysis of the relationship between these assemblages and various ecological and socioeconomic factors that may have shaped their development. To this end, we leverage the high-resolution data provided by current archaeological research, applying an integrative framework that allows us to test those hypotheses on the development of material culture during this transitional period.

The results indicate that different archaeological records did not evolve at the same pace, nor did they respond uniformly to processes of change. By analyzing these findings, we assess the extent to which the variability in the frequency of certain technological features can be attributed to two major factors: (1) the adaptation of these groups to their ecological context and subsistence activities, and (2) the possible social dynamics scenarios that account for (or fail to account for) the cultural diversity observed in the archaeological assemblages.

Ultimately, this study underscores the importance of examining diverse archaeological records in parallel, as their combined analysis offers a richer and more nuanced understanding of the processes shaping sociotechnical continuities and changes during the Neolithic transition.

01-13 The Mesolithic-Neolithic necropolis of Cueva de los Murciélagos (Albuñol, Granada, Spain): Continuity or change?

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The Cueva de los Murciélagos site is a karstic cave located 7 km inland from the current Mediterranean coastline of southern Iberia. It sits in the lower section of the Angosturas gorge, on the right bank, at an elevation of 450 m.a.s.l and about 70 m from the gorge's base. The cave features a lenticular entrance, 15 m wide, facing east, which provides direct access to the main chamber. Known archaeologically since the 19th century as a burial site, the cave is notable for the remarkable preservation of organic materials. The site has recently been re-examined as part of the MUTERMUR project, which aims to re-evaluate archaeological collections held in museums and conduct the first systematic fieldwork at the site. New research has revealed that the cave has yielded the best-preserved collection of Mesolithic basketry in southern Europe (circa 7500 BC) as well as other unique organic materials - plant fibre and wooden based - from early and middle Neolithic societies (circa 5200-4200 BC). This communication presents the funerary evidence from both periods, referring to their differences and similarities. From a holistic analysis of the evidence - organic and inorganic material culture, sedimentology, human remains, and radiocarbon dating - the aim is to identify whether the cave was used continuously by the hunter-gatherers and early farmers as a burial site, or if, on the contrary, there was a change or gap between both populations. The unique evidence from Cueva de los Murciélagos is contextualized with other sites from southern Iberia to determine whether the process of Neolithization was a matter or change or continuity.

01-14 The Devil is in the Details: The Role of Inner Peripheries in the Neolithization of Central Europe

Václav Vondrovský[1]

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The role of indigenous hunter-gatherers in the neolithization of Central Europe has been a topic of ongoing debate, with mainstream narratives oscillating between acculturation and farmers' demic diffusion. The latter perspective currently prevails, supported by genomic analyses revealing a dominance of Anatolian ancestry at early Neolithic cemeteries. However, we might throw the baby out with the bathwater. Most recent aDNA evidence indicates that indigenous communities hitherto persisted long into the Neolithic, which aligns with other archaeological data supporting such trajectories. Still, these results remain rather underexplored within the current interpretative scaffolding calibrated to the grand diffusionist narratives.

This paper seeks to refine the existing model by introducing the concept of the inner peripheries – regional pockets nested in established cultural zones where distinct communities with diverse practices, ancestries, or economic strategies may have coexisted. An overview of currently known cases shows that this phenomenon extended beyond isolated local peculiarities, representing a significant aspect of Neolithic diversity. Thus, we should acknowledge hunter-gatherer communities as minor but active agents in the dynamics of Neolithic Central Europe.

01-15 A missing North Sea connection? The Neolithisation of southern Scandinavia and the Low Countries compared

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The Late Mesolithic of southern Scandinavia and the Low Countries have often been studied in comparison, where Late Mesolithic point-based ceramics in both regions operated as the linking material expression of a shared worldview of successful hunter-gatherers. In this perspective, the occurrence of perforated wedges from Central-European farming communities in both regions and the apparent lack of further societal change added to our interpretation of resilient Ertebølle and Swifterbant communities.

This paper will revisit this theme on the basis of new research in the Netherlands that questions the status of Swifterbant as the most western branch of the ceramic hunter-gatherers found across northern Europe and beyond. It is proposed that around 4200 BCE a new type of society has been formed that combined characteristics of its Late Mesolithic cultural and genetic background with strong evidence of new practices and people from its neighbouring farming communities. In the final part of the paper, the outcome of this process will be compared to the Early Neolithic in southern Scandinavia and similarities in terms of subsistence and ceramics will be presented. This raises the question how intensive the contacts were between these communities in southern Scandinavia and the Low Countries.

01-16 Transitioning to the Neolithic in Belgium: a multidisciplinary anaylsis of stone tools

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Neolithisation took different forms throughout Europe. For the sandy lowlands of North-Western Europe, this process was a gradual transition, where a primarily foraging lifestyle persisted much longer (until c. 4300 BC) by “hunter-gatherers in transition” (Swifterbant (SW) Culture), while neighbouring loess areas were already colonised by farmer-herders of the Linearbandkeramik Culture (starting c. 5300 BC). The contact dynamics between foragers and farmers in the coversand area remain the subject of intense debate, with hypotheses ranging from complete acculturation to demic diffusion or a combination of both.

So far, the issue of contact has mainly been addressed through pottery and archaeobotanical analyses, while lithics have generally been neglected. Yet, these also contribute substantially to the debate. We demonstrate this by presenting the results of detailed, multidisciplinary research on a specific tool-type, the faceted tools. Since this tool-type is found on both indigenous SW hunter-gatherer sites and early farming sites, it allows us to investigate similarities and differences in technology, morphology, and use. Our paper mainly focuses on the functional aspect, presenting data from microwear and residue analysis, using the traditional approaches of microwear analysis and physical characterisation and chemical staining of residues. We also explore the potential of proteomic analysis, aided by state-of-the-art taxonomic classification, to identify organic residues relating to lithic use.

01-17 Bone-antler artifacts technology in the hunter-fisher-gathering communities during the Vth mil BC in the SE Baltic coast (Zedmar culture)

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Ceramic production emerged in the territory of the South-Eastern Baltics in the 5th millennium BC (Zedmar culture). Researchers associate its origin with the influence of both the world of agricultural cultures – late phases of the Linear pottery in the west, and the world of hunter-fisher-gatherer communities – the Narva culture in the east. The materials of the Zedmar culture include expressive artifacts made of hard organic materials. For example, T-shaped axes and waste from their production, arrowheads and harpoons, daggers, etc. are widely represented. The report will present the typology of these materials and the results of their technological analysis. Artifacts will be considered in the context of the Mesolithic and Neolithic cultures of the region and neighboring territories – Lithuania, Belarus, Scandinavia, Poland and the coastal part of Germany.
Research was conducted by the RSF No 23-78-01172.

01-18 The emergence of clay pottery (Neolithization) in the forest-steppe Volga region (Eastern Europe)

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Starting from the Mesolithic period, stable connections with the Southern Urals and Trans-Urals were established in the forest-steppe Volga region. Close analogies are found in stone industries and the tools used, including geometric microliths - specifically, asymmetric trapezoids. Palynological analysis indicates that around 8700 BP, characteristic forest-steppe conditions emerged in the Volga region, lasting until approximately 8000-7900 BP. Subsequently, a gradual aridization of the climate begins, with its peak recorded around 7500-7200 BP. This leads to significant population movement and Neolithization of the region during the period of 8000-7500 BP. The onset of the Neolithic era is associated with the emergence of pottery-making technology, while there was no transition to a producing economy. The closest analogies are found with materials from the Middle Asian interfluve (Kelteminar culture). Similarities are evident in the shape of the vessels S-profiled oval vessels with pointed bottoms and their ornamentation, which features incised lines and rare punctate impressions. At the same time, the flint industry of early Neolithic population groups is based on the percussion technique of flaking and is fundamentally different from the late Mesolithic technique (pressure flaking). This suggests a complete population replacement in the forest-steppe region of the Volga with the arrival of new groups and either uniqueness or a complete absence of contacts between them. At the same time, both in the Mesolithic and in the early Neolithic, the southeastern orientation of the cultural connections of the forest-steppe Volga is maintained. The research was supported by the RSF (project 23-78-10088).

01-19 Neolithization in central Asia

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The emergence of productive economies based transformed virtually every aspect of human life—from subsistence strategies and methods of landscape exploitation to material culture and the mechanisms of interaction among human populations. The most comprehensive studies on Neolithization have been conducted in the regions of the Fertile Crescent and East Asia. In Central Asia, the influence of these two centers is evident, although the majority of research has focused on relatively later periods in history (the Bronze Age). Regarding the earliest stages in the development of productive economies, two centers are currently recognized in the region: the foothills of Kopetdag (Jeitun culture) and southern Ferghana (Obishir-5, Surungur).

We conducted an analysis of materials from the sites of Jeitun, Obishir-5, and Surungur, which included an examination of archaeological artifacts and a paleofaunal collection, along with the application of bioarchaeological analytical methods. Based on these analyses, we propose a model for the formation of the Neolithic in the mountainous regions of Central Asia and trace how the Jeitun Neolithic influenced the development of Neolithization in these highland areas.

Research supported by RSF Project No. 24-78-10127 “Neolithization in the Mountainous Regions of Central Asia (from Kopetdag to the High Mountains of Pamir)”

02 Modelling and Population Dynamics: Formal Approaches for the Understanding of European Late Hunter-Gatherers and Farmers

Session co-organizers: Alfredo Cortell-Nicolau[1] & Salvador Pardo-Gordó[2]

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During the past years, the use of formal and quantitative modelling has known an exponential increase in archaeological practice. Loosely under the overarching framework of Computational Archaeology, morphometric analysis, Bayesian chronologies, settlement patterns, network analysis and, most of all, demographic and population dynamics analysis are just some of its most used applications. Thanks to this methodological progress, archaeologists have been able not only to formalise previous hypotheses, but also to expand their research questions and push the discipline forward.

Attending to this fast development of Computational Archaeology and, in particular, through its applications in the European Middle and Late Holocene, in this session we welcome approaches applying computational methods to the understanding of the European Last Mesolithic and Neolithic. On top of its primary scope on demographic dynamics, the session is open to spatial analysis, advanced statistical and mathematical modelling, open research and database approaches or software development, just to name a few. In summary, any formal and computationally-intensive proposal, either methodological or theoretical, is welcome to this session.

02-01 Where are we? A current insight into modelling approaches for the Early Neolithic

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During the past years there has been a substantial increase in computational and modelling applications deployed specifically for the Early Neolithic, but also for Archaeology in general. Computational simulations and advanced statistical approaches are currently common practice in several domains in archaeological research. Indeed, several journals now include (and share) the code and data produced for the analysis presented, and some even count on specialist reproducibility reviewers (e.g. *Journal of Archaeological Science*) in order to guarantee reproducibility and code/data hygiene.

But, how did we get this far? What are the challenges that archaeologists have had to face in order to introduce formal modelling into the discipline? What are the challenges they still face now? In this paper we will offer a review not only on some of the pioneer work applied to formal modelling in the Early Neolithic (including the period of transition to farming), but also an overview of the difficulties inherent to the application of mathematical/computational modelling in Archaeology, both at an epistemological, but also at a methodological and even at a political level.

Finally, we will offer some views on some of the cutting-edge techniques currently applied, as well as on potential ways forward and future lines of research. All in all, our intention is to reflect on the current state of the sub-discipline and how can we work as a group to move it forward.

02-02 Better together: LBK chronology in the Ammer valley (SW Germany) based on the combination of correspondence analysis and radiocarbon dating

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The Ammer Valley is a landscape with fertile loess soils, where traces of the Linear Pottery culture (LBK) are documented from the oldest phase onwards. It is part of the Upper Neckar region in SW-Germany, which corresponds to the south-western limit of the earliest LBK distribution. Starting from 2017, the Neolithic occupation of the Ammer Valley has been investigated in a cooperative project between the University of Tübingen (R. Krauß) and the State Office for Cultural Heritage Management Baden-Württemberg (J. Bofinger/Y. Tafelmaier). At a total of six sites (Lüsse, Unteres Feld, Tiefer Weg, Grüninger, Ammerbühlen, Untere Wasenbreite) structures of longhouses, pits, and a settlement ditch were identified by geomagnetics and excavations.

Based on a modelling of radiocarbon dates from the two sites ‘Lüsse’ and ‘Unteres Feld’, the project organizers together with B. Weninger (University of Cologne) have already proposed a pottery stylistic development of five Ammer Valley stages (AV 1-5). In extension, the decoration types of the pottery from all Ammer Valley sites are now to be analysed for the first time using a correspondence analysis (CA). Additionally, the calculated seriation will be substantiated with new 14C-dates. This approach promises results concerning the ongoing debate whether the ceramic traditions are contiguous or non-contiguous.

The oral presentation will outline the current state of research in the Ammer Valley and the intention to link a CA with 14C-dates. In this context, a brief insight is given into the method used in Germany since 1973 to organize the LBK decoration types using a CA.

02-03 The Neolithic spread in Europe: modeling population dynamics and interactions

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In the last decade, the mathematical wave-of-advance model by Ammerman and Cavalli-Sforza has been extended by including cultural transmission. In this talk we review the mathematical and computational approaches that make it possible to estimate the intensities of cultural and demic diffusion in the spread of the Neolithic by using archaeological data. We also explain recent results based on ancient DNA that provides a different, independent estimation of the intensities of cultural and demic diffusion. We highlight that there is now a sound mathematical theory that makes it possible to estimate the relative importance of demic and cultural diffusion, as well as of the number of hunter-gatherers incorporated into the populations of farmers (per farmer and generation), independently from archaeological and ancient genetic data. The results of both kinds of data are compared and found to be consistent with each other. The ancient DNA data provide more precise estimations than the archaeological data.

02-04 Multicentennial Cycles: Combining Continental, Regional and Local Perspectives

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Human population dynamics and their internal and external drivers are not well understood, especially over the long term and on large scales. Here, we show that demographic growth trajectories of all inhabited continents from 9 to 3 ka BP reveal multicentennial and partially synchronous cycles. These continental cycles were estimated based on summed probability distributions of radiocarbon dates and, for Europe, cross-validated by archaeology-derived settlement data. The European growth cycles show a strong correlation with multicentennial variations in the stability of climate states.
This continental perspective is complemented by regional and local foci. Case studies are three successive cycles around the Upper Rhine valley in western Central Europe. These are formed by the traditional archaeological phases of the Early to Young Neolithic, with Central European archaeological entities like the Linear Pottery Culture (LBK), Rössen, and Michelsberg. Local cycles indicate both synchronous but also decoupled behavior from regional and continental population cycles. A similar partial synchronicity appears at a single location of the Michelsberg culture (4200-3500 BCE), the hilltop site of Kapellenberg and its vicinity. We discuss how exogenous factors such as climate variability are amplified by endogenous factors such as phase-dependent changes in social cohesion. The empirical findings help to validate a model for socio-technological evolution and demographic changes.

02-05 Early Neolithic Population Dynamics and Settlement Potential in Central Europe (LBK; 5400 – 4950 BCE)

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The Linearbandkeramik (LBK; ca. 5400 – 4950 BCE) constitutes the earliest Neolithic in Central Europe and is one of the best-studied phenomena of this time period. Its rapid expansion, primarily attributed to demic diffusion, has prompted various hypotheses addressing underlying mechanisms regarding e.g. push-and-pull dynamics, demographic developments, or adaptation processes. Nevertheless, the settlement dynamics and drivers of LBK expansion remain insufficiently understood.

The LBK can be subdivided into two distinct phases: the initial phase of the oldest LBK and a younger phase characterized by significant territorial expansion and the incorporation of new regions. However, the extent to which this growth resulted from internal demographic trends versus population influx from the LBK's origin area remains unclear. The influence of possibly necessary adaptive processes in shaping the pace and direction of expansion is equally uncertain.

Within the HESCOR project, settlement preferences during both LBK phases are analyzed using the "Human Existence Potential" (HEP) model, originally designed for Palaeolithic contexts and adapted for farming societies. It belongs to the family of species distribution models, and couples environmental variables (palaeoclimate and soil fertility) with site distribution to identify preferred ecological niches. These findings are correlated with settlement patterns, demographic estimates, and land use data.

The results provide novel insights into the diachronic development of the population dynamics in Central Europe at the beginning of the Neolithic and the influence of environmental factors behind the demographic developments.

02-06 Modelling obsidian circulation in the Central Mediterranean through network analysis

Niccolo Mazzucco[1], Giada Pirrone[1], Simone Sani[1], Claudia Finocchiaro[1], Elisabetta Starnini[1]

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Efforts to model obsidian circulation in the Central Mediterranean have thus far been limited, primarily concentrating on the identification of material provenance through archaeometric analysis.
Our CHRONOS research project, "*The Obsidian Route in the Central Mediterranean: Diachronic Pathways and Cultural Connections*", has the ambition to go further and model the distribution of obsidian in the Italian Peninsula. This study aims to identify patterns of interaction between sites by analysing the available technological data from obsidian assemblages.
We present the preliminary results of the project obtained by constructing a reference dataset based on both published and previously unpublished data from Early Neolithic contexts (6100–4900 cal BCE). Through the application of multivariate statistics and network analysis, this research assesses whether a hierarchical structure existed in the distribution and consumption of obsidian and how this was geographically articulated.

02-07 Assessing risk-sensitive herd culling strategies in Neolithic Northern Dalmatia, a demographic modeling approach

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Mortality profiles constructed from age-at-death estimations of archaeological bone and teeth of domesticated animals offer important insight into the outcomes of slaughtering decisions made by herders in prehistory. Survivorship curves derived from these data are often presented as evidence that herd management optimized the production of meat, milk, or wool. Moreover, comparisons across space and time are potentially useful for hypothesizing variation between, or developments within, prehistoric agropastoral economies. However, an important caveat of this approach is that the mortality rates associated with certain age classes may have a deleterious effect on herds in the long term. Moreover, when offered as a representation of the production goal for a pastoral system spanning multiple generations of herders, survivorship profiles imply offtake rates are constant through time. This paper examines this issue by modeling the effects of various culling strategies on herd demography. Sheep and goat herd dynamics are simulated using a stage-structured Lefkovitch population projection model. Theoretical and empirical culling strategies, reconstructed using caprine age-at-death data representing four Neolithic sites on the Dalmatian Coast of Croatia, are modeled as the primary constraints on herd growth. By optimizing offtake rates, the simulations assess the consequences of herders adjusting their practices in response to environmental and subsistence challenges to maintain a stable herd size. The findings reveal the demographic consequences of various culling strategies, showing that sheep populations were generally more sustainable than goat populations under the conditions studied. This research provides insights into the viability and adaptability of ancient herding strategies, emphasizing the importance of flexible culling practices to mitigate risks and ensure herd sustainability. The nuanced view offered in this paper underscores the critical role of adaptive management in responding to environmental pressures and sustaining livestock populations over time.

02-08 The impact of population history and diet on mandibular morphology in the transition from Upper Palaeolithic/Mesolithic hunting-gathering to Neolithic agro-pastoralism

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After millions of years of hominin scavenging, hunting, fishing and gathering, our species developed agro-pastoralism ~10000 years BCE. This Neolithic mode of subsistence arose in the near east and dispersed throughout Europe together with migrating populations that often admixed with previously existing peoples. This transition from hunting-gathering to agro-pastoralism involved deep changes in population history and diet. Thus, these have been hypothesized as the main drivers for skull morphological changes arising in this transition. Yet, no studies have quantified which of these factors impacts skull morphology the most at the beginning of this major event of human evolution. Here we combine mandibular morphology, genetic and dental wear data to address this question.

259 mandibles from populations ranging from North Africa to western Eurasia and from the Upper Palaeolithic to the Chalcolithic were digitized. Geometric morphometrics (GM) was used to examine mandible morphology. Dental wear magnitude was scored as proxy for diet. Frequencies of mitochondrial DNA (mtDNA) haplogroups were calculated for the relevant populations based on previous studies. Population level distance matrices were then generated based on GM Procrustes distances, mtDNA haplogroups frequencies and dental wear. Mantel tests were used to examine the correlation between these variables and the results were used to quantify the proportion of mandibular morphology explained by population history and diet.

Mandibular morphology is significantly correlated with mtDNA and dental wear, a large proportion of mandibular morphology is unexplained and mtDNA explains a much larger proportion of mandible morphology than diet (as assessed via dental wear).

03 People, Settlement and Territory: Constructing Communities from Local to Regional Scale

Session co-organizers: Evita Kalogiropoulou[1] & Darko Stojanovski[2]

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The study of settlements constitutes prominent field in the history of archaeological research. The interplay between landscape evolution and human settlement dynamics has been featured as a complex palimpsest, formed by the continuous interaction of human and nature. In the Neolithic the human perception of the landscape and the ability to explore and exploit it was of paramount importance for the early farmers. As societies highly dependent on natural resources, Neolithic people and communities had many factors to consider in the formation of living strategies. Moving beyond single-caused interpretations on the effect of natural processes or the dominant role of human agencies, the session invites research presentations related with spatial arrangements, both in the intra-site/local and the inter-site/regional scale in the context of their environmental setting and landscape position. The range of topics include settlement establishment strategies, internal structural developments of space, distribution of the various daily and exceptional practices, household organization, interaction and mobility among communities, landscape developments, land use strategies, territoriality and raw material procurement.

03-01 Space as the Machine: Spatial Processes and the Formation of the Balkan Neolithic Settlement Systems

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Settlement patterns have traditionally been understood as passive imprints of past human activities in the landscape. However, landscape actively shapes social activities. Its spatial structure, arrangements, and overall configurations influence human movement and social interactions. Formation of settlement systems is a dynamic process.

This study investigates spatial complexity to identify structural patterns that emerge at the level of entire spatial configurations. How do spatial patterns affect human movement and social interaction? What role does spatial configuration play in movement, interaction, and other social phenomena? When the first Neolithic communities established themselves in Thessaly, they did not introduce predefined settlement patterns. Instead, they followed only local rules, adapting to the spatial configurations they encountered. As they engaged with their environment, settlement structures evolved in unique directions shaped by these spatial conditions.

The relationship between small communities and space is central to this analysis. Through the integration of spatial layouts, the density of movement, and the structuring of movement by-products, new patterns of encounter were generated. In this way, spatial configuration acted morphogenetically, shaping social interactions at a fundamental level.

This case study focuses on the large-scale settlement systems of the Neolithic Balkans. It explores how landscape configuration contributed to the emergence of complex social processes, with particular emphasis on movement and interaction. The paper proposes a conceptual model for long-term adaptive settlement systems based on the generative properties of space.

03-02 Perimeter ditches and the social construction of community and space at Early-Middle Neolithic Koutroulou Magoula, Thessaly, Greece

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In the last few years, it has become evident through archaeological and geophysical research that perimeter ditches were a common and important feature for many, perhaps most Neolithic communities in the Balkans. In this paper, we will present and discuss such features at the site of Koutroulou Magoula, a four-hectare tell site in Thessaly, Greece, which was founded at the later phases of the Early Neolithic and expanded and thrived in the Middle Neolithic (c. 6100-5700 BCE). First detected through geophysical survey, such features have been archaeologically verified and explored through systematic excavation and artefact analysis since 2017. This work, combined with our topographical and pedestrian survey and the overall excavation of this site since 2001, allows us to explore the social construction of space and the creation of community. Given the scale of the project, and the labour involved in the making and maintenance of the ditches, it seems that this was a communal endeavour of significant proportions. We suggest that beyond their specific functional roles, it was the process and the act of creating such features that was most valued by people, and it was this specific communal act of space-making that produced this village as a community. If the tell itself was a monument to the longevity and duration of this community and its attachment to the specific place, the ditches, as process and outcome, were a monument to the establishment of the collectivity as an interdependent and relational whole.

03-03 A unique Early-Middle Neolithic settlement at the mountainous landscape of LakePlastiras, Western Thessaly, Greece.

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At an altitude of 800m asl,next to the artificial Lake Plastiras, a unique Neolithic settlement dated at 5,996-5,839B.Cwaspartly excavated, yielding rare finds that point out towards an autonomous character, ontologically and semiologically detached from the contemporary sites of the Thessalian plain. The landscape, abundant in raw materials and natural resources, provided an exceptional place to be for its Neolithic inhabitants, who most probably occupied the site all-year round. The discovery of two very rare pottery kilns in such a mountainous and isolated landscape, as well as a series of other rare finds underlines the unique character of the site.

The questions surrounding the decision of these Neolithic groups to “isolate” geographically from the populations of the Thessalian plain cannot be possibly answered based on the established theoretical schemes concerning the Neolithic way of life in the Thessalian plain, but rather require new approaches and narratives that perhaps put the notions of continuity and tradition at center stage, but from a rather different point of view.

03-04 The earliest Neolithic settlements in Europe, habitational patterns in Early Neolithic Greece

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Recent radiocarbon dates have firmly established Macedonia and Thessaly as the regions with the earliest Neolithic habitation in continental Europe, placing this event at the mid-7th mil. BCE. Both old and new excavations at such sites, which usually grew to become long-lived Neolithic villages, reveal similar habitational patterns across these territories, although the restricted area of the revealed deposits hampers our perspective. In sites such as Paliambela and Revenia in Macedonia, Sesklo and Achilleion in Thessaly, the first features created by these early pioneering communities were sunken, 'negative' spaces cut into the earth. In this study, we explore the available data surrounding the form, function and arrangement of these features, and we discuss how these choices align with the narratives put forth about the event of Neolithisation. Lastly, we explore one more crucial line of evidence, that of pottery, which is inextricably tied with the appearance of the Neolithic in Europe, and we discuss its appearance and distribution in these early Neolithic sites.

03-05 Where Are the Blades? The 'Vjosa Project' and a Preliminary View of the Lithic Assemblage from the Newly Discovered Neolithic Open-Air Site of Qesarati-Thelëza (Tepelena, Albania)

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As part of the 'Vjosa Project,' a collaborative effort between the University of Bari Aldo Moro and the Institute of Archaeology (Tirana), a systematic survey was carried out along the right bank of the Middle Vjosa River valley. The 2023 fieldwork led to the discovery of the Qesarati-Thelëza site, which has been preliminarily dated to the transition between the Early and Middle Neolithic (around the early 6th millennium BC), with additional evidence of occupation in the Roman and Late Antique periods.
The lithic assemblage from Qesarati-Thelëza includes 1,036 chipped stone artifacts, with a core ratio of approximately 3:1 (69 laminar cores to 22 flake cores). However, the ratio between non-retouched artifacts reverses to 5.7:1 (708 flakes to 123 laminar products). This contrasts with other Neolithic sites in the Korça basin, southeast Albania.
This distinct lithic pattern may reflect Qesarati-Thelëza's role as both an intermediary and exporter to regions like the Korça basin, where raw materials are scarce and of lower quality. However, the majority of flakes are non-cortical and from advanced stages of core reduction, suggesting they were not prepared specifically for laminar core export. This lithic composition could also be linked to the use of particular reduction sequences such as the one applied on Kombewa-type cores, which may represent an unrecognized local facies in the Albanian Neolithic.

03-06 Everyday life at early Neolithic Amzabegovo: preliminary evidence from soil micromorphology

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This paper presents initial results from a soil micromorphology study of earliest Neolithic settlement deposits at Amzabegovo. This well-known low mound was among the first sites settled by early farmers in the Vardar River basin in today's North Macedonia. First excavated in the 1960s–1970s, new fieldwork has been underway since 2019 under the direction of Darko Stojanovski. This includes a deep (>4 m) trench in the centre of the mound that has exposed stratigraphy spanning the whole Neolithic period. The earliest deposits include a series of surfaces and built floors, thick ash lenses and finely laminated layers of charred plant material. Thin section analysis provides evidence for a variety of everyday activities within the settlement including plant processing and animal keeping. Repeated patterns suggest traditions or patterns of behaviour that persisted over long periods of time. The case study at Amzabegovo is part of the NEOSOL project, which examines earliest Neolithic settlements using a soils-based approach, integrating thin section micromorphology and micro-archaeological techniques.

03-07 Early Neolithic architecture in South-western Bulgaria

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Approximately 30 settlements from the Early Neolithic period (6200-5450 BC) have been identified in South-western Bulgaria, with some having been the subject of detailed study, thus providing valuable insights into the construction techniques employed. From the outset of the Early Neolithic period, a diverse array of house-building techniques was employed, a fact substantiated by the evidence from Kovachevo, where several distinct techniques were identified, and Galabnik, located at the opposite end of the Struma River, which also exhibits significant variability of techniques. In Brezhany, two techniques were utilized: *wattle and daub* and *pisé*. However, a distinctive feature was observed, namely the utilization of split stakes for the construction of inner platform. The imprint of these stakes in clay exhibits a strong resemblance to both house models and cult tables from Pelagonia, suggesting a potential link between the two. At Ilindentsi, in addition to the *wattle and daub technique*, stone construction was also employed, with wall foundations composed of stones and built up with the pisé technique. Here too, we find stakes split in two, used for platform supports, as at Balarchevo and Brezhani.

The dwellings themselves were above ground, with some of them being dug in, as seen at Balgarchevo. At Kovachevo, the earliest dwellings were constructed on pits, whether for the purpose of insulation from damp or as a reminiscence of the so-called *pit-houses* common in the earliest settlements in northern Greece, remains to be determined.

The analysis of the available data indicates that in South-western Bulgaria during the Early Neolithic a variety of construction techniques, characteristic of northern Greece, the Republic of North Macedonia and western Anatolia, continued to be applied. In other regions mainly one technique was used, in Thrace *wattle and daub*, in Thessaly *kerpić* on a stone foundation, and on the territory of Starčevo culture dwelling pits with a wooden construction on top or a regular dwelling pit and *wattle and daub* technique like in Balgarchevo. The region of South-western Bulgaria has an important contribution to the study of Early Neolithic architecture on the Balkans.

03-08 Outward and Upward: Strategies for Space Utilization in the Early Neolithic settlement site Slatina-Sofia

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At the end of the 7th millennium BC, some of the earliest farmers and livestock breeders in the Central Balkans found suitable living conditions along the left bank of the Slatina River in the Sofia Plain. They settled there and gradually established a settlement, which existed from the end of the 7th millennium BC until the middle of the 6th millennium BC. The settlement's long duration raises the issue of the efficient use of space according to the various needs of its inhabitants—housing, areas for cultivation, animal husbandry, etc.

Several strategies for the utilisation of inhabited space will be discussed here, which were used at different stages of the settlement's existence and were likely related to population growth. One such strategy was the expansion of the village beyond its initially defined inhabited area. In its early stages, the settlement site Slatina-Sofia was enclosed by a wooden wall and a ditch (or ditches). However, within a relatively short period, these boundaries were surpassed, and expansion beyond this initial area began. Once the territorial limit of habitable space was likely reached on the one hand, and with advancements in technical skills on the other hand, a tendency emerged to replace single-storey houses with two-storey buildings.

03-09 Selection and Evolution of Depositional Practices at Yabalkovo, an Early Neolithic Settlement in Upper Thrace

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Yabalkovo is a settlement site established at the onset of the Early Neolithic, around 6000 cal BC, along the middle course of the Maritsa River in Upper Thrace. The earliest settlers initially occupied an area in close proximity to the ancient riverbed. After a period of habitation, likely not exceeding a century, they appear to have abandoned the site due to periodic flooding and marshy conditions, relocating south/southwest to higher and more protected terrain. There, the new settlement persisted until the end of the Early Neolithic, around 5600 cal BC.

A variety of depositional practices are attested throughout the occupation of the settlement. Some of these appear to be specific to particular features, such as houses, while others display recurring patterns within pits and ditches. The diverse structured deposits identified within the settlement area suggest a deliberate selection of materials, chosen for distinct acts of deposition at specific moments. Taken together, these practices offer valuable insights into the activities of the Neolithic community at Yabalkovo, both within domestic spaces and in the broader settlement, as well as their transformations over time.

To shed light on these processes, this presentation will discuss the selection of deposited materials and the possible reasons behind their placement, considering broader patterns in depositional practices during the Early Neolithic.

03-10 Pit Houses and Early Farmers: Architectural Insights from Starčevo Settlements

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During the Early Neolithic (6200 BCE onwards), numerous settlements were established across the Central Balkans, marking a significant shift from the preceding Mesolithic period, which is well-documented only in the Danube Gorge. These early settlements were relatively small, typically consisting of several houses. The Early Neolithic Starčevo culture is characterized by two primary types of dwellings: semi-subterranean huts and rectangular above-ground houses. However, the available evidence is insufficient to establish clear chronological or spatial patterns between these two dwelling types.

In this paper we investigate the excavation methodologies, formation processes and architectural features of semi-subterranean dwellings, drawing on recent excavations at two central Serbian sites: Drenovac and Međureč. Dating back to approximately 6200 BCE, these sites rank among the earliest Neolithic settlements in the region. Their location in the Middle Morava Valley highlights their significance, as this area played a pivotal role in understanding the emergence and expansion of early farming societies in Southeast Europe.

We address several key research questions concerning Early Neolithic residential architecture. How large and deep were these pit dwellings? What was the layout of their interior living spaces? What evidence exists for above-ground structural elements? Additionally, we examine the types of ovens found inside these dwellings and explore their construction techniques to provide a more comprehensive understanding of Early Neolithic domestic life.

03-11 A Ditch Too Far - Obscured large scale Starčevo earthworks on the site of Jovanovac, Serbia

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SRGAP (Šumadija Geoarchaeological Project) has been active in central Serbia for more than nine years, with the collaboration between University of Pittsburgh and now Center for Archaeology "Dragoslav Srejović" of University of Kragujevac. Although the main focus of the project has been on the large scale regional research of the Vinča period, with research focus on Grivac and Kusovac sites, one of the most intriguing avenues opened with Starčevo - Vinča transition. Early on during the systematic pedestrian survey was performed in 2019, covering 92sqkm, as a NSF funded grant (NSF DDRIG #1741667) for the PhD project of Miroslav Kočić. This research was partly presented in 1st ENE conference in Barcelona, and one of the most puzzling questions at the time was the large number of the open Starčevo settlements, that seem to go through centralization process in the valley of Gruža, with only two Vinča Mega sites remaining - Grivac and Kusovac, suggesting emergence of complex societies. Already then it was extremely interesting that it was Starčevo material surface spread that covered the largest area, not subsequent Vinča occupation. New protective research, conducted in winter 2024-2025, on one of the smaller Vinča sites in Lepenica river valley - Jovanovac, with large scale geophysical recording, and dating the sequence across the site, brings a new light and pose additional questions about Starčevo monumentality and social organization.

03-12 The Second Neolithisation of the Balkans? Revisiting the Early Neolithic Communities in Romania

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This study re-examines the Neolithisation process in the Balkans, focusing on early Neolithic communities in Romania, particularly the Boian and Gumelnița archaeological sequences. Recent aDNA studies indicate these communities originated from a second wave of Anatolian farmers arriving around 5318-5301 cal BC. Radiocarbon evidence from cemeteries such as Curătești, Sultana-Valea Orbului, and Sultana-Malu Roșu reveals a gradual northward expansion of settlers who established flat settlements and the first cemeteries in the Mostiștea Valley (Romania). The initial exploratory phase (5318-4941 cal BC) was followed by the development of tell settlements, inter-regional trade networks, and the adoption of new materials like copper and gold.

However, this phase was not the first documentation of Neolithic people in the area. The end of the 6th millennium BC marks the introduction of the Anatolian socio-economic tell settlement model in the northern Balkans, which was absent until then, though evidence of farming groups with non-local genetic origins dates 800-700 years earlier. Ceramic analyses reveal shifting mobility patterns, with early Neolithic Starčevo-Criș communities exhibiting high mobility, while later Chalcolithic Gumelnița groups show increased sedentism. This transition reflects broader socio-economic adaptations, including craft standardisation and raw material procurement. Neolithic material culrure elements do not necessarily indicate the immediate implementation of the Anatolian farmers' model but rather a delayed adoption several hundred years later. These findings challenge traditional cultural-historical narratives, highlighting a complex, multi-phase Neolithisation process shaped by migration, climatic shifts, and evolving socio-economic strategies.

03-13 Crossing the Carpathians. The oldest settlement of the first farmers in Poland

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The latest achievements in the project on the expansion of the first agricultural communities (Linear Pottery culture) to the areas north of the Carpathians have clearly shown that this occurred somewhat later than previously assumed, i.e. around 5330 BC. The conclusions are based on extensive comparative studies, and the starting point was research in Gwoździec, which is currently the oldest Neolithic settlement in Poland. This settlement is also special due to its location, because it is located in the foothills (333 m above sea level) close to the Carpathian passes, through which the first farmers migrated, settling the loess uplands, and then even further north, the lowlands. It was also certainly an attractive place from an economic point of view - located between the sources of flint in the Kraków Upland and the area of the Eastern Linear Circle, with which contacts were constantly maintained. Through extensive excavation research in Gwoździec and deep interdisciplinary analyses, results were obtained showing various aspects of the lifestyle in the settlement. We obtained data on the development of the functional space of the entire household and the spatial development of the settlement, house construction, food acquisition and processing, production of vessels and tools. The time in which the settlement functioned continuously was also determined, i.e. from 5330 BC to 5160/5060 BC.

03-14 Chronological re-evaluation of the beginning of the Neolithic in Bohemia

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Bohemia was an important region in the spread of the Linear Pottery Culture (LBC) across Central Europe in the Early Neolithic (5600-4900 BC). However, the dating of this process has long stagnated, despite its re-evaluation in surrounding regions. In this respect, the chronology of the large settlement at Bylany, which frames the chronological range of the LBK in Bohemia, played an important role. Thus, original studies date the beginning of the LBK to the period 5600-5500 BC, but this timeline is no longer valid based on the new findings.

The presented research centres on two settlements regarded as the earliest LBK in Bohemia - the sites of Nové Dvory and Litice. In terms of pottery typology, they correspond to the Milanovce phase defined in the Danube region. Also, the absolute dates from these sites show that Neolithic settlements in Bohemia probably did not occur before 5400 BC, which is consistent with the colonisation models of the surrounding regions. The shift of 200 years in the dating is caused by the inclusion of biasing factors in the C14 dating, namely the old wood effect.

The new results change the current view of the earliest stages of the LBK in Bohemia. They will also have a major impact on the perception of large central sites such as Bylany, whose chronology and development has for several decades been considered fundamental to understanding this period in the region.

03-15 Elemental Insights: Unveiling Daily Life in an LBK House at Těšetice-Kyjovice (Czech Republic) Through XRF Analysis

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The Early Neolithic site of Těšetice-Kyjovice, situated in South Moravia (Czech Republic), offers unique insights into the socio-spatial organization of an LBK (Linearbandkeramik) settlement with approximately 100 houses. Long-term excavations by Masaryk University (Brno, Czech Republic) have uncovered 23 of these houses, providing an exceptional dataset for understanding household activities. As part of a French-Czech collaborative research project (IEA TKLit, CNRS, 2022–2024), we investigated soil archives to reconstruct the filling processes of LBK pits and to explore spatial activity patterns within and around these houses.

To achieve this, we applied XRF (X-ray fluorescence) analysis which can determine the elemental composition of soil samples by measuring fluorescent X-rays emitted under high-energy excitation. A total of 500 carefully selected samples were taken systematically across the house interiors, lateral pits, and pit profiles at 50 cm intervals, ensuring comprehensive spatial coverage.

The data were analysed using t-distributed Stochastic Neighbour Embedding (t-SNE), Kruskal-Wallis test and spatial analysis in GIS revealing significant spatial partitioning within the sampled areas. At least three distinct zones of activity were identified, suggesting separate functional or symbolic areas linked to different aspects of daily life. These findings provide critical insights into the organization of LBK households and the possible division of labour within these spaces.

By comparing our results to existing models of LBK household organization, we aim to determine whether this spatial arrangement reflects broader cultural patterns characteristic of LBK communities or a unique adaptation at Těšetice-Kyjovice.

03-16 Dispersal of the earliest Linear Pottery Culture in Bavaria – Upscaling from local to regional scale

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Studies on the dispersal of the earliest Linear Pottery Culture (eLBK) are predominantly conducted at a regional and supra-regional level, while there are only few studies on settlement dynamics on small scale and local level. This is where our project comes in: Based on two eLBK settlement areas in Northwest Bavaria, the colonisation of the landscape by the carriers of the LBK at the beginning of the Neolithic will be investigated. We work on three different scale levels: At a micro level, four excavated eLBK settlements will be analysed regarding internal chronology of the settlements, their spatial structure and their subsistence. At a meso level, the focus is on questions concerning the integration of all settlements into the local social and economic networks, as well as on the contacts with other settlement regions. Another priority will be the analysis of agricultural land use patterns. Finally, on the basis of the insights we have gained at the two lower scale levels, on the macro level we will address overarching questions concerning the mobility of the eLBK and the currently discussed dispersal mechanisms for this archaeological culture (leap-frogging versus wave-of-advance etc.). The Nördlinger Ries in central Bavaria, whose eLBK settlement dynamics were recently studied in detail, will serve as a comparative region. In our talk we will present the first results of this project.

03-17 A family affair? The economic pattern of western Lbk societies, the view from diet and craft activities

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The social and economic organisation of first farmer societies of continental Europe (6th millennium BC) has been at the center of many discussions among scholars, as it is one of the rare context were we can approach directly the activities of the households.
By combining brand new results on foodways and craft production conducted in the frame of the HOMES project, we propose a systemic view on the general economical basis of Lbk households taking the example of the Aisne valley (France, 5100-4950 BC). Isotopes analysis of the human and faunal remains provides the image of a quite homogeneous diet, shared by most individuals from different sites, that complete previous researches on the faunal and archeobotanical contribution to food habits. The technological study of ceramic, flint and grinding tools brings new elements on the organisation of these productions, at different level from the house to the village, suggesting different patterns of know-how transmission. In the meantime, use-wear analysis provides a clear view on the equal distribution of some daily activities and the more random distribution of some craft activities.
Our presentation will discuss the general common characteristics shared by most households interpreted in terms of self-sufficiency, and propose some interpretations on the variations observed from an anthropological perspective, including possible surplus production for exchanges, and centralisation of some of the activities at the village level.

03-18 Refining the Chronology of the Early Neolithic Lake-shore Settlement of La Marmotta at Lake Bracciano (Anguillara Sabazia, Rome, Italy)

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The Neolithic lake-shore settlement of *La Marmotta*, situated on Lake Bracciano in central Italy, is a key site for understanding early farming societies in the Mediterranean. This communication aims to refine the chronology of the settlement by integrating typological analyses of ceramic assemblages with a new series of radiocarbon dates obtained from well-preserved seed samples.

Previous chronological frameworks of *La Marmotta* have relied predominantly on relative dating methods, particularly the typological classification of ceramic artefacts. While these approaches have provided valuable insights into the site's cultural and technological sequences, the absence of precise absolute dates has limited discussions on the temporal dynamics of its occupation. To bridge this gap, we conducted radiocarbon dating on carefully selected seed samples representing key stratigraphic levels within the settlement.

The integration of relative ceramic chronology with calibrated radiocarbon dates has produced a more accurate timeline for the site's development and occupation phases. By applying statistical analysis and Bayesian modelling of the radiocarbon dates, this study contributes to refine the chronological framework of *La Marmotta*, enhancing our understanding of its role within the broader Neolithic context.

03-19 The emergence of the Neolithic in the central Po Valley (northern Italy): the Vhò aspect

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New research on the Neolithic of the Central Po Plain began in 1974 with the excavation of one of the Early Neolithic sites discovered in the middle of the 1800s around the village of Vhò di Piadena in the Province of Cremona (Lombardy, northern Italy). The scope of the new excavations was to define and radiocarbon date a poorly known cultural aspect, which showed some affinities with that of Fiorano, whose distribution covers the eastern part of the Po Valley. In the territory of central Po Valley many Neolithic sites have been discovered so far. Several are attributed to the early Neolithic Vhò cultural aspect which is radiocarbon dated between the last three centuries of the 7th and the beginning of the 6th millennium uncal BP years. The Vhò assemblages are represented mainly by pottery, knapped and polished stone artefacts. They show peculiarities that clearly distinguish them from the other aspects that flourished in northern Italy during the same period. Less known are settlement organization and infrastructure, dwelling structures, subsistence economy and funerary behaviours. The authors present a summary of the state of art and new achievements concerning the first farmers of this territory.

03-20 Exploring Neolithic diffusion in southern France : insights from the Early Neolithic ceramic production at La Baume de Ronze (Orgnac-l'Aven, Ardèche)

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In southern France, the first agropastoral communities date to the early VI [e] millennium BCE. Although the initial *Impressa* phase remains partially understood, current data suggest that these groups had a limited impact in the overall neolithization process in the region. From 5450 cal. BCE onward, the emergence of Cardial groups marks a broader expansion phase, leading to the long-term establishment of neolithic communities in the region. The site of La Baume de Ronze (Orgnac-l'Aven) is a vast rockshelter located in the Ardèche region. Dated between 5480 and 4730 cal. BCE, the Early Neolithic sequence represents one of the oldest Cardial occupation currently known in France. The reconstruction of the main stages of the ceramic production reveals a homogeneous and stable production pattern, which reflects the cultural unity of their producers. This study thus provides a better understanding of the initial phase of the Cardial complex in southern France. Comparisons with contemporary Cardial sites in the northwestern Mediterranean region also allow us to explore the social networks existing between these regions. While some similarities indicate shared cultural practices, variability, especially in decorative sequences, suggests more localized norms or regional identities. In a broader context, this research also contributes to a deeper understanding of the role of the Cardial complex in the Neolithic diffusion across the western Mediterranean basin.

03-21 Territorial organization of Early Neolithic settlements: insights through the lithic analysis of two major sites of the Rhône valley

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The diversity of the settlements of the Early Neolithic Cardial culture in Southern France is interpreted as a reflection of the territorial organization of the communities. Landscape resources, nature and size of the sites, economy as reflected in faunal and vegetal records, transcend the basic opposition between seasonal occupations of rockshelters with specialized activities and permanent occupations of larger open-air sites. The technological and functional study of the lithic industry of two major sites, Courthezon – Le Baratin (an open-air site in the Rhône valley) and Châteauneuf-les-Martigues – Font des Pigeons (a rockshelter near the sea and the Étang de Berre lagoon), is an approach of this spatio-economic organization.

03-22 Settlements and connectivity in the context of the pioneer's neolithisation in Southern France

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In the context of the north-western Mediterranean, the emergence of agricultural and pastoral know-how is largely linked to the movement of communities whose routes are not yet fully understood or clearly mapped. The hypothesis that small pioneer groups moved by sea between Italy, France and Spain is implicitly accepted, but rarely demonstrated in detail. In this context, we would like to present the specific case of southern France, where the emergence of agro-pastoral societies at the beginning of the 6th millennium cal.BCE is explained by a model of colonisation by small groups originating from the Impressa complex on the Italian peninsula. Archaeological settlements that allow the characterisation of this early stage of the Neolithic process are still rare, and the natural and cultural factors that determined the settlement patterns of these pioneer groups are still under discussion. New research carried out as part of the PREME project is providing new insights. This work is based partly on fieldwork (surveys and test excavations), which adds to the corpus of data, and partly on the characterisation of the site environment (natural environment, mineral resources....). This work makes it possible to take into account the importance of wetlands in the choice of location of communities, as well as their cultural connectivity over a large area.

03-23 An unexpected Early Neolithic? The Emergence of Agropastoral medium and high Mountain Territories in the Central Pyrenees

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In recent years the location and study of various archaeological sites in the Southern Central Pyrenees challenges the view of the emergence of the Neolithic in middle and high mountain areas of the Iberian Peninsula. Until recently it was assumed that the Pyrenees had largely been left out of the population, economic and social developments of the Early Neolithic. The recent study of sites such as Abric de l'Estany de la Coveta I, Abric d'Obagues de Ratera, Abric del Portarró, Cova del Sardo, Cueva Lóbrica, Coro Trasito and Artiga de Viturián disprove this. Firstly, they show a certain chronological continuity between the end of the Mesolithic and the beginning of the Neolithic, which is unusual in the north-east of the Iberian Peninsula. Secondly, they allow us to begin to characterize the modes of occupation and settlement in medium and high areas mountain in the Pyrenees during these periods. In this sense, the pattern of wide altitudinal dispersion of the sites in the Mesolithic undergoes a remarkable change with during emergence of the Neolithic, with a greater concentration of human occupation in mid-mountain areas and a much more punctual frequentation of the upper altitudinal stages. This communication details these changes and relates them both to the evidence of economic practices from these sites and to the paleoecological information which, on a much more local scale than in the phases of the end of the Neolithic, begins to glimpse the first anthropic impacts on the paleovegetation.

03-24 Stone dwellings from the Early Neolithic in southern Iberia. The settlement of Cerro del Cercado (Priego de Córdoba, Spain)

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The nature and characteristics of Early Neolithic dwelling structures in the Iberian Peninsula remain poorly understood, especially in comparison to other European regions where longhouses and posthole-defined structures are well documented. This paper presents recent research at Cerro del Cercado, an archaeological site in southern Iberia where excavations began in 2022 and currently being continued through the ERSAND project. Covering approximately 3.4 hectares, the site's morphology has contributed to the preservation of structural remains built on stone foundations, likely corresponding to domestic structures. Geophysical surveying, supplemented by limited excavation, has identified at least half a dozen polygonal or subcircular structures, as well as trapezoidal-apsed features. These constructions feature vertically embedded stone blocks wedged with smaller stones, with an outer facing composed of rubble forming the exterior walls. On the site's upper platform, test trenches revealed a series of postholes and post supports, including two semicircular negative features excavated into the cemented gravel bed. Although the analysis of material culture and radiocarbon sampling is still in its early stages, preliminary findings and the stratigraphic sequence confirm site occupation between 5400 and 4700 cal BC. This work is part of the project ‘’First settlements in Central/Interior Andalusia’’ (ERSAND) PID2023-152309NA-I00.

03-25 Settlement patterns during the Early Neolithic in the central Limestone Massif of Estremadura (Torres Novas, Portugal)

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In the westernmost reaches of Europe, the central Limestone Massif stands as a key region for studying the Neolithisation process along the Atlantic coast of Iberia. It features the highest concentration of Early Neolithic sites, corresponding to the establishment of agro-pastoral communities in the region around 5500 cal BC.
By then this was a peripheral area relative to the Mesolithic settlement hubs of the Tagus valley. Defined by dry, nutrient-poor soils in the massif and opposite conditions in the river valleys, the area features open-air sites and rock-shelters serving as temporary habitats, alongside caves designated solely for use as necropolises. Present day models emphasise the concentration of sites along the Arrife, an escarpment dividing the limestone massif from the Tagus basin, from where both contrasting ecosystems could have been exploited.
This presentation seeks to further examine these territorial strategies across the three cultural phases identified in stratigraphic sequences, pottery typologies, and radiocarbon dating. The aim is to explore potential spatial and social relationships among sites, and develop a predictive model based on the areas' geomorphological characteristics.

03-26 There and back again. The neolithisation of inland Central Portugal

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Westernmost Europe is an area for which a broad spectrum of research has been presented, dealing with Holocene hunter-gatherers and early pastoralists. The arrival of seafaring allochthonous pioneers carrying a "Neolithic way of life" (or parts of it) has been widely discussed, albeit in the last years the attention seems to go back to the neolithisation of "marginal" areas, their chronology and associated material culture, the involvement and interactions of different groups and the processes arrhythmic nature.

This is the case for the Alto Ribatejo, in inland Central Portugal, where a large amount of effort was directed towards the characterization of data and discussion of theoretical explanatory models emphasizing "mosaic" and "capillarity" perspectives. A few key sites for the earlier phases of neolithisation have been excavated resulting in interesting information. This was framed within various research projects focusing on the synchronic and diachronic description of socio-cultural entanglements, territory exploitation and landscape evolution.

In this paper we take a renewed look at existing pieces of evidence located in the Alto Ribatejo (inland Central Portugal) dated roughly from the 6th/5th millennia BCE, especially the results from the open-air site of Salvador, located near Abrantes, in the left bank of the Tagus river. Our aim is to try to update the discussion on the regional initial steps of neolithisation through different settings – from local to regional scales –, including diverse cultural, lowlands/highlands landscape interactions and environmental data.

03-27 Constructing communities: the Early Neolithic Céide Fields, northwest Ireland (3900-3700 BC)

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The emergence of field systems in prehistoric Europe remains a fundamental question for understanding human-animal-landscape ecological relationships. In this context the Céide Fields of northwest Ireland offers a rare example of extensive co-axial fields established by pioneer farmers. Contrary to recent arguments that these phenomena are not of Neolithic date, we present new evidence that conclusively establishes an early 4th millennium BC date for these systems and demonstrates their association with dairying economies.

We achieved this by undertaking molecular and isotopic analyses of lipid residues preserved in Neolithic pottery sherds recovered from excavations within the field systems and obtaining compound-specific radiocarbon determinations from these lipid residues. This new direct evidence from diagnostic Neolithic artefacts, set alongside the existing regional stratigraphic and archaeological context of the Céide Fields, confirms the early date for the origins of the field systems and their role in cattle management. Using comparative ethnographic data and medieval Irish written sources, we argue that the distinctive co-axial morphology of the Céide Fields resulted from co-operative grassland management practices based on year-round grazing enabled by a temperate Atlantic environment.

04 Human-Environment Dynamics: Environmental Archaeology and Paleoclimate

Session co-organizers: Katarina Botić[1] & Rory Connolly[2]

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The investigation of human-environment dynamics is becoming a core focus of research in prehistoric archaeology. The concept of human-environment interaction describes the manner in which humans and their surrounding environments exert an impact on each other, in processes that can be synergic or destructive. Understanding the relationships between past societies and the environments in which they lived greatly complements the classical archaeological approach.

This session invites contributions that explore the influence of environmental factors on the Neolithisation process in Europe and assess the evidence of human-environment interactions across diverse archaeological and environmental records. Topics may include, but are not limited to, how Early Neolithic communities both adapted to and impacted their diverse environments (terrestrial, riverine/fluvial, waterlogged, lacustrine, marine, etc.). This might also include studies that address the adaptive strategies of local Mesolithic populations in the context of a changing natural and social environment. Broader discussions on methodological innovations, interpretation of anthropogenic markers, and multiscalar analyses are similarly encouraged.

04-01 Climates during the spread of the Neolithic in the Central and Western Mediterranean

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This presentation examines the spread of farming across the Central and Western North Mediterranean (from Italy to Portugal) between 6000 and 5000 BC using quantitative methods. Specifically, it employs the R neonet framework to analyze over 2,500 curated radiocarbon dates from the latest phases of the Mesolithic and the earliest phases of the Neolithic, calculating the isochrones of the farming pioneer front and incorporating palaeoclimate reconstructions (via the R pastclim package). Although the granularity of our modeling does not allow for precise mapping of subregional ecozones (e.g., wetlands), the diffusion model clearly demonstrates that ecological barriers, such as latitudes and mountain ranges, significantly slowed the neolithization process. Furthermore, our framework offers substantial potential for reproducibility and enhances comparisons with previous models (e.g., Binder et al., 2019).
The early farmer colonization of Southern Italy, around 6000 BC, aligns with the PPN (Pre-Pottery Neolithic) core model of neolithization, which posits early farming settlements in temperate climates with dry, hot summers ('Csa' in the Köppen Climate Classification). Once early farmers reached the Tyrrhenian Sea, between 5800 and 5600 BC, the process of 'leapfrog' colonization began, marked by Neolithic settlements established along the Mediterranean shore via seafaring, without prior continental continuity. From 5600 to 5000 BC, we observe the resilience of the latest foragers (Late Mesolithic), who became 'cornered' in the northwest of the Iberian Peninsula, particularly in regions such as Galicia, Asturias, and Cantabria.

04-02 The climate and Neolithic cultures of the Northern Cis-Caspian and steppe Volga River basin

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In the Northern Cis-Caspian region in the period from 6400-6200 calBC the aridization began. At about 6300 calBC the particulate sites with ancient pottery and microlithic industry appeared. From 6100 to 5900 calBC precipitation increased. During this period, sites with dwellings and heavy cultural horizons have been spread. At this time, the carriers of the Orlovskaya culture of the Early Neolithic were developed in the steppe zone of the Volga River basin. The climate in this region was more humid than in the Northern Cis-Caspian area. Motley grass was developed in this period in the Volga River basin, and aurochs and tarpan appeared also. In the Northern Cis-Caspian at ca.5800 calBC the short dry climatic episode was registered. Around 5700 calBC there was the transition to the Late Neolithic in the steppe zone. In the period of ca. 5700-5400, the climate became humid. The sites with dwellings increased. The types of ceramics and stone tools changed. Aurochs and tarpan spread. At ca.5400 calBC in the Northern Cis-Caspian region, the aridization increased. The sites of the Tenteksor culture disappeared. They were changed by the sites of the Cis-Caspian culture of the transition period. It is characterized by other ceramic types and the stone industry. On these sites, the bones of sheep and goats were found. The appearance of domestication in this region is connected with the influence of Western cultures or cultures from the Caucasus. In the Low Volga River basin in ca.5200 calBC the aridization is increasing. This episode coincides with the disappearance of the Orlovskaya culture. The carriers of the Cis-Caspian culture from the Cis-Caspian region which had practiced the domestication, occupied this region around ca. 4900 calBC. With increasing humidity, the development of motley grass in the Low Volga region prevailed and the Khvalinian culture began to develop. The investigations were supported by the project RSF 24-28-00103.

04-03 The Early Neolithic period in Eastern Fennoscandia: Structure and Chronological Boundaries

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Appearance of pottery in material culture is considered to be a marker for the beginning of the Neolithic in Eastern Fennoscandia. However, the rest of the material culture, including subsistence strategies and settlement patterns, continued development in the same way as it had during the Late Mesolithic period, from the end of the 8th millennium BC. Abundance of resources and diversification of landscapes led to increase in sedentary lifestyle and complexity of social structure during this time.

Several different early pottery traditions appeared in the Eastern Fennoscandia and in the southern coast of the Gulf of Finland almost simultaneously about 5300 BC, some hundreds and even a thousand years later then in the other parts of the forest belt of the Eastern Europe.

Palaeogeographical and geoarchaeological data from the eastern part of the Gulf of Finland suggest a rapid episode of isostatic uplift that may have occurred shortly after 5500 BC, possibly accompanied by tectonic activity. It is difficult to determine the exact nature of the relationship between tectonic activity and the emergence of ceramics, but this chronological coincidence cannot be ignored. In the Gulf of Finland and the Lake Saimaa region, the end of the Early Neolithic pottery tradition coincided with a dramatic transformation of the hydrological system caused by tectonic activity around 3900 BC.

04-04 Simulation of Environment and Human Relationships via Agent-Based Modeling: Alternative Agropastoral Production Scenarios and Their Effects in Çatalhöyük, Turkey

Neriman Erdem[1], Bülent Arikan[1]

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The site of Çatalhöyük established at a point overlooking the Konya Plain (Turkey), is considered to be one of the largest and most crowded settlements of the Neolithic. It is also one of the most researched sites in Anatolia hence Çatalhöyük provides wide variety of data to examine long-term socio-ecological dynamics between ca. 7100–5950 cal. BCE. On the other hand, available data sets have not been put together to assess the complex and dynamic web of human-environment interactions through agent-based modelling approach. Consequently, we lack a holistic picture of human-environment dynamics.

The core purpose of this research is to investigate the shifts from the different periods in Çatalhöyük and the co-evolution of agro-pastoral practices and landscape through time, under different climate and land-use scenarios. Agent-based modeling offers new insights into contentious questions, integrating various viewpoints while considering the multi-faceted dynamics between humans and their environment.

In the study, MedLand Modelling Laboratory was used to couple the environmental dynamics (as modelled through Macrophysical Climate Model) with the decisions of a Neolithic agro-pastoral community during the Early Neolithic (7100−6900 cal BCE), the Middle Neolithic (6700−6500 cal BCE), and the Late Neolithic (6300−6100 cal BCE), where each archaeological period represented unique socio-economic and environmental conditions. Our results illustrate the processes of long-term environmental change as result of human impacts that vary from one phase to the other of the Neolithic.

04-05 A computational analysis of crop dynamics during the Neolithic in NW Mediterranean area: a response to climate changes or to the neolithization process?

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The expansion of the Neolithic in the NW Mediterranean during the 6th millennium BC involves a loss of diversity in cultivated crops compared to SW Asia, where they were domesticated. The dynamics and uses of the different types of introduced crops change over the Neolithic period. In the early stages, there is a clear predominance of hulled wheat, but this shifts during the 5th millennium, when naked wheat and naked barley become more prominent. Around 4000 cal BC, hulled wheat re-emerges as the main cereal. These changes directly affected the agricultural practices of the first farming communities, as each cereal required different labour investment and climatic conditions. Did early farmers adapt their crops to the changing climatic conditions, or did they change their crops due to the new climatic regions they colonised?

In the framework of AgriChange project (2018-2022), over 3500 radiocarbon dates and archaeobotanical data from ca. 300 Neolithic sites in the NW Mediterranean were collected, alongside detailed analyses of new archaeobotanical samples, helping to deepen our understanding of early agricultural practices.

This paper aims to analyse this dataset to specify and characterize the temporal and geographical dynamics of crops during the Neolithic, using spatio-temporal analyses of settlement and agricultural practices based on radiocarbon dating. Additionally, these data will be linked to paleoclimatic dynamics and topographic variables to calculate the crop niche and explore whether changes in crop dynamics were related to Neolithic climatic shifts or if other factors explain these changes.

04-06 A Brackish Frontier? The Neolithic Transition in the Northern Adriatic and the Role of the Palaeolandscape

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Recently our understanding of the Mesolithic Neolithic Transition in Europe has improved significantly, especially thanks to ancient DNA evidence and computational modelling approaches. In some regions, however, many questions on the dynamics of Neolithization still remain open. This is the case for the Northern Adriatic, where unresolved issues include the paucity of Late Mesolithic sites, the problematic evidence for hunter gatherer's acculturation, and the sudden appearance of a fully developed farming economy. At the same time, our interpretation is hindered by the significant changes in the palaeolandscape that would have occurred since then, which strongly affect archaeological visibility especially considering that key developments in the Transition would have probably occurred by the ancient, now submerged, coastlines. Therefore, this paper aims to shed light on the Mesolithic Neolithic Transition in the Northern Adriatic, both through a review of the radiocarbon evidence and by presenting new palaeolandscape reconstructions for the area. The chronological data will be used to test theoretical models of Neolithization, arguing for a 'Spectrum of Possibilities', as different dynamics would have been in place in different subregions. Yet, for the Venetian Friulian Plain, given the contrasting archaeological evidence, palaeolandscape reconstructions will be used for further testing through palaeoecological modelling. While the presence of paralic environments (e.g., lagoons, estuaries, marshes) would support the resilience of hunter gatherers in the area, and thus a frontier mobility model, we will explore the possibility that favourable areas for farming would have been present (e.g., delta plains, fluvial ridges), where Neolithic exploratory parties could have penetrated this brackish frontier.

04-07 Finding Suitable Grounds: Investigating the onset of crop cultivation in the lowlands of the Netherlands

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Buried and submerged landscapes in the lowlands of the Netherlands play a key role in research on the introduction of agriculture. Recent results indicate the establishment of cereal cultivation in fluvial floodplains around c. 4300 BC at the latest. These floodplains, however, were part of a dynamic, constantly changing environment. Repeated flooding caused regular changes in the landscape: levees rose, crevasse splays formed, and courses of river channels switched, abandoning old and forming new suitable grounds.

We investigate where, when and how humans in these dynamic lowlands first managed to colonize the most suitable grounds for crop cultivation. In buried and submerged former surfaces in two lowland areas (IJsselmeer/Flevoland resp. Rhine Meuse delta) we combine soil micromorphology, 14C dating, and multi proxy archeobotany from mechanical cores and deep reaching excavations, investigating landscape elements from the period 6000 4000 BC (last Mesolithic to first Neolithic occupations). In both areas, indicators for human activities occur on all investigated riverine levees throughout the period of interest. Dispersed indicators are ample charred herbaceous particles, changes in phytolith morphotypes and starting c. 4900 BC scattered minute ceramic fragments. At specific depths, micromorphological features indicate early neolithic soil cultivation, associated with denser concentrations of ceramics, charred material and coprolites.

We conclude that the levees in the lowland landscape of the 6th and 5th millennium BC, were intensely used both during the Mesolithic and Neolithic and geoarchaeologically recorded the neolithisation process. Humans seem to have specifically selected the most suitable parts of the landscape (the levees), and dealt opportunistically with changes in the landscape.

04-08 Human-environment dynamics and marine resource exploitation in NW Ireland from the fifth to third millennia BC

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Shell middens provide important insights into prehistoric human-environment dynamics along Europe's Atlantic margins, however, in many regions these sites are threatened by ongoing erosion. Here we present the results of a radiocarbon dating programme at five eroding shell midden sites in County Sligo, NW Ireland. These new dates reveal direct evidence of persistent marine resource exploitation from the Later Mesolithic to the Late Neolithic. Contrary to arguments that marine resources were insignificant to coastal farming communities, shell middens appear to be a characteristic feature of the Neolithic in Sligo and key source of evidence for understanding Neolithisation in this region.

By situating these results within regional paleoenvironmental records, we explore how climate fluctuations may have shaped subsistence choices and local settlement patterns. We will discuss whether the exploitation of the marine environment represented a local and sporadic response to climate change, or ought to be considered a long-term strategy to mitigate environmental constraints in remote Atlantic coastal settings.

04-09 Tracing climatic impacts on early agriculture through shell-based isotope and LIBS analysis

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The Mediterranean region has been at the centre of archaeological debates regarding the "Neolithic Dispersal". The information on the processes underlying this spread remains limited, with ongoing discussions about whether climate change delayed the Western Neolithic expansion and whether adverse weather conditions led to agricultural risks. In this work, we present our project based on central Mediterranean archaeological sites, including Franchthi (Greece), Haua Fteah (Libya), Žukovica Cave (Croatia), Grotta dell'Uzzo and Grotta d'Oriente (Italy). Our approach integrates environmental parameters at the excavation unit level with corresponding subsistence data (faunal and floral remains) to statistically evaluate the impact of large-scale climatic events on site-specific and temporal scales that would have been perceptible to humans at the time. To achieve this objective, we undertook a combined methodology of stable oxygen isotope (δ18O) analysis and laser-induced breakdown spectroscopy (LIBS) to analyse archaeological mollusc shells. Initial data comes from Franchthi, where significant differences in winter temperature minima, annual range, and variability were observed across Neolithic periods, reflecting large-scale climatic patterns. However, these factors are mirrored by only ~12% of changes in subsistence strategies, suggesting a lesser impact on human behaviour than previously assumed. In accordance with this, the ongoing analysis of the Haua Fteah and Žukovica assemblages, along with our plan to expand the study to more sites across the central Mediterranean, is expected to provide further insights into the climatic impact of the Neolithic dispersal and contribute to the development of a comparative, bottom-up model of climatic influences throughout the early and mid-Holocene.

04-10 Phytolith evidence for harvesting, grinding and building from Early Neolithic La Marmotta, Italy

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The lakeshore early Neolithic settlement of La Marmotta, in central Italy, is well known for the extraordinary preservation of organic materials by water-logging, including wooden artefacts related to navigation, textile production, agriculture, and basketry. La Marmotta has provided remarkable and diverse stone implements including well-preserved sickles and grinding stones, in addition to a wide range of earthen building remains. Recent microfossil studies, particularly of phytoliths (plant silica cells), have proven critical for delineating plant use and reconstructing crop-processing behaviors at the site. Phytoliths were first identified in an interdisciplinary study focusing on three of the most complete sickles recovered from the site, resulting from plant remains incorporated within the adhesive, providing direct evidence from the harvesting of domesticated cereals, primarily wheat and barley. Further, the size of multicellular phytoliths from grinding stones also pointed to dehusking and grinding activity according to experimental cereal processing datasets, including hulled barley and einkorn wheat, which dominate the macrobotanical records at the site, along with emmer and free-threshing wheat. Lastly, the observation of the phytoliths and other remains in thin-section micromorphology from a selection of earthen building materials point to the use of cereal grinding by-products, as suggested by concentrations of phytoliths from the inflorescences or floral parts of these plants and light chaff. This research examines the contribution of phytolith experimental records to an improved interpretation of plant processing behaviors, and the critical importance of understanding taphonomic and formation processes for reconstructing plant processing patterns and earthen constructive systems in Neolithic built environments.

04-11 Plant Resource Use and Agriculture in Early Neolithic Albania: New Results from Pogradec

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This paper presents new archaeobotanical data from the Early Neolithic (EN) site of Pogradec, located within the modern town with the same name in southern Albania. The site was selected as a thesis topic due to its potential contribution to understanding the transition to agriculture in the southwestern Balkans, which occurred during the EN around 6,500 BCE. Its proximity to other significant EN sites in Albania, as well as those in Northern Greece and North Macedonia, makes it a valuable addition to the study of agricultural systems in the region. The specific aims of this study are: 1) to provide new preliminary archaeobotanical data from the archaeological site of Pogradec, which is the most recent addition to the archaeobotanical assemblages of the EN Albanian sites; 2) to contribute to our understanding of the timing of Albania's earliest agricultural communities relative to nearby regions in lake areas; 3) to assess the importance of on-site anthracological analysis and provide new data; and 4) to address concerns related to sampling strategies and recommend appropriate methods for collecting and documenting flotation samples at the time of recovery in the field. The crop taxa recovered from the site are Hordeum vulgare (hulled barley), Triticum dicoccum (emmer wheat), Triticum aestivum (bread wheat), Triticum monococcum (einkorn wheat), Lens culinaris (lentil), and Linum sp. (flax) alongside rare non-wood plant remains. Charcoal recovered from the site includes both gymnosperms and angiosperms, with pine and juniper taxa being the most abundant.

04-12 Base subsistence strategies in the Early Neolithic of Central Italy: insights from Rio Tana (AQ, Abruzzi)

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In the early centuries of the 6th millennium BC, Neolithic groups linked to Impressed Ware, began to colonise the central Adriatic region of the Italian peninsula. These groups introduced significant technological innovations alongside a well-established subsistence economy based on agriculture and animal husbandry. Their strategies, deeply rooted in their cultural practices, were carefully adapted and optimised to ensure survival and stability in the diverse newly settled areas. This paper aims to contribute to this topic by providing data from the site of Rio Tana (AQ), an early Neolithic settlement currently under investigation in the Abruzzi region. Through an overview of botanical finds, harvesting tools and faunal remains, this site provides valuable information on environmental conditions and basic subsistence practices. By comparing and integrating the data obtained with existing literature, this study also aims to improve the still limited knowledge framework of the central area of the peninsula.

04-13 Back to the wild: a multidisciplinary approach to investigate the persistence of wild plants in the subsistence strategies of Early Neolithic communities in Tyrrhenian central Italy

Giovanna Pizziolo[1], Angelo Gismondi[2], Alessia D'Agostino[2], De Marco[1] C., Gabriele Di Marco[2], Domenico Lo Vetro[3], Fabio Martini[3], Paul Mazza[4], Gaia Mustone[1], Mario Federico Rolfo[5], Lucia Sarti[1], Nicoletta Volante[1]

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Within the broad framework of studies dedicated to Human-Environment dynamics occurred during the process of Neolithisation, this contribution focuses on the middle Tyrrhenian area discussing evidence related to some case studies analysed by the on-going project "BACK TO THE WILD: uncovering the Italian Neolithic phytoculture by an archaeo-biomolecular strategy". The research aims to investigate how Early Neolithic communities exploited and impacted the local environments, taking into account different set of contexts and landscape settings, such as open-air sites and caves located in coastal areas, alluvial plains, inner relieves of central Italy. In order to explore these complex dynamics, the project adopts a multidisciplinary approach, based on genetic (DNA barcode, Next Generation Sequencing) and metabolomic investigations (Gas Chromatography-Mass Spectrometry) combined with archaeozoological and palynological analyses and functional characterization of lithic tools and ceramic vessels, for detecting traces of subsistence strategies. The contribution is oriented to recognize the management and processing of wild plants in the background of the domestication expansion in a landscape perspective. Additionally, to better appreciate continuity and changes occurred in the Mesolithic-Neolithic transition in the Tyrrhenian central Italy, the research provides a general framework to contextualise the single samples analysed. Even if the Mesolithic and Early Neolithic evidence in this territory is not sizeable, the project aims to define the variability of neolithic subsistence strategies and the possible interaction with the Mesolithic tradition; in this perspective, the study of wild plants become a challenging key to investigate the Neolithisation process and improve our means of interpretation.

04-14 The adaptation of the Neolithic way of life to the natural conditions in northern Banat

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Starting from western Anatolia and the Aegean, Neolithic settler groups advanced as far as the Carpathian Basin after the climatic fluctuations of the 8.2 BP Event had subsided. The results of genetic studies on human remains from this period leave no doubt that the Neolithisation process took place through the immigration of a population from the Balkan region. These in turn are descendants of immigrants from western Anatolia and the Aegean. Within the Carpathian Basin, however, different manifestations of the Neolithic way of life can be seen. In the western part of the Carpathian Basin, a continuous development of the Neolithic package can be observed, which is largely based on the utilisation of cultivated plants and domestic animals. As a result, Linear Pottery Culture (LBK) developed there as a very successful concept with which groups of settlers were able to penetrate into northern Central Europe. In the eastern part of the Carpathian Basin, our work in recent years has revealed a different development. During the colonisation phase of the Banat, the new settlers initially brought cultivated plants and domesticated animals with them. In the further course of the Neolithisation process there, however, a very strong adaptation to the natural environment and the local conditions can be seen. This manifests itself in the increased utilisation of aquatic resources, game hunting and gathering plants. As a result, we see the development of a different concept of Neolithic settlements, which differ greatly from those in the West.

04-15 The Early Neolithic between the Danube and the Alps: a review of environmental and socioeconomic data

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The appearance of the first Neolithic populations, arriving from the Balkans, north and west of the Danube is documented around 6000 cal BC after a short halt during the 8.2 ka event, the causes of which have not yet been fully investigated. The dynamics of this process in some areas of the Carpathian Basin significantly depended on the existing natural environment, and it is possible to monitor it using a combination of documented environmental and socioeconomic indicators. Several synthetic papers on this topic are available for the area of the central and western Carpathian Basin, but such syntheses do not yet exist for the area south of the Drava River. The reason for this is the poor research of environmental indicators for the 6th millennium cal BC (the Holocene in general), on the one hand, and the insufficient publication of socioeconomic indicators of archaeologically documented Early Neolithic populations, on the other hand. By combining both sets of data, it is possible to reconstruct individual shorter phases of the emergence, adaptation and spread of the Early Neolithic way of life in this micro-region, and compare them with published supra-regional data. It is also possible to partially explain the tendency towards partial mobility of early populations, preference for smaller domesticated ruminants and extensive hunting practices, especially in the initial phase of settlement.

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05 Subsistence and Health: Archaeology of the Emerging Food Systems, Dietary Patterns and Lifestyle Maladies

Session co-organizers: Dragana Filipović[1] & Ivana Živaljević[2]

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One of the most significant economic and technological achievements in human history is the development of agriculture; its emergence triggered a chain of complex economic, social, technological and environmental changes. In archaeology, it represents a hallmark of the Neolithic, and Neolithic agriculture is described as an activity securing subsistence for small producing units (e.g. a farming family) with the produce not intended for commerce but some likely shared or exchanged within a community or network. Combined with gathering, hunting and fishing, Neolithic subsistence farming is thought to have provided a higher-than-before degree of food security, including the steady and sufficient supply and diversity of essential nutrients – prerequisites for good health. Whereas the emerging food systems integrated manifold strategies, these would have varied in relation to their natural-cultural contexts, resulting in distinct food production and consumption patterns and 'food cultures' across the continent, presumably with different health outcomes. How is this reflected in the archaeological record? This session invites papers on ways of securing and consuming food in the Neolithic, how the early food systems operated in their natural-cultural environments, what kinds of diets they enabled, and what the health outcomes of dietary choices were among the early farmers in Europe. Beyond the focus on subsistence, the session aims to discuss emerging interlinkages of the cultural and biological processes: how did the co-living and co-dependence of humans and the adopted plant and animal domesticates unfold in the new biogeoclimatic regions and new cultural worlds.

05-01 More-than-Human Assemblages: a Multispecies Perspective on the Neolithic

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New forms of human-nonhuman relations emerging in the Neolithic have long been dominated by Modernist narratives of Human mastery over Nature. According to this view, the complex processes such as animal and plant domestication have been completely one-sided and driven by human agency. These anthropocentric perspectives failed to acknowledge that animals, plants, and all other organisms lumped under the term "environment" can and do act back, often in unpredictable ways, and elicit various responses. As articulated by Donna Haraway, "no species, not even our own… acts alone; assemblages of organic species and abiotic actors make history". In a similar vein, Anna Tsing offers a view of human nature which "shifted historically together with varied webs of interspecies dependence". The understanding that multispecies assemblages are neither fixed nor stable, but continuously transforming, bears important implications for the study of the Neolithic, itself one of the major shifts in human and nonhuman history. These processes included the responses of various species to new, anthropized environments, the closer proximity, trust, joint labour and shared living space of humans and nonhumans, the effects of this coexistence including the changes in behaviour, appearance and the development of new zoonotic diseases, as well as the agency of various actors (e.g. humans, cattle, mold, bacteria) in the emergence of new substances such as dairy products. By using mentioned examples as case studies, this paper explores these shifting webs of interspecies dependence, situated and mutually becoming in historically and contextually specific ways in the Neolithic.

05-02 Dietary patterns of Mesolithic-Neolithic communities in the Central Balkans: data from stable isotope and buccal microwear analyses

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Dietary behaviours are deeply culturally rooted and represent a great potential for understanding the processes underpinned by changes in diet, such as Neolithisation. The Central Balkans is one of the key areas for understanding this process. Neolithic skeletons are found in multiple culturally and ecologically different niches, including the Danube Gorges (9500-5500 cal. BC), with an environment suitable for fishing and hunting, and the southern part of the Central Balkans and the Carpathian Basin (6200-5300 cal. BC) with landscape more suitable for agriculture, and where the evidence of Mesolithic occupation is only beginning to emerge. To investigate their dietary patterns, we conducted stable isotope and buccal microwear analyses on ca. 100 individuals from these regions. Stable isotope ratios of δ13C, δ15N δ34S showed aquatic fauna and hunted game played an important role in the diet of Danube Gorges inhabitants through the whole sequence, although in the Neolithic there is a change toward consumption of more terrestrial food. Communities in the other studied areas had a typical Neolithic terrestrial diet, while aquatic fauna did not play an important role. Microwear analysis showed that the diet of the Mesolithic communities was highly abrasive and reliant on meat. In the Neolithic, there was a change in the diet texture, which was not so much the consequence of diet composition, but of the change in food preparation techniques. Integration of these two complementary methods enabled a better understanding of the mechanism of the complex processes that were part of the Neolithisation in the Central Balkans.

05-03 Unraveling the Genetic History of Cattle in Balkans

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Aurochs (Bos primigenius) were native to Europe during the Pleistocene, and zooarchaeological evidence suggests that Mediterranean Europe, including the Balkan littoral, supported large populations of wild cattle. After the domestication of aurochs during the early Holocene in the Fertile Crescent, domesticated cattle spread with the first farmers into the Balkans and the rest of Europe. In this presentation we examine the genomic evidence for cattle domestication in Europe, with a focus on the Balkans. We begin by reviewing current genomic insights into early cattle populations in Southeast Europe, focusing on autosomal, mitogenomic, and Y-chromosomal data. We then examine evidence for interbreeding between domesticated cattle and local aurochs, particularly in the western Balkans, and highlight key unresolved questions. Next, we present new ancient DNA findings from the “Gabridge” project (Bridging the Disciplinary Gap: Integrating Animal Genetics and Archaeology in Croatia), shedding light on the genetic diversity of early cattle in the region. Finally, we outline the prerequisites for effective collaboration between geneticists and archaeologists in studying cattle domestication and management in Southeast Europe.

05-04 A closer look at the orientation and seasonal rhythms of sheep economies in the early Neolithic of the Adriatic region

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The strategic relevance of the Adriatic region in the Neolithization of the central and western Mediterranean is reflected in the prominent presence of the 'maritime stream', associated with the Impressa pottery complex. This stream indicates a remarkable cultural unity between both Adriatic coasts, sustained by continuous interactions, as evidenced by elements of material culture. Economically, both sides share an emphasis on sheep herding and barley cultivation, although they differ in their use of wild resources, reflecting both local adaptations and cultural preferences. However, knowledge about livestock practices remains limited, particularly regarding animal management and exploitation.

This study aims to characterize livestock practices in the Adriatic region during the early Neolithic, focusing on sheep, the predominant species. Mortality profiles from sites on both coasts will be analyzed to reconstruct the orientation of the production, inferred from herds demographic management. Additionally, pastoral calendars will be investigated at Tinj and Crno Vrilo (Dalmatia) and at Trasano and Rendina (southern Italy) with special attention to the timing of sheep birthing in the annual cycle, in order to reflect potential zootechnical strategies for deseasoning lambing in autumn, as is currently practised in the Mediterranean region.

The results are expected to provide a more comprehensive understanding of animal management strategies and the socio-economic organisation of these agropastoral communities, revealing patterns that highlight the role of the Adriatic region as a strategic hub in the spread of the Neolithic and the development of early agropastoral economies in the Mediterranean.

05-05 Early Dairying and Long-Range Connectivity in the Adriatic Early Neolithic food systems. Deciphering the Early Neolithic Assemblage of Mala Pećina

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Excavations in Mala Pećina cave near Muć in hinterland Dalmatia, unearthed extensive Early Neolithic layers in the length of the cave. Of particular importance is an assemblage of impresso pottery sherds, belonging to several vessels, that has been deposited in the narrowest and most difficult to access part of the cave. The assemblage concentrated in a thin layer and it was shield by flowstone and surrounded by a low stone structure. Several fire lenses have also been excavated in close association with the pottery deposit. The layer has been dated to the very early decades of 6th millennium BCE (5834 calBC 95.2% probability) and organic residue analysis presented that various of the impresso sherds have evidence of dairy. Petrographic analysis on samples from the same assemblage also indicates that the clays for the pots have been sourced from a wide range of localities ranging from the coastal parts of Dalmatia to the Herzegovina uplands. This paper aims to present the outputs of the research in Mala Pećina EN materials and incorporating also the zooarchaeological and archaeobotanical remains from the EN strata in order to raise a discussion about the subsistence strategies that led to the archaeological evidence we are getting today. Consequently, and putting the Mala Pećina observations in context, the paper further discusses the role of caves in the Early Neolithic food systems in Eastern Adriatic.

05-06 From shore to land: a comparative isotopic study of Neolithic dietary practices in coastal and inland Croatia

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The territory of modern-day Croatia, stretching from the Western Balkans to the Adriatic Sea, served as a crucial corridor for the spread of the Neolithic in Europe, with two main expansion streams: a maritime route along the Adriatic coast and a continental route through the Central Balkans and the Pannonian Plain following major river courses. The adaptation of farming practices to local climatic and cultural conditions in these regions gave rise to distinct cultural traditions between inland and coastal areas in the territory of modern-day Croatia. Despite the significance of this region, very few studies have systematically investigated the dietary practices of humans living in both inland and coastal Croatia areas though the Neolithic, leaving open questions about the continuity or divergence in resource use and subsistence strategies throughout the period.

This study represents one of the largest isotopic analyses of Neolithic populations in Croatia to date, investigating 78 human (adult and subadult) and 46 faunal remains from eight Early, Middle, and Middle/Late Neolithic sites in coastal (Istria) and inland (Osijek-Baranja and Vukovar-Syrmia counties) areas of Croatia through δ13C, δ15N, and δ34S isotope analyses. Our results show no significant differences in human subsistence strategies across the Neolithic or between coastal and inland sites, with diet primarily based on the consumption of C3 plants and domesticates (cattle, pigs, ovicaprids). Notably, ovicaprids exhibit higher δ15N isotope values than other herbivores throughout the entire Neolithic, potentially reflecting distinct feeding practices–such as the use of manure for fertilizing crops or pastures–or specific husbandry practices or cultural traditions associated with their management.

This study provides new, important insights into the dietary patterns of Neolithic populations in Croatia, allowing for an improved understanding of how the Neolithic was adopted and adapted in this region and contributing to broader discussions on the spread of Neolithic agricultural practices across Southeastern Europe.

05-07 Animal husbandry practices in Southeast Europe: New zooarchaeological and stable isotope ratio insights from Early Neolithic Svinjarička Čuka, Serbia

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With the spread of farming communities into Southeast Europe (Balkan peninsula), livestock species domesticated in Southwest Asia were introduced to a diverse array of environments beyond their natural range. This necessitated significant adaptations by both farmers and animals. Zooarchaeological studies have shown changes in species composition of the animals kept by the earliest farmers, which were likely (at least in part) influenced by environmental differences. Stable isotope ratio studies have additionally revealed dietary adaptations in the nutrition of domestic livestock as wide-ranging as forest-grazing, winter-foddering, and deliberate feeding of pigs with human food waste, also giving information as to how animals may have been kept.

The initial Neolithic in Southeast Europe was a period of complex socio-economic change, with diverse developmental trajectories that require further research. In the centre of this region, the early settlement of Svinjarička Čuka (Serbia), where first excavations started in 2018, can offer new insights into the early neolithisation process. In the Early Neolithic faunal assemblage excavated so far, 91% of the remains were of domestic animals. Caprines (sheep and goats) and cattle dominate the material, whereas pigs and dogs are much less common. Bone collagen from 68 domesticated and wild animal bones from Svinjarička Čuka were analysed for stable carbon and nitrogen isotope ratios. These results will be set into the larger context of Early Neolithic husbandry at other pioneer sites in Southeast Europe, including the Starčevo and Körös sites Alsónyék, Ecsegfalva, Endrőd 119, Lánycsók-Égetthalom (all in Hungary), and Măgura - Boldul lui Moş Ivčnus (Romania).

05-08 The exploitation of animal resources by the first Neolithic human communities in Dobrogea (6th millennium BC)

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Recent archaeological research conducted in 2021 at Palazu Mare (Constanța County) on the promontory of Malu Alb, located northwest of the Black Sea, led to the discovery, for the first time in the territory of Dobrogea (Romania), of a Neolithic cultural facies (6th millennium BC) unknown for this area, named by the authors of the discovery Prehamangia. The data obtained after radiocarbon analyses (14C) suggest that this cultural aspect can be dated between 5700-5400 cal BC, before the Hamangia culture.

Based on the study of more than 12,000 bone remains from five unique archaeological complexes (C18, C19, C20, C21, C55), the main features of the animal paleoeconomy, of the first Neolithic human communities settled in the territory of Dobrogea, have been highlighted. The data indicates that the activity of animal breeding, especially cattle and caprins (sheep and goat), is predominant, with the pig having a minimal role in subsistence strategies. The study of the slaughter ages' pattern of domestic animals (cattle and caprins) suggests specific purposes for which these animals were raised.

Despite identifying a large list of wild mammals (15 species), the share of hunting was extremely low, less than 5%. The most hunted species were the hemione and the red deer. As for aquatic resources (freshwater fish and bivalves), there is a low interest.

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05-09 Where the Wild Things Are: Reassessing Late Neolithic Socio-Cultural Variation on the Great Hungarian Plain through Isotopic Analyses

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Archaeological interpretations established in the early 20th century continue to underpin our understanding of the development of Late Neolithic (ca. 5,000-4,500 BCE) cultures on the Great Hungarian Plain. For instance, the Tisza and Herpály archaeological cultures have traditionally been differentiated based on several cultural distinctions, including the supposed reliance on domesticated (Tisza) versus wild (Herpály) animals. However, this distinction is based on excavations of numerous Tisza tell sites and only a limited number of Herpály sites. Moreover, very little data from off-tell settlements of either culture have been generated. Recent intensive archaeological investigations at the Herpály site of Csökmő-Káposztás-domb (CsK) by the Prehistoric Interactions on the Plain Project (PIPP) offer a unique opportunity to study dietary trends and subsistence strategy across an entire tell-centered settlement. Here we present new results from stable isotope carbon and nitrogen analyses of cattle, pig, and deer bone to reassess the use of “wild” versus “domesticated” species at CsK. Our findings test long-standing assumptions about Late Neolithic cultures on the Great Hungarian Plain and help us to better characterize human-animal dynamics during this time.

05-10 Neolithic maritime dispersals in comparative perspective

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Maritime networks were a key mechanism for Neolithic farming dispersals in several coastal and island regions, including the Mediterranean, the British Isles, Island Southeast Asia and Japan. While there has been considerable research on these networks individually, comparative approaches are less common. Inland Neolithic dispersals could have been conducted on foot and conceivably at the household level. Maritime networks, by contrast, required more complex planning as well as seafaring technologies. This paper will consider how the maritime/inland difference might have impacted various aspects of Neolithic life, including the scale of production, social connectivity and complexities, and health. A further question is the relationship between Neolithic maritime networks and maritime economies, especially fishing. The paper will explore these questions based on archaeological evidence from the Mediterranean, Island Southeast Asia and Japan.

05-11 Crops in the burials from Late Neolithic graves in Anatolia

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The archaeobotanical study on the plant remains from graves at Neolithic Period Çatalhöyük and Early Chalcolithic Kanlıtaş Höyük, which is the earliest known human of Central Western Anatolia showed very early applications of buried crops in the graves, which is a well-known application on EBA period burials in Central and Western Anatolia. Although there was not any special study on burial fills, close-up observations on these contexts and fills on these burials showed a wide variety of plant remains, including cereals such as einkorn wheat, emmer wheat, bread wheat and seeds of wild species such as goosefoot and bitter vetch on those burials.

This study implies that during the following centuries in those fully sedentary Agricultural societies at Çatalhöyük in Central Anatolia and Kanlıtaş Höyük at inner western Anatolia plants have played a role in their spiritual life as indicated by the various plant remains found in the grave. Actually, these finds are very important because of the limited archaeobotanical data from excavations in Anatolia, especially from graves, they provide invaluable information about the funerary practices and rituals of early agrarian societies as the earliest benchmark so far. The archaeobotanical analysis of those graves with different crops provides a rare glimpse into the sociocultural structures and belief systems of the region's earliest inhabitants, contributing to our understanding of the relationship between plants and burial customs in prehistoric Anatolia. The importance of archaeobotanical studies has once again revealed the importance of archaeobotanical studies as it creates an interdisciplinary interaction in better interpretation of the data to be obtained from archaeological sites as well as on other European Prehistoric sites.

05-12 New insights on the beginning of the opium poppy domestication in Early Neolithic Europe

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Although the Neolithic origin of opium poppy (Papaver somniferum) in the Mediterranean region seems to be the consensus today, the scenarios regarding the early stages of its diffusion are still unclear. Key challenges include the small size of opium poppy seeds, which facilitates their movement between archaeological layers on multi-period sites, the lack of radiocarbon dating directly on macroremains, and the absence of morphological criteria to reliably distinguish between wild and domesticated seeds.
In recent years, new approaches have been developed to tackle these questions, supported by ongoing projects funded by the French ANR (CE27-0006-01) and the Portuguese FCT (PTDC/HAR-ARQ/1709/2021), as well as previous initiatives funded by the French Fyssen Foundation and Agrichange project (PP00P1_170515) in Switzerland. These interdisciplinary projects integrate archaeobotany, genetics, geometric morphometric (GMM), radiocarbon dating techniques, and 3D imaging (https://opiumpoppy.hypotheses.org).
In this paper, we share results of an inventory of archaeological attestations of opium poppy in Europe and the Near East, focusing on contexts spanning from 6500 to 50 BCE. This inventory is supported by new radiocarbon dating, which complement previously published chronological data that pinpoint the earliest evidence of opium poppy use in central Italy to the mid-6th millennium BCE.
These studies, grounded in the analysis of archaeological material, are contextualized with recent findings from genetic analyses of modern varieties and GMM applied to both modern and archaeological seeds. The ultimate goal is to shed light on the early domestication process of the opium poppy, which may be the only crop of European origin in the Neolithic period.

05-13 Plants and blades: harvesting techniques and diet in the Neolithic of the central-western Balkans

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Several recent or ongoing research projects have revised and systematised old and generated new information on the lithic technology and plant food consumption among the Neolithic cultural groups in the continental western Balkans. The data point to intra-regional, inter-and intra-cultural, and diachronic variability in the choice and diversity of raw materials and resources. For instance, Early Neolithic groups in the eastern part of the region (eastern Serbia) used a wider range of raw stone materials, mostly non-local, whereas those in the western parts (western Serbia, northern Bosnia-and-Herzegovina) opted for locally available resources. Late Neolithic groups used both local and imported raw materials, but those in the west to a lesser extent, while the choice of materials differed between the groups in north and in the south. Early Neolithic groups in the south cultivated a wider range of crops than those in the north. Late Neolithic groups in the west relied on a narrower spectrum of cultivars than those in the east, but maintained high rate of exploitation of wild edible plants. These findings suggest differentiated economic behaviour and dietary habits within the region, within and across postulated boundaries of the cultural groups. We superimpose and compare patterns of differentiation in the lithic and archaeobotanical records. Specifically, we examine morphology and raw material of the blades potentially serving as harvesting tools (i.e. bearing silica gloss) alongside morphological and biological characteristics of cereals and weeds. We discuss 'purity' of Neolithic harvests and possible variations in human and animal diets within the region.

05-14 Valued wild: non-cultivated edible plants across the Neolithic Balkans

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What usually prompts increased archaeobotanical attention are finds of greater quantities of the remains of potentially useful wild plants – in the form of discrete concentrations in occupation layers or in features and objects such as bins and ceramic pots. But single, isolated finds are much more frequent, however no less valuable, as they also contribute to our knowledge of the breadth of wild resources used by humans, both before and after the introduction of agriculture. Compared to crops, wild plant foods have received little attention in the research on early farming communities in the Balkans. This is mainly due to their far lower representation in archaeological layers and also the prevailing interest in reconstructing the route and pace of spread of south-west Asian 'founder crops' into and through Europe. This paper shifts the focus of predominantly crop-centred Neolithic archaeobotany to wild plant food sources, their diversity and potential dietary importance. A wide array of wild edible plants, such as common hazel (Corylus avellana), Cornelian cherry (Cornus mas), elderberry (Sambucus nigra), blackberry (Rubus idaeus), water chestnut (Trapa natans), sloe (Prunus spinosa), pear (Pyrus pyraster), apple (Malus sylvestris), wild strawberry (Fragaria vesca) have been in use in all corners of the Balkans throughout the Neolithic but also in the earlier and later periods. The paper presents the type and context of the finds of wild plants and argues that these remains serve as a testimony of the value placed on wild resources in the past and the long history of their use.

05-15 Tracing Early Farming Practices in Neolithic Croatia Through Isotopic Analysis of Cereal Remains

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Over the past two decades, stable carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) isotope analysis of charred plant remains has become a key method for reconstructing prehistoric agricultural practices. This paper presents the first isotopic study of Neolithic cereal remains from Croatia, focusing on five sites in northern Dalmatia—Pokrovnik, Rašinovac, Danilo-Bitinj, Krivače, and Velištak. Through analysis of charred barley and emmer grains, we explore variations in crop water status and manuring intensity to assess early cultivation strategies. The results indicate the use of small, possibly permanent plots with differing inputs of organic fertilizer, aligning with broader patterns observed across Neolithic Europe. Despite limitations in the archaeobotanical record, evidence of diverse crop cultivation and shifting animal husbandry practices suggests a complex and adaptable agricultural system that sheds new light on Neolithic land use in the karst landscapes of the Adriatic and southeastern Europe.

05-16 In with the new: Plant foodstuffs in an early Neolithic village in southeastern Serbia

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Archaeobotanical traces of earliest farming communities in much of Serbia are scarce, and this is a result of both the intensity of exploration and the likelihood of plant materials to undergo charring – the major route to archaeological preservation here. Unlike many of the later Neolithic settlements in the region, which were larger, with wattle-and-daub houses that, along with their contents, were commonly destroyed in large-scale burning, early Neolithic occupations were small, composed mainly of semi-subterranean or light above-ground structures (huts) and offering little evidence of burning and charring and thus plant use. Nevertheless, systematic sampling and analysis at some of the sites provided solid, if limited, evidence of production, collection and consumption of plants. The early farming village of Svinjarička Čuka in southeastern Serbia is a prominent example. Looking modest next to the Early Byzantine hilltop town overlooking the entire Leskovac Basin, this site has so far offered a rare and important glimpse of the domesticated and wild plant foodstuffs that sustained what likely was a small group of people residing over several centuries in this resource-rich valley of the central Balkan highlands. Thanks to the ongoing archaeobotanical investigations and meticulous analysis of both the 'light' and the 'heavy' fraction of flotation samples, we have documented a surprisingly wide range of plants used for food, fuel, crafts and construction. They include both the 'old' plants – those used in the wider region from the Early Holocene – and a number of 'new', including many of the 'founder crops'. This paper introduces the long-term archaeobotanical research at Svinjarička Čuka and presents the increasingly detailed picture of the plant-based subsistence and diet in one of the earliest farming settlements in the central Balkans.

05-17 Early Neolithic Farmers of the Middle Morava Valley, Serbia: Evidence of Plant and Animal Exploitation

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The earliest farming communities settled in the Middle Morava Valley around 6200 BC, marking the onset of the Early Neolithic Starčevo culture (c.6200-5300 cal BC). The region was densely occupied, with more than 60 registered settlements, positioned along the tributary valleys of the Morava River. However, only a few have been excavated, providing important opportunities to investigate economic adaptations, especially the poorly understood strategies of agricultural exploitation. In this study, we will focus on bioarchaeological data from two key sites in the region – Drenovac and Međureč (6200-6000 cal BC). Animal remains at both sites are exceptionally well preserved, systematically collected through advanced techniques such as dry and wet sieving, allowing for detailed analysis. Archaeobotanical sampling at Drenovac has yielded a comprehensive dataset, while Međureč has produced only about 50 plant remains due to more limited sampling. By examining the interplay between plant and animal exploitation, this research highlights the diversity of subsistence strategies among some of the earliest farming communities in the Middle Morava Valley. Additionally, it explores food practices, from preparation to discard, providing insights into these communities' cultural behaviors and their relationship with the environment.

05-18 Assembling the Natural: Forests, Ethnobotany, and Socialist Modernization in Montenegro

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Information about the role and range of plants relied upon for subsistence in the Neolithic of Montenegro remains scarce, with evidence limited to only a handful of archaeological sites. However, findings elsewhere suggest that Neolithic communities utilized plants not only for subsistence but also for construction, tool-making, and possibly medicinal purposes, underscoring the deep entanglement between humans and their environments. Montenegro's land of sharp geographical contrasts—encompassing high-altitude mountains, vast plains, deep canyons, and a narrow coastal zone—acts as a microcosm of diverse flora. Despite its small size, nearly half (49%) of the country is forested, sheltering approximately 3,600 species and subspecies of vascular plants, including one of Europe's last remaining primeval forests. During the socialist modernization of Yugoslavia, its forests played a pivotal role as the backbone of the paper and timber industries. They became essential export commodities, significantly contributing to economic growth in that era. Beyond their industrial significance, Montenegro's forests remain deeply embedded in local tradition as having medicinal properties, becoming an integral part of daily care and healing practices. By framing forests as "natural archives," this paper explores them as more than not merely as commodities but as dynamic mediators of cultural memory and ecological adaptation. It interrogates how landscapes and their botanical elements embody the interplay of local traditions, industrial processes, and broader political ideologies. Viewing plant-based subsistence as a convergence of ecological, cultural, and political forces invites a rethinking of its nature and place in the Neolithic.

06 Innovation and Tradition: Technological Perspectives on Europe's Neolithisation

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The Neolithisation of Europe, marked by the emergence of a new production-based economy, led to profound transformations in material technologies. As communities transitioned to farming, technological practices evolved to meet changing demands, forging a balance between innovation and continuity. Longstanding technologies like lithic and bone tool production were adapted to meet the needs of emerging Neolithic practices (such as harvesting for instance). Certain technological domains, such as pottery production, were once regarded as entirely new innovations in continental Europe, representing not just functional advances but also significant shifts in material culture. These developments underscore the interplay between technological creativity and cultural adaptation, as communities integrated new techniques with existing traditions to address their evolving socio-economic and environmental needs.

By examining the transformative role of technological practices, this session explores how they served as both drivers and reflections of Neolithic societies. We invite contributions that investigate the trajectories of technological innovation and tradition, highlighting their implications for socio-economic structures, cultural interactions, and the formation of exchange networks in the Early Neolithic of Europe. Special emphasis will be placed on three interconnected themes:

- Innovative Methodologies – New tools and techniques for studying technological practices, from experimental reconstructions to advanced material analyses.
- Cross-Material Perspectives – Integrative studies examining diverse materials (lithics, ceramics, organics, building materials) to address socio-technical dynamics.
- Regional and Comparative Case Studies – Research exploring the interconnections and variability of Neolithisation trajectories across Europe.

06-01 Approaching the social organization of grinding tools production: a case study from the early Neolithic of the Paris Basin

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Anthropological studies demonstrate the diversity of organization of grinding tools production, in terms of know-how transmission, gender and specialization within communities. However, it appears generally challenging to identify a precise pattern of production in archaeological contexts. On the basis of a long-term research over 20 sites dating of the Early Neolithic of north-western Europe (LBK and BVSG, 5100-4900 BC), we explored the organization of grinding tools production in the villages. By tracking the main clues of quern production in the domestic units (roughouts, hammerstones, shaping flakes), it is possible 1/ to highlight where the production took place within the village, 2/ to propose some hypothesis regarding the producers' degree of specialization and 3/ to point a possible evolution of grinding tools production through time.

06-02 The Emergence and Development of Polished Stone Tools from Starčevo Culture Sites in Northeastern Croatia

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Although many parts of northeastern Croatia, with their geographical and topographic characteristics, would have been suitable for settlement during the Paleolithic and Mesolithic periods, the lack of research in this region leaves our understanding of pre-Starčevo populations incomplete. As a result, the transition from a hunter-gatherer lifestyle to a food-producing, sedentary way of life remains unclear. The Starčevo culture emerges in this area as a fully developed Neolithic phenomenon, documented at numerous sites spanning different phases of its existence (c. 6000–5300 BC). This paper focuses on polished stone tools (axes, adzes, and chisels), which first appear in the Sava-Drava interfluve precisely within the context of Starčevo sites. These tools represent a key aspect of Neolithic material culture and reflect broader shifts in survival strategies and lifestyles driven by economic, biological, and climatic changes at the onset of the Neolithic.

Their emergence is primarily linked to increased deforestation, woodworking, and soil cultivation by early farming communities. Through the analysis of stone tools from Starčevo culture sites (Belišće-Staro Valpovo, Stari Perkovci-Debela šuma, Našice-Arenda, and Selci Đakovački-Kaznica Rutak), this study examines the typological and technological diversity of these artifacts in relation to their function. Additionally, it highlights the intentional and systematic selection of raw materials used for their production.

While Starčevo polished stone tools appear highly homogeneous in both morphology and raw material selection, a noticeable shift occurs towards the end of the period (from the Sopot phase), signaling further technological developments.

06-03 Metabasite of the Jizera Mountain Type (Czech Republic): an important player in the Neolithisation of temperate Europe

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The Jizera Mountains-type metabasite was the primary raw material for the production of polished tools across Central Europe during the LBK period. Its outcrops are located on the edge of the Jizera Mountains in northern Bohemia, Czech Republic. This rock was extensively mined and processed into semi-finished products throughout the entire LBK period. The Jistebsko quarry complex, covering approximately 1 square kilometer, exhibits well-preserved evidence of both surface and deep-pit quarrying.

In this paper, we present the latest research on this mining site, including raw material processing and distribution patterns. Since the widespread distribution of tools made from this metabasite in the early Neolithic is not self-evident, we also explore its potential social significance in relation to the establishment of Early Neolithic sites.

06-04 Neolithic flint assemblages in transition and transformation: Bulgarian case study

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This paper focuses on the Neolithic period in Bulgaria, which featured significant cultural achievements that made the area important in the Early Neolithic *oikumene* and the Neolithisation of Europe. A general overview of the chipped stone assemblages from Bulgaria during the Neolithic period (6th millennium BC) is presented. Based on numerous flint assemblages belonging to different phases of the Neolithic (many of which were studied by the author), some general observations on the key features and trends are provided from a diachronic perspective. The Early Neolithic was characterised by distinctive formal toolkits and the uniform use of raw materials (Balkan flint) that served as hallmarks of a major cultural milieu represented regionally by the Karanovo I and II cultures, and supra-regionally by the broader Karanovo I–Starčevo–Kriş–Körös complex. A shift in all aspects of the flint industry occurred around 5500 cal BC. The distribution network of Balkan flint raw material declined, and there emerged chipped stone industries primarily based on local resources and expedient production. Strong evidence of microlithisation – represented both by cores and tools with small dimensions and by the presence of geometric microliths – is clearly reflected in the morphometric parameters and typological repertoire of the flint industry and can be regarded as a diagnostic feature of the Late Neolithic assemblages. This dichotomy provokes challenging questions about the origin of the transformation – its palaeoenvironmental basis has yet to be proven; its social dimensions are equally unclear.

06-05 The role of Balkan flint in the neolithisation of the western Balkans

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This paper studies the role of the Balkan flint exchange networks in the social life of early migrating farmers, and the nature and significance of these contacts in their expansion into new landscapes. Balkan flint was a distinctive trend of the Early Neolithic communities in Southeast Europe, primarily used for making long blades and tools on blades. It is considered a key element of the Neolithic "package". Its main sources were located along the Meosian Platform in northern Bulgaria.

Artefacts made of Balkan flint occur at most of the Early Neolithic sites in the western Balkans. Recent provenance studies of several geological and archaeological samples from Serbia pointed to Bulgarian sources as a main acquisition zone. To explore the organisation of production and distribution of Balkan flint artefacts across the western Balkans in the Early Neolithic, forty-one lithic assemblages were analysed using the chaîne opératoire method and attribute analysis, and compared using the distribution maps, and exploratory and inferential statistics. The results indicated that the spread of Balkan flint through the western Balkans was a two-step process following two different trajectories. Initially (c.6250-6000 BC), the first farmers brought a small amount of Balkan flint artefacts to the settlements in the southern part of the western Balkans. Once they reached the Danube and the areas north of it (c.6000 BC), the transmission of the complete technological concept of standardised blade production using Balkan flint was achieved.

06-06 Just daily business: Long blades from Lin 3 (Albania) in their wider context

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Albania sits at an important junction regarding the different Neolithic trajectories of southeast Europe. Despite its geographical importance much of its prehistoric record remains undisclosed for the wider scientific circles. The latest work by the Albanian-Swiss EXPLO project at the waterlogged site of Lin 3 has provided new insights into the Neolithic period.

In this context, the lithic assemblage collected during the recent fieldwork at the site has revealed the presence of long blades in highly precise dated contexts. These exceptional artefacts were first examined in detail from multiple angles as individual objects and then within the Lin 3 assemblage, while also considering their technological and contextual attributes in relation to broader lithic trends in Albania.

Until recently, the long blades were considered a special feature of the Eastern Balkans, particularly the Bulgarian region. However, the discoveries at Lin 3 contribute to a growing body of evidence for long blade production in the southern and western Balkans and further afield in Italy. Furthermore, the finds from the southern and western Balkans show a comparably distinct earlier chronology, which calls for a revision of the present interpretation on their origin and spread in southeast Europe. One of the key remaining questions is whether these rare, unusual artefacts have to be considered as prestige object or for the fulfilment of daily tasks? The case of Lin 3 suggests that the latter could have been the norm.

06-07 No Single Way Forward: Rethinking Lithic Technological Strategies in the Early Neolithic Balkans

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The Neolithic of the Balkans is often characterized by distinct cultural developments in its different parts, each with its own material expressions and traditions. However, when it comes to lithic production, even individual regions do not present a uniform picture. Our recent studies reveal a complex mosaic of lithic production strategies, where communities made highly specific choices regarding raw materials, clearly determined production aims, and technological traditions.

This paper presents first-hand evidence from the Early Neolithic sites across modern-day Serbia, Romania, and Greek Macedonia, alongside a reassessment of data from North Macedonia, to evaluate how lithic technological strategies fit into, or challenge, existing narratives of Neolithic transformation. We explore four key aspects of lithic practices: (1) the scale and intensity of production, (2) raw material selection and procurement strategies, (3) integration into wider exchange networks through materials, ready-made products, or know-how transmission, and (4) the role of lithic traditions in shaping local and regional patterns. These aspects reveal that while some communities adhered to conservative, locally bound production systems, others were more closely engaged with external networks, acquiring raw materials and objects produced elsewhere. However, the impact of these imported elements remains uncertain – did they lead to the adoption of new techniques, or were they simply incorporated into existing technological traditions? Additionally, we consider sites that appear surprisingly disengaged from lithic production, questioning how far lithics were central or marginal to daily life in different Neolithic communities.

By synthesizing new case studies with existing literature, we argue that the Early Neolithic Balkans were not just culturally diverse but technologically fragmented, with multiple, sometimes competing strategies shaping lithic assemblages across the region. This variability forces us to reconsider how we interpret lithic evidence in broader models of Neolithisation, moving beyond simplistic narratives of diffusion or regional homogeneity.

06-08 The Social Aspect of Stone Blade Exchange Among the Early Villages in Southeast Europe

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This paper will examine the social aspect of stone blade exchange among the early villages during the Neolithic period in Southeast Europe. Specifically, it focuses on how these exchanges created and maintained social and economic connections among the neolithic communities.

In our discussion, we will explore indicators of blade production, including tool-making techniques, the types of raw materials used, and the movement of these tools among the villages, specifically the movement of Carpathian obsidian, Balkan flint during the early Neolithic and the so-called soft white flint during the Late Neolithic. For the latter, we propose that the newly discovered site called Lluga in Kosovo, which appears to have functioned as a workshop for stone blade production might have been one of the suppliers of white chert blades to sites along the Morava River.

Furthermore, we will discuss the broader social implications of stone blade exchange. Rather than merely fulfilling a supply-demand need, we will investigate how these exchanges may have contributed to maintaining a social cohesion among the Neolithic villages in the region.

06-09 Obsidian economy in Early Neolithic Central Italy: New insights through technological and provenance analysis

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Obsidian provides key evidence of socioeconomic transformations occurred in the central Mediterranean during the early stages of Neolithization, marked by an increased circulation of exogenous materials and the rise of specializations that often led to unequal access to distant resources. Since the beginning of the VI millennium BCE, three main insular obsidian sources (i.e., Lipari, Palmarola, Monte Arci) begin to be exploited in the Central Mediterranean. We present the preliminary results of a research project (CHRONOS) that integrates technological and provenance analyses to explore the modalities of obsidian circulation and its regional and local management.

By examining assemblages from seven Neolithic sites (i.e., Catignano, Colle Cera, Casa Querciolaia, Cala Giovanna, Fornace Cappuccini, La Marmotta, La Scola) through a technological and chaîne opératoire approach, we demonstrate that obsidian was managed differently across sites, reflecting variations in raw material accessibility and the knapping skills involved in its transformation.

Incomplete production sequences indicate that some sites received obsidian as finished products, while others performed locally knapping activities with varying degrees of specialization. These patterns highlight disparities in resource access and the diverse roles of sites within the interaction networks of early farming communities.

06-10 Raw materials, territories and technical productions on the Early Neolithic of north-eastern Iberian Peninsula

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Throughout Pleistocene times in north-eastern Iberia, Palaeolithic communities developed economic practices aimed at procuring raw materials for the production of their lithic tools. These dynamics were perpetuated in such a way that some sources of siliceous rocks were recurrently exploited by these societies for millennia.

With the arrival of the first Neolithic communities in the area and the establishment of a new way of subsistence, we might expect a change in the dynamics of raw material supply or a reformulation of these dynamics through interaction with the last groups of hunter-gatherers.

However, the population gap in this area during the Late Mesolithic meant that the Neolithic groups had to explore all these territories in search of the most suitable raw materials for their technical requirements, resulting in an adaptation based on a mixed model. On the one hand, some raw materials that were almost unheard of in previous chronologies were exploited for the first time, such as Montjuïc jasper from Barcelona. This material was widely used during the Early Neolithic, especially in the Cardial Neolithic. At the same time, and probably as a result of contacts with other Neolithic groups established in neighbouring territories that had adapted to pre-Neolithic traditions, the exploitation of certain raw materials whose diffusion seemed to have been interrupted during the Mesolithic period was restarted. We will review these dynamics within the framework of the technical skills inherent to the Neolithic economy, observing how the exchange networks represent a reinforcement of the Neolithic socio-economic structures.

06-11 Growing bigger: the Early Neolithic flintmining activities at the Casa Montero-Los Cerros mining complex (Madrid, Spain) (6th mill cal ane)

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Flint mines are scarce, but they offer an unique information from the socio-economic point of view. Included in the urbanistic actuations for the so-called Southeast Madrid Development, Los Cerros is a huge extension of 470 ha where abundance of flint and extractive activities are known during centuries. The Los Cerros archaeological interventions imply collaboration between partners. We would like to highlight the importance of the synergy between a private company and the public University that allows the transfer of knowledge from research to economic activity. It is also the place where 20 years ago Casa Montero Neolithic flint mine was discovered. Preventive archaeological works at Los Cerros (Madrid) have brought to light new flint mining areas 1.5 km distant from Casa Montero. Although there is scarce evidence from other chronological periods, the most important mining activity of this site is dated in Early Neolithic (6^{th} mill cal ane). This work presents the preliminary results of the first archaeological interventions in this site. Most of the mining structures are vertical shafts analogue to those from Casa Montero. Nevertheless, different mining extraction methods have been recorded.

06-12 Trypillian Rhomboid Points: a Mesolithic Heritage or a Neolithic innovation?

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The Early Trypillian expansion (47-45 centuries BCE) rapidly covered the expanses of Moldova and Central Ukraine. It was accompanied by the spread of a special type of projectiles - rhomboid points. This geometric microlith is formed by oblique truncation with a micro-burin facet at one end and subparallel truncation with abrupt retouch at the other end of a bladelet. These products are known in large series (up to several dozen from one complex) from Early Trypillian settlements of virtually their entire range. The fact that such an expressive type of microlith was not recognised in time once again points to the demonstrative neglect of the examination of flint tools during studies of the 'ceramic' periods. Such rhomboids are also known from the sites of ceramic fishers-hunters-gatherers. But are they a contribution of the latter to the Early Trypillian toolkit? Or, on the contrary, is it the early Trypillian industry that is the source of their distribution outside the classical early agricultural settlements?

06-13 Technological and functional news from Adige Valley between late Mesolithic and early Neolithic

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The transition from the last Mesolithic hunter-gatherer groups to the first Neolithic communities represents a significant change in the relationship between humankind and the environment, which is mirrored in many technical and productive variations. However, it is nowadays a shared idea that these changes did not take place in the same way everywhere; on the contrary, in different areas of Europe this transition occurred at different times with specificities linked to climatic-environmental differences and intercultural interactions. In this regard, the Adige Valley represents a peculiar case study; in fact, it is a structurally well-determined territory in which the transition is documented in various archaeological sites, which represent the reference stratigraphies of this period in the Italian Alpine area.

In this research we present a comparison of two sites documenting the transition between the Mesolithic and Neolithic, both located in the Adige Valley in Trento province, and situated a few kilometres from each other: the Gaban rock-shelter (left side of the Adige river, ~270m above sea level and ~80m above the valley floor) and the open-air site of La Vela VII (right side of the Adige river, ~190m above sea level and ~10m above the valley floor). Starting from a re-examination of the stratigraphic context, new technological and functional data from the lithic and pottery industries allow us to expand the discussion on cultural and behavioural changes during the Neolithisation process. In the lithic industries, we highlight continuities linked to subsistence activities and some adaptations and/or changes in the production processes. The appearance of pottery represents an innovation, and its production by different raw materials throughout the early Neolithic attests a wide and increasing knowledge of the surrounding geological sources by the communities who inhabited the valley. Lastly, the comparison of the two sites' locations, between the Adige valley floor and the piedmont area, with the new data here presented allows us to discuss both the territorial exploitation strategies on regional scale and the wider chrono-cultural context of north-eastern Italy.

06-14 Living in the LBK Village of Těšetice-Kyjovice (Czech Republic): A Multi-Proxy Approach to Socio-Technical Organization

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The Early Neolithic site of Těšetice-Kyjovice, located in South Moravia (Czech Republic), reveals a remarkable LBK (Linearbandkeramik) village comprising approximately 100 houses. Long-term excavations conducted by Masaryk University (Brno, Czech Republic) have uncovered 23 of these houses, offering a unique opportunity to investigate the socio-technical dynamics of this community. As part of a French-Czech collaborative research project (IEA TKLit, CNRS, 2022–2024), we have resumed an integrative study of the archaeological material, enhanced by new technological insights.

Our analysis focuses on a multi-proxy approach, examining lithic and macrolithic tools, osseous artefacts, pottery styles, and ceramic production technologies. By synthesizing these datasets, we aim to identify the socio-technical identities of the village's households. Specifically, we investigate whether the housing units display homogeneity or diversity in their material culture and technological practices. In our presentation, we will consider whether these households are functionally self-contained or if they reflect interdependence and cooperation within the broader community.

Through comparative analysis, we will explore patterns of similarity and divergence across different material categories, shedding light on how socio-technical organization shaped daily life in this LBK village. The cross-material perspective we employ not only reconstructs the socio-economic networks within Těšetice-Kyjovice but also situates this community within broader discussions of the first farmer's settlement organization in Central Europe. Ultimately, our findings will contribute to refining existing models of LBK socio-technical systems, offering new insights into the complexities of LBK household and community interactions.

06-15 Innovations in the Early Neolithic bone technology: the case study of Nova Nadezhda (eastern Bulgaria)

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Changes in subsistence economy that were introduced with the Neolithic way of life, also included and influenced major changes in technology. Some technologies were introduced for the first time, such as ceramic technology, while others, such as lithic or bone technologies, that had been rather important in earlier periods, were now adapted to major changes in everyday lives. The Early Neolithic bone technology in some areas of southeastern Europe shows certain traits that may be characterised as the Mesolithic traditions, but also includes some major changes, related to the new lifestyles, changes in economy and everyday activities – bones from domestic animals now became the major raw materials, diverse tools for small crafts, for agricultural activities, etc., are now predominant, while hunting implements decreased. Among these innovations, some may be characterised as influence from Southwest Asia – in particular, the appearance of spatula-spoons, carefully crafted from *Bos* metapodial bones; tools from sheep/goat tibiae; specific ornaments produced from long bones, etc. While some of these Southwest Asian objects were adopted without changes, others were locally adapted and modified. This presentation will discuss the Southwest Asian influence as demonstrated in the bone industry of Nova Nadezhda, an early sixth millennium BC site in Upper Thrace (southeastern Bulgaria) that has been investigated since 2013.

06-16 Palaeoproteomic approaches to the study of Neolithic bone tool industries; the case of Svinjarička Čuka (Serbia)

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Post-depositional fragmentation and anthropogenic modifications often present challenges to the study of bone artifacts. One of the main obstacles is that these factors hinder the taxonomic determination of the raw material used. Zooarchaeology by Mass Spectrometry (ZooMS), or collagen peptide mass fingerprinting, provides an effective and quick solution for assigning robust taxonomic identifications at the family, genus, and even species, level to highly fragmented or modified unidentified osseous materials. This innovative approach complements and refines the research findings of traditional zooarchaeological approaches.

In this study, we explore the potential of non-invasive or minimally destructive ZooMS techniques to investigate the Neolithic bone tool industry from Svinjarička Čuka in southern Serbia, a key site in the Morava River valley. Using ZooMS, we provide taxonomic identifications for a selected assemblage of Neolithic unidentifiable bone tools and a unique figurine recovered in the Starčevo-Neolithic settlement. Our approach will contribute to the understanding of the Neolithic bone tool production processes in the region, shedding light on raw material selection and manufacture strategies, as well as culturally mediated practices associated with the bone tool industries in the early to middle Neolithic times. On a broader level, the results will shed light on resource management and human-environment interactions during the early stages of Neolithisation in the region and its spread across the Balkans.

06-17 Bone industry from the site of Ždrilo (Croatia): preliminary results of the technological and use wear analyses

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Animal skeletal elements were widely used as raw materials in the Early Neolithic in the Adriatic area, however, they are still insufficiently studied. Recent excavations at the cave site of Ždrilo near Rovanjska (Croatia) yielded a small assemblage of osseous items, that provided the basis for the technological and use wear analyses. Ždrilo is a complex speleological structure, located on the eastern side of Novigradsko ždrilo, a sea strait that connects Novigradsko more in the south with Velebitski kanal in the north. The traces of the occupation from the Early Neolithic period were discovered in the 20th century in this cave, and recent renewed excavations revealed traces from the Palaeolithic period as well. From the excavation campaign carried out in 2023, among other findings, a small assemblage of osseous tools was discovered. In this paper will be presented their technological and typological traits. Furthermore, a series of experiments was conducted to test the hypotheses on their possible modes of use, that suggest they were used for processing various organic materials, but also possible use on clay, i.e., for pottery production.

06-18 Taxonomic selection strategies in the production of Early Neolithic bone objects, NE Iberian Peninsula

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Taxonomic identifications of bone objects, notably through Zooarchaeology by Mass Spectrometry (ZooMS) and minimally invasive sampling methods, have especially in the past 10 years enhanced our understanding of prehistoric bone object manufacture. This study expands on previous research by analysing around 700 bone objects, from which over 400 were successfully taxonomically determined through ZooMS and morphological measures, from four Early Neolithic contexts, and two Late Upper Palaeolithic sites as outliers, located in the northeastern Iberian Peninsula. Additionally, non-worked bones representing different fragmentary states from the respective sites, both assessed morphologically (data from previous studies) and by ZooMS (from this study, have been included in order to establish a faunal baseline. Ultimately, this research aimed to elucidate the taxonomic selection strategies employed in bone object production on a spatiotemporal scale. It was found that local factors such as resource availability, ecological conditions, and cultural preferences played significant roles in the selection strategies involved in bone object production. Despite changes in subsistence practices from the Magdelenian to the Early Neolithic, the persistent use of Cervidae in various bone object types suggests its ongoing importance. This variability, along with the fluctuating use of taxa like Caprinae and Bos sp. during the Early Neolithic, points to a complex relationship between resource availability, the physical properties of animals' skeletal elements, and cultural norms shaped by the specific contexts of each site and the broader prehistoric landscape.

06-19 The development of the bone industry in the Neolithic — Eneolithic of the Middle Don river

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Comprehensive archaeological research of Neolithic and Eneolithic sites on the Middle Don river began in the second half of the 60s of the XX century. At the moment, 20 sites are known, two of them are funerary. Artefacts made of solid organic materials have been preserved on 6 of them. The focus of the report will be on the traceological analysis of bone and antler items from two settlements: Cherkasskaya-5 (Early Neolithic; 1/4-VI mill. BC) and Cherkasskaya-3 (Neolithic-Eneolithic; VI-IV mill. BC). Absolute dating and ceramic material from Cherkasskaya-5 show the proximity of Early Neolithic sites from the Lower Volga (Northern Caspian Region), where tools made of bone and antler were assigned a specific functional niche: the use of bone points for knitting and weaving from plant materials, the creation of ceramic vessels, processing hides and house building. At the same time, hunting and fishing gear was not made from bone and antler, and the presence of a large number of chalk sinkers at the Cherkesskaya-5 site indicates net fishing (direct date for organic strapping from the sinker is 6987±28 BP, or 5980-5778 cal BC (SUERC-86147)). Later, during the Middle to Late Neolithic period, the transition to the Eneolithic, bone manufacturing traditions changed. This is probably due to the increasing complexity of production in crops where a productive economy (cattle breeding) is beginning to develop. Previous evidence of net fishing (sinkers made of stone) has not been found, but specific hunting and fishing tools (harpoon and spear heads, fish hooks), jewelry sets made of boar tusks and items made of tubular bird bones are beginning to accompany status burials. Along with changes in the economic orientation of the population, social relations are also changing, as can be seen from the materials of the underground burial grounds. From the 2/4-V mill. BC, bones of small cattle appeared in settlements (Cherkasskaya-3, middle layer) and metal ornaments in burial grounds (Blue Krynitsa), which marks the beginning of a new archaeological era - the Eneolithic.

06-20 Stone, clay or earth: Technological choice and Early Neolithic ovens from the site of Lepenski Vir

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Even though the Early Neolithic material at the site of Lepenski Vir shows characteristics of the Starčevo culture, there are certain significant elements which are atypical for the Early Neolithic communities of the Central Balkans. One of the atypical elements are the ovens. In the Early Neolithic layers at the site of Lepenski Vir, a total of five ovens inside pit-dwellings were found. Nevertheless, three different types can be distinguished – a dug-in oven, a free-standing oven with floor and dome parts made of stone slabs, and a free-standing oven with stone slab foundation under the clay floor and a dome of an unknown material. The use of stone as a material for the construction of ovens, is yet unknown in the Early Neolithic of the Central Balkans. In the Starčevo culture, ovens were usually features dug into the side of pit-dwellings and not free-standing fire installations, yet only one out of the five ovens from Lepenski Vir showed those characteristics. Therefore, at the site of Lepenski Vir we can see, not only different types of ovens, but also different materials and building techniques used in their construction. The aim of this presentation is to explore functional, social and economic factors that influenced technological choices regarding the ovens at the site of Lepenski Vir.

06-21 Exploitation, Identification and circulation of Gargano chert in the Adriatic region during the Neolithic

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The Gargano Promontory (Apulia) is characterised by an important mining network exploited from the Early Neolithic through the Early Bronze Age. The presence of high-quality chert exploited over three millennia has led researchers to underline the fundamental role of the Gargano chert supply in the central-northern Mediterranean. Primary and secondary chert sources are available on both sides of the central Adriatic Sea. Recent petrographic and geochemical characterisation of the chert mines of the Gargano Promontory and the nodules of Middle Dalmatia shows that they are well-distinguishable and gives a reference database for circulation studies. Dalmatian artefacts from five Neolithic contexts have been analysed and sourced. To date, it has been determined that many Dalmatian artefacts were made from Gargano chert, suggesting the regional importance of the mining complex of this area. The archaeological assumption is therefore that there were potential routes across the Adriatic making use of a series of stopovers on some of the islands or small archipelagos situated on both sides of the sea (Tremiti, Pianosa, Palagruža, Sušac and Korčula). This is evidenced in particular by Gargano chert blanks and tools from several sites on Sušac. Whilst the identification of single mines on the Gargano Promontory has become possible using a multi-factor analytical protocol, the various steps of production, distribution and consumption are still poorly understood. Blanks and preforms, in chronologically distinct shapes, are known from sites close to the mines and are believed to form the backbone of the distribution processes, as they also appear in consumer sites. However, the contact and distribution networks, as well as the cultural and techno-economic realities in action (organisation of mining, transport, navigation, exchange systems, dependencies…), are complex topics and subjects of intense investigations. The paper aims to present some of the current debates and models.

06-22 Diverging and converging traditions: Identifying early Neolithic communication networks in Thrace through pottery analysis

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This presentation examines the intricate communication networks and physical and cultural interactions among early Neolithic communities inhabiting Thrace in the first half of the 6th millennium BC, as reflected in two key ceramic categories: the red-slipped and often white-painted pottery, and the dark burnished pottery.

The analysis highlights distinct preferences and morphological features, identifying at least two groups within the red-slip ceramic category which might belong to two distinct local communication networks within the region. These groups illustrate the movement of cultural and technological traditions along established communication routes, facilitating the exchange of ideas and materials.

The presentation also revisits the role of dark burnished pottery, recognized as a chronological marker for some Neolithic settlements in Thrace. Evidence indicates that in certain settlements in Upper Thrace, this pottery appeared earlier and in larger quantities than previously assumed. Its prominence alongside red-slipped and white-painted pottery suggests an active exchange of technological know-how and perhaps even materials across interconnected communities.

The middle and lower reaches of the Maritsa River and its watershed are identified as key contact zones where two distinct ceramic traditions converged. These regions acted as hubs within broader communication networks, facilitating the interaction and integration of traditions moving from different directions into the heart of Thrace. This dynamic interplay highlights the pivotal role of communication networks in shaping early Neolithic ceramic production and cultural landscapes.

06-23 Early Neolithic colour palettes decoded by painted pottery analysis: examples from the Eastern Balkans

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Variation within methods of emerging Balkan pottery production in the Early Neolithic was much greater than previously assumed, and clearly demonstrates dynamic local developments in the newly developed craft. The main technological components, including specific colouring agents used for surface treatment and decoration of the vessels, encode intentional acts in the process of pottery making, as well as highlighting essential aspects of procurement strategies and use of raw materials.

This paper explores the beginnings and developments of production of the typical, chronologically sensitive, locally specific and visually effective painted ceramic vessels from Early Neolithic settlements of key importance, located in the region of the Eastern Balkans, and present-day Bulgaria in particular. The main focus is on an essential technological component closely associated with the very beginning of pottery production at several Early Neolithic sites (end of 7th-beginning of 6th mill BC) in North and South Bulgaria.

These components are considered within the broader context of Neolithization since, particularly within the ceramic technology domain, the continuation of traditional practices and the gradual development of innovation strategies are both indicative of the modes of adaptation and the range of creativity of certain Neolithic communities.

06-24 A closer look – Petrographic analysis on the early neolithic ceramic of the site Movila lui Deciov

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This presentation investigates the technological development of ceramic production at the early Neolithic site of Movila lui Deciov through an interdisciplinary approach. The site is located in the Banat region of Romania, near the town of Dudeștii Vechi, and dates to the 6th millennium cal. BC. The primary objective of this research is to examine technological advancements and potential adaptations in ceramic production during the site's occupation, with particular focus on differences between Phase 1 (~5760-5740 cal. BC.) and Phase 2 (~5710-5620 cal. BC.), which represent the earliest phases of habitation.

The ceramic assemblage was first subjected to macroscopic analysis to identify macro traces related to crafting techniques. This was further complemented by petrographic analysis of 51 ceramic samples, representing a broad spectrum of vessel types from both occupation phases. Additionally, a small number of geological samples were collected for comparative analysis.

This study seeks to provide a comprehensive understanding of ceramic diversity and its technological evolution at Movila lui Deciov, contextualising these findings within the broader archaeological framework of the site and the early Neolithic period in the Banat region.

06-25 Breaking Ground: Insights into Dobrogea's Earliest Neolithic Site through Ceramic Technology

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Recent archaeological investigations at the Palazu Mare-Malu Alb site in Constanța County, Romania, have revealed transformative insights into the earliest Neolithic communities along the western Black Sea coast. These findings challenge prior assumptions and highlight the distinctiveness of the early inhabitants' cultural and technological practices. The identified "Pre-Hamangia culture" marks the initial occupation of the plateau, preceding the Hamangia culture, known for its Middle and Late Neolithic presence in the region.

A detailed analysis of the ceramic assemblage sheds light on the technological and typological traditions of these communities, spanning approximately 300–400 years during the latter half of the 6th millennium BC. This study reveals a lack of direct continuity between the Pre-Hamangia and Hamangia cultural groups, despite some shared manufacturing techniques that reflect broader Neolithic traditions rather than specific cultural ties.

However, significant technological distinctions were observed, including differences in clay sources, tempering agents, surface treatment, and firing techniques. Typological variation further supports the cultural separation, with divergent vessel forms and decorations. The Pre-Hamangia ceramics exhibit strong southern influences, aligning with the broader dark-colored wares cultural groups, but also with influences from Karanovo III tradition and late impressed ware horizon. In contrast, Hamangia ceramics reveal technological connections to continental Neolithic traditions from the northern Balkans.

These findings underscore the dynamic nature of cultural interactions and technological exchanges during the Neolithic in southeastern Europe, providing new perspectives on the complexities of early human settlement along the western Black Sea coast.

06-26 Origins and spread of impressed ceramics in the Balkan Peninsula

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It is known that the oldest Neolithic on the Balkan Peninsula is characterised by painted ceramics, found in the cultures of Sesklo, Starčevo, Anzabegovo-Vršnik, Kovačevo, Karanovo I, etc, from around 6500 BCE. However, the Adriatic coastline bears witness to very different pottery, decorated with impressions of punches, fingernails or shells. This Neolithic facies is known as 'impresso' or 'impresso-cardial'. On the Mediterranean coast of France, there is an initial period known as 'impressa', followed by a culture known as 'cardiale'. Similarly, the dwellings known on the Adriatic coast differ markedly from the classic quadrangular constructions of the interior of the peninsula. Such a marked difference between the interior and the west of the Balkan peninsula raises questions. Impressed wares have sometimes been traced as far back as the Byblos neolithic site in Lebanon. Nevertheless, we note that in the Balkan sites with painted ceramics, we also find a small percentage of printed ceramics, as at Nea Nikomedea in Greece or Kovačevo in south Bulgaria, while Thessaly has a purely printed episode, with the culture known as Preseskło. This paper will therefore take stock of what we know about Balkan impressed ceramics, and propose some hypotheses about their genesis and spread (Oral presentation).

06-27 The Ideas We Take With Us: The Crafting Choices of Neolithic Potters in North Macedonia

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North Macedonia plays a crucial role in understanding the spread and cultural expression of migrating agricultural groups during the Neolithic, connecting pioneer zones in Anatolia and the Aegean to Southern and Central Europe. Archaeological evidence indicates the establishment of settlements by multiple agricultural groups, often defined by settlement types and pottery styles which have been used to establish cultural and chronological boundaries. At the same time, it has long been recognised that there are striking visual similarities in pottery styles within these and neighbouring groups, commonly interpreted as evidence for spheres of contact and influence between different populations.

Whilst pottery has been fundamental for defining such boundaries, we do not have detailed information about the practices and materials used in pottery making in North Macedonia, something which might offer additional insights into the meaning behind the presence or absence of types, and their relationship to defined chrono-cultural groups. This paper will present results of an integrated analytical programme utilising traditional typological and macroscopic methods with thin section petrography and SEM-EDS, to investigate pottery from Amzabegovo, Tumba Madžari, Orniche-Kosturino, and Cocev Kamen. Examination of the chaîne opératoire for a variety of pottery types including painted, monochrome, and incised/impresso wares, has demonstrated the presence of shared and individualistic crafting behaviours related to forming, firing and raw materials within and between sites. These findings suggest adaptations within broader shared crafting concepts and point to technical practices that span cultural and geographical boundaries, with connections to neighbouring areas like Serbia, Bulgaria, and Anatolia.

06-28 Shaping Through Ceramics: New Insights into Pottery Production and Social Dynamics in Northeast Italy (6th–5th Millennia cal. BCE)

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Our understanding of the Early Neolithic period in northern Italy (c. 5400-4800 cal. BCE) is based on pottery typological classifications that have traditionally shaped our understanding of cultural manifestations and their developments. The Fiorano material culture, for example, which spread from Emilia Romagna to the Veneto region, is one of the most significant phenomena of this period.
This paper presents the initial findings of a PhD project that integrates traditional typological methods with archaeometric analyses and experimental studies. Over 100 samples from key sites in the western Veneto plain (north-eastern Italy), typologically related to the Fiorano material culture, were petrographically analysed, revealing various tempering strategies, including the use of bone temper.
While bone temper has been recognised in some Neolithic European contexts, its presence in Early Neolithic pottery from this region is a new finding, raising questions about both its functional purpose and/or its symbolic significance, as well as the exchange of technological knowledge among communities in the Veneto plain and their external connections.
By employing an interdisciplinary approach, this study offers fresh and significant insights into ceramic production techniques, with a particular focus on bone tempering as a manufacturing strategy. These insights could reshape our understanding of the behaviours and social dynamics of Early Neolithic communities in northeastern Italy from the second half of the 6th millennium to the beginning of the 5th millennium cal. BCE and represents an important contribution to the study of Early Neolithic in northern Italy and the neolithisation of the Po Valley.

06-29 Pottery innovations in the onset of farming in Iberia: an overview

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Technological innovations and social changes are two main aspects with crucial relevance for past societies. Throughout the History of Humanity, many technological innovations have motivated new configurations of human groups and have influenced their way of social articulation. Recognize the social context, the chronology and the implications of these technological changes are crucial aspects in our understanding of the past societies.

Pottery is one of the technological innovations that has been traditionally linked to the introduction of farming and livestock in South Europe. Technological choices and manufacturing processes are strongly related with environmental, social and cultural constraints. These research questions are clearly correlated with the social interest in the reconstruction of our past.

In this presentation, we address the modifications in the role of pottery technology following the introduction of food production and late consolidation in the Atlantic coast of the Iberian Peninsula and possible influence areas (ca. 6000-3000 cal BC). Considering an interdisciplinary approach combining archaeological, mineralogical and chemical information from a robust corpus of data, we point out the main technological tendencies in the earliest pottery evidence in Iberia.

06-30 Diachronic persistence's and changes during the Neolithic in South Iberian Peninsula (mid-6th to early 3rd millennium BCE): new advances through the angle of ceramic technological practices

Javier Cámara Manzaneda[1], María Dolores Camalich Massieu[1], Dimas Martín-Socas[1], Salvador Pardo Gordó[1], José Luis Caro Herrero[2]

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The Neolithisation of the South Iberian Peninsula is interrelated with the Neolithic expansion from the West-Central Mediterranean and occurred almost simultaneously with the North-African area during the middle 6th millennium BCE. Since its spread in this vast region, the Neolithic has been marked by an empirical diversity given the sharp geographical contrasts and the transfer and development of diverse cultural traditions. A clear example of this regards to the first pottery productions, with decorative schemes framed within the Impresso-Cardial complex, but also with southern idiosyncratic decorations (red slip known as Almagra). Subsistence strategies, pottery traits and other handicrafts suffered significant changes with the advance to the Late Neolithic during the 5th millennium BCE, with a radiocarbon breakup of about 400 years which do not support a transitory period with the Early Neolithic. From 4200 BCE onwards the farming system was completely settled, and more sedentary settlements and new normalised types of collective burials appeared.

This paper focuses on characterising whether these significant changes that occurred between the Early-Late Neolithic were also reflected in the sphere of pottery technological practices. Starting from these premises, this paper presents the technological analysis of five south Iberian sites by integrating manufacturing traces and micro-CT analyses. The scope is to examine if widespread ceramic traditions in the Western Mediterranean, such as the patchwork technology, prevailed in this region during the Early Neolithic, and to recognise which ones survived and emerged during the Late Neolithic, assessing the sociological impact of these persistence's and technological changes.

06-31 One-Note Culture - Variability of Early Kuyavian Farming Communities through the Lens of Pottery Technology and Use

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The first Central European farmers of the LBK left behind an astonishingly homogeneous material culture, including pottery. Spherical vessels, both fine and coarse predominate throughout its range. Their rich decoration has formed the basis of chronological and regional divisions, especially detailed in the western part of this culture. The eastern part is dominated by the Music-Note pottery, which in many regions, including Kuyavia in the Polish Lowlands, continues to the end of this culture. The pottery style there is surprisingly homogeneous, although some differences between the groups inhabiting the region can be presumed from variations in economy or settlement. The issue of the homogeneity of the LBK communities in Kuyavia and their interrelationships is the subject of a new project funded by the Polish National Science Centre in Poland ‘One-note culture? Tracing sociocultural diversity and dynamics of the first farming communities in Kuyavia through pottery production and use’ which will focus pottery technology and function. Our presentation outlines the project's main objectives, presenting the current state of research and the resulting research questions as well as the very first results of the ongoing analyses. Studies are financially supported by the National Science Centre, Poland, OPUS 26 (project no. 2023/51/B/HS3/00207).

06-32 Early farmer interactions: rethinking "non-LBK" ceramic assemblages in the early Neolithic of central-western Europe through the reconstruction of Limburg pottery manufacture and uses

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Although recent palaeogenomic studies suggest a relatively limited contribution of hunter-gatherer groups to the agro-pastoral communities of the early Neolithic in central-western Europe (LBK), the question of the mechanisms of interaction between 'local' Mesolithic populations and 'migrant' LBK communities remains a central debate. In the western distribution area of the LBK, the pottery known as La Hoguette and Limburg pottery have been emblematic of this debate since they were identified in the 1980s in LBK pits in western Germany, Dutch Limburg, central Belgium and northern France. These vessels have also been sporadically discovered outside the LBK distribution area, in a variety of contexts: at a few Late Mesolithic sites, possibly in the epicardial levels of the Gazel site (Occitania, France), but also in isolated contexts, outside the known Early Neolithic settlement areas.

Due to their morphological and technological characteristics (large, thick-rimmed bowls, specific decoration and bone temper), which distinguish them from typical LBK vessels, some researchers argue that these vases were made by "*ceramised*" hunter-gatherers, while other authors suggest that they represent a functional category of LBK pottery. Based on the recent study of a large assemblage of Limburg vessels excavated from LBK sites in the Aisne Valley (Picardy, France), this presentation aims to contribute to this debate using the concept of vessel biography. The aim is to reconstruct the life cycles of these specific vessels from a relational perspective (communities of practice, learning networks, transfers) in order to propose a new interpretative model for these artefacts.

07 Figurative Expressions and Socio-Symbolism

Session co-organizers: Valeska Becker[1] & Esther López-Montalvo[2]

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Like no other prehistoric period, the emergence and spread of the agro-pastoral way of life involved new relationships with the environment and deep social transformations. Changes were also expressed in the symbolic sphere. The blossoming of new social codes was translated into novel media and forms of figurative expression, coupled with a renewed socio-symbolic perception and interpretation of the landscape and natural resources.

During the Neolithic, new themes, representation techniques, and media emerged. These images, characterized by naturalistic and schematic figurative styles, emphasize human and animal forms to form narrative components. Thus, they provide valuable insights into economic activities, social organization, and territorial structuring of early farming societies. We may consider figurative expressions as a gateway between the material and the symbolic and an invaluable source for the study of Neolithic populations.

Therefore, the session aims to highlight the potential of parietal and portable Neolithic art, paying special attention to the analysis, contextualization and dating of these images. Presentations may encompass the chaîne opératoire of parietal or portable art, techniques and raw materials, stylistic analysis of motifs, or an archaeo-anthropological approach. Research dealing with the use, possible interpretations or the abandonment of figurative expressions is likewise welcome. Territorial approaches to Neolithic rock art, linked to dynamics of landscape occupation and exploitation, will be also discussed, as well as studies of circulation and cultural boundaries of portable art at a regional or European scale. Finally, this session also focuses on the dating methods of open-air or cave parietal contexts, as well as on the taphonomic studies of these rock surfaces.

07-01 Neolithic figurines and miniatures: (un)reality, correlations, divergences, narratives

Christina Marangou

Neolithic figurative forms occur on different scales, from microminiatures to the almost (super)natural. Imitated living beings, human or non-human, artefacts and structures, possibly including allusions to the surrounding environment, may coexist in an ensemble, but may also not have been used as a set. Furthermore, in spite of predominant trends in the choice and representation of subjects, exceptional, hybrid, even non-existent beings have occasionally been reproduced, sometimes resulting in counter-nature images. All the themes and specific contexts were neither necessarily interconnected, nor inevitably forming or/and comprising miniaturized sets.

Moreover, it could be implied either that a missing theme/prototype was absent in reality, or that, deliberately, some originals had not been incarnated in miniature; both presence and absence may have been significant. Besides, some figurines or miniatures may not have represented physical reality, but rather a materialization of fiction. This would therefore suggest that images may have had their own world, which may be different than the real one.

Perceptions and readings of images, based on still existing material evidence and contextual information, often lacking, may be considered in the framework of research hypotheses within social anthropological perspectives. The paper considers examples of Neolithic material, mainly from Greece and neighbouring regions, attempting possible directions towards interpretation of variability, correlations, presences and absences in the complex figurative expressions embodied by Neolithic symbolic artefacts, in an archaeo-anthropological approach.

07-02 Fragments as a unit of analysis for early Neolithic figurines

Bisserka Gaydarska[1], John Chapman[2]

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Every researcher studying samples of Balkan Early Neolithic fired clay figurines will encounter the same phenomenon – a high proportion of items are broken. And yet our embedded art-historical tradition leads to the preferential publication of whole figurines. Our proposal is to give fragments their due and make the figurine fragment the unit of analysis. This is not just about taking fragments seriously, nor even about a pragmatic approach to the way that most figurines are deposited. What is important here is the materiality of personhood – the ways that objects contribute to the creation of persons. Whether figurines are deposited whole or incomplete provides insights about the ubiquitous tension between dividuality and individuality. It also highlights the performance of actual fragmentation before deposition, whether casual or elaborate, in more 'public' or more 'private' places. This a relational approach, focusing as much on absence (missing fragments) as on presence and the implied emotional links between places. By contrast, complete examples bringing an integrative sense to social practices are so rare as to requires an explanation.

We have investigated a representative sample of Early and Middle Neolithic (6th millennium cal BC) sites from all parts of Bulgaria. However, there are currently very few examples of completely excavated Early Neolithic sites with a large figurine sample. This restricts the inferences we can draw about missing fragments and where they were deposited. But, even on partially excavated sites, we can discuss the preferential deposition of specific body parts (especially heads), the significance of contexts of deposition and the association of figurines with other objects. Even more general inferences concern the relations of figurine fragments, and especially body part selection, to site types (tells vs. flat sites) and Early Neolithic phases. Are there recurrent examples of site types / phases without figurine deposition?

07-03 Breaking with Tradition: on the disappearance of figurative representations in Central Europe during the Middle Neolithic

Rebecca Bristow[1]

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At the start of the Middle Neolithic (5000 BCE), as the central-European Linear Pottery Culture dissolved into smaller cultural groups, the traditional making of clay figurative representations was either transformed or radically abandoned. For thousands of years, these figurines and vessels representing humans and animals had been a hallmark of Early Neolithic lifestyle. They were found in hundreds in Southeastern Europe during the 6th millennium BCE and continued to be produced as the Neolithic reached Central Europe, although in smaller numbers. By the start of the Middle Neolithic, however, clay figurative representations disappeared from most of Central Europe. This dissolution of a thousand-year-old figurative tradition could be tied to a shift within communal practices during the Middle Neolithic, as well as a transformation of figuration through a common stylised motif.

07-04 Early Neolithic anthropomorphic figurines made of daub, their function and symbolism

Małgorzata Grębska-Kulow[1]

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Anthropomorphic figurines are a distinctive feature of prehistoric cultures in the Eastern Mediterranean region. These figurines are crafted from diverse materials, predominantly clay, though stone (marble), bone, and maybe wood. Their iconography varies, giving rise to a plethora of theories regarding their purpose. A notable exception to this is a small group of anthropomorphic figurines discovered in South-western Bulgaria, which differ from this characteristic. These figurines represent anthropomorphic heads or masks, and less frequently whole bodies made of daub, a material commonly utilised in the construction of dwellings. The heads were permanently attached to the internal wooden structure of houses and bear their clear impressions. The eyes in some examples appear to have been incrusted, and the outer surface was covered with white or cream paint. Such figurines have been identified in a several Early Neolithic (6200-5460BC) settlements in South-western Bulgaria, including Balgarchevo, Kovachevo and Ilindentsi, but also in Madzhari, The Republic of North Macedonia. They offer insight into the cult practices of the period, with particular emphasis on in-door rituals and the potential association with funerary traditions. The anthropomorphic figurines made of daub provide a significant contribution to the study of cult practices during the Early Neolithic in the Eastern Mediterranean.

07-05 Visual and contextual analysis of Neolithic anthropomorphic clay figurines along the southern reaches of the Tisza River

Kata Furholt[1], Ildiko Medović[2], Martin Furholt[1]

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In this paper, we will focus on the visual and contextual analysis of the Neolithic anthropomorphic figurines to study how these clay objects related to potential group identities along the southern reaches of the Tisza River. A large number of anthropomorphic clay figures are known during the entire Neolithic period (6100-4500 BCE) along the Tisza River in present-day Hungary and Serbia. In the context of Starčevo-Körös, people increasingly use clay in multiple ways, for instance, forming vessels for everyday use, making wattle-daub structure houses, and creating symbolic and artistic objects such as anthropomorphic and zoomorphic figurines. The vast majority of them depicted the female body highlighting attention to the lower body section. In the context of the later LBK, communities created simplified and more schematic figures, which were presented on a basis of a flat rectangular block-like form, and mask-like triangle face applications provided them with a schematic connection with the human form. At the same time, face decoration was implemented on vessels and, in this way, humanised everyday objects. The emergence of these Alföld LBK (ALPC) figurative representations is more apparent in the middle and upper Tisza region. The Tisza and Vinča communities provided different figures than those found in Starčevo-Körös and ALPC contexts. With the new artistic expression of sitting human figures on chairs or thrones, human figures and vessel combinations, we can observe a wide scale of human depiction from realistic to schematic representation. Several clay figures holding typical Tisza and Vinča pottery style decorations and particular symbols can be seen as deliberate expressions of the group identity

07-06 The cult of the horse and bull in the Neolithic of the steppe and forest-steppe Volga region

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The presence of horse and bull figurines among the Neolithic and Eneolithic populations of the steppe and forest-steppe regions of the Volga is interpreted as one of the indicators of the domestication of these animals. According to researchers, the placement of these figurines in altars suggests the significant role of horses and bulls in the economic life of the people. To date, 10 bone artifacts depicting horses or bulls have been found in the region of interest. They belong to a wide chronological range from 5600 BC to 4900 BC. In the steppe Volga, three horse figurines were discovered at the Neolithic site of Varfolomeyevskaya, and one at the Lipovy Ovrag burial site. In the forest-steppe part of the Volga, three horse figurines were found at the Vilovatovskoye settlement and at the Syyezzhensky burial site. Two bull images were also discovered at the latter site. Similar figurines have been found in materials from the Mariupol cultural-historical region.

Thanks to recent research in the Northern Caspian region, another horse figurine has been found at the late Neolithic site of Taskuduk. The ornamentation on the surface of this item links it to bone artifacts from the Varfolomeyevskaya site. A complex geometric pattern is carved on its front side. Similar compositions are found in Central Asia and the Balkans.

Analysis of the faunal remains from the Neolithic and Eneolithic complexes of the steppe Volga has shown the absence of domesticated species of horses and bulls. The first domesticated species in the region is the sheep. The presence of horse and bull images may be explained by the high importance of these animals in hunting activities.

07-07 From monumental bulls to portable motifs: transformation of images in Late Neolithic Central Anatolia

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Images of bulls, and in particular, bucrania are well- documented in Neolithic Europe, from the Balkans to Sardinia. My paper examines this iconographic motif from an Anatolian perspective, emphasizing the significant interconnections between Anatolian and European imagery during the Late Neolithic. Genomic and archaeological evidence has established Central Anatolia as a core area for Neolithic expansion into Europe.

In Central Anatolia, best exemplified perhaps at the site of Çatalhöyük, this period witnessed a profound transformation of imagery, characterized by the abandonment of figurative wall paintings and cattle-horn installations inside the houses. Recent research by Adam Mickiewicz University revealed some novel practices involving bucrania at the very end of settlement's occupation. Notably, for the first time, bucrania appear in a funerary context.

This paper explores the persistence of the bull motif in the Late/ post- Neolithic world, namely its presence in new, small portable forms, within new contexts. In addition to scrutinizing the evidence from Çatalhöyük, I will examine its appearance on vessels at Late Neolithic/ Early Chalcolithic sites in the Lake District and Cappadocia. This widespread presence of the bucranium motif underscores its importance in shaping the cultural and symbolic connections between Anatolia and Europe during this time.

07-08 Unveiling Social Structures within the Iberian Neolithization Process: Insights from Human depictions in Spanish Levantine Rock Art

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In the Iberian Mediterranean Basin, the Levantine Rock Art paintings portray a variety of scenes related to economic and social activities. The degree of naturalism of these images, particularly in certain phases of their sequence, provides key insights into material culture as well as the significance of certain activities within the communities that produced them.

A major challenge, particularly in relation to the early Neolithic of the Iberian Peninsula, lies in reconstructing how these first farming societies were organized, and in assessing possible evidence of emerging social inequality. The archaeological record, particularly with regard to funerary contexts, is scarce, limiting our ability to infer mechanisms of individual and collective identity that might point to significant social distinctions within these groups. These difficulties are further compounded when attempting to integrate gender as a social construct, which may have played a crucial role in shaping disparities in economic and social roles.

Levantine Rock Art, where human figures are prominently featured, constitutes a valuable source of information for examining the social identities of men and women, as well as the roles they may have held in different spheres of community life.

In this communication, we will thus provide an archaeo-anthropological analysis of Levantine human depictions, with the aim of inferring evidence regarding the social organization. To this end, we will consider both temporal aspects, related to the potential stylistic sequence of human figures and territorial factors, taking into account the boundaries of each stylistic horizon and their areas of influence. This approach will offer a diachronic and regional perspective, highlighting elements of continuity and change at various scales.

07-09 The rock art of the last hunter gatherers groups in the Iberian Peninsula: pre-schematic art

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Traditionally, it has been assumed that in many regions of the Iberian Peninsula, schematic rock art represented an innovative graphic and cultural phenomenon introduced by the first groups practicing a productive economy who settled in this territory. This artistic expression later consolidated and became more complex throughout the Copper and Bronze Ages. This perspective implied the existence of a temporal gap between the last graphic expressions of the Upper Paleolithic and the oldest schematic art representations produced during the Early Neolithic.
In this presentation, we aim to challenge the notion of such a gap, based on a series of recent findings in the western Iberian Peninsula, particularly in the Extremadura region. We propose recognizing the continuity and complexity of the artistic phenomenon we have termed Pre-Schematic Art, which seamlessly bridges the period from the end of the Upper Paleolithic to the early stages of the Early Neolithic.

07-10 Technical Traditions and Cultural Mosaic in the Neolithization of Mediterranean Iberia: Contributions from the chaîne operatoire of Spanish Levantine rock art pigments

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The chronological framework of Spanish Levantine rock art has primarily been constructed through the typological analysis of human figures, which exhibit greater variability than animal motifs. This variability appears to stem from both temporal changes and regional influences. The resulting sequence is highly complex, with notable formal variations within each stylistic horizon. However, in the absence of absolute dating, establishing connections between these horizons and defining their chronological and territorial relationships remains challenging.

Until now, research has focused exclusively on parameters related to figure design, associating the concept of style strictly with formal attributes. The technical dimension—encompassing the entire operational sequence from the acquisition of raw coloring materials to the processing and application of pigments—has been entirely overlooked, despite its potential to provide valuable insights. Operational sequences serve as a crucial link between material culture and the societies that produced these paintings. The artificial separation of form and technique raises important questions about the definition of technical traditions in Levantine rock art, their temporal and spatial dynamics, and their connection to the complex cultural mosaic that emerged with the spread of Neolithic societies across the Iberian Mediterranean basin from the 6th millennium cal BCE.

Building on this perspective, we have implemented new analytical protocols that comprehensively address all stages of the painting process. These protocols encompass the study of coloring material provenance and composition through a physicochemical and mineralogical characterization approach (SEM-EDS, Raman, and PIXE), alongside the examination of processing and application techniques by analyzing the morphology of pigment crystals and the structure of the pictorial layer. The statistical analysis of data collected at each stage and across different analytical perspectives allows us to explore key aspects of the Levantine rock art stylistic sequence. Specifically, we investigate the potential correlation between formal variability and operational sequences, as well as their temporal dynamics. This approach enables us to identify distinct technical traditions within the Levantine sequence and to elucidate the mechanisms underlying the transmission of technical knowledge.

07-11 Where the Hills have no name: Late Neolithic Rock Art tradition on Rocky Landscape of Asia Minor

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Balkayası rock painting that was discovered in 2005 showed a rare example of Late Neolithic rock paintings in Asia Minor with possible many horses and a human figures like shaman with some rock cut galleries on top of a hill. Actually, the rock painting were made on rock facade of one of highest peaks of granite hills of which the topography is reminiscent of the largest area of Latmos rock paintings in SW Anatolia covering 60 locus with hundreds of rock paintings and compositions. Along with similar ones recently have been found in Taurus mountains (Erdemli) from southern Mediterrenean region. Eventhough farming fully sedentary communities spread and became fully sedentary sites like Çatalhöyük in many parts of Central Anatolia and Western Anatolia in 7. Mill B.C, Rock art presence of Late Neolithic period in sporadic places so far show a testimony of still hunter gatherer or a nomadic mode of life or rituals persistent on the hillly regions in opposition to growing large farming villages.

07-12 Neolithic Stamps between Making and Meaning: The Stamps of Svinjarička Čuka, Serbia

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Within the extensive corpus of Neolithic visual expression, stamps hold a unique position as early devices created for the mechanical reproduction of images. Also known as pintaderas or stamp seals, these artefacts have been found at sites across Southeast Europe and Southwest Asia. Typically made of fired clay and decorated with geometric designs, they facilitated the repeated application of motifs through printing or impressing on surfaces. Despite their widespread presence, the lack of direct evidence of their use in the archaeological record makes them one of the most enigmatic Neolithic artefact types. By creating, shaping, or revealing connections or fostering a sense of belonging, the act and effects of stamping played a vital part in the dynamic visual culture of the Neolithic world. Through this process, generic artefacts were transformed into unique items with deliberately crafted visual and tactile properties.

The ongoing interdisciplinary investigations at the Starčevo site of Svinjarička Čuka (Serbia) provide a fresh opportunity to reassess Neolithic stamps, as the site has yielded a notably large and varied assemblage of Neolithic clay stamps. This study re-evaluates established interpretations through a contextual analysis of depositional patterns, associated artefacts, residue analysis, and renewed experimental research specifically designed to address previously unexplored aspects. A chaîne opératoire is proposed to reconstruct the production and use of the stamps, shedding new light on their potential functions and use scenarios across various materials.

07-13 Color matters: investigating the significance of white ornaments in Early Neolithic burial practices in Poland

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This study explores the symbolic significance of color in the Early Neolithic (so-called Danubian) societies in Poland (ca. 5350-3700 BC), focusing on the roles of red and white in reflecting status and funeral customs. In Neolithic cultures, color was not merely aesthetic but deeply embedded in social and ritualistic contexts, serving as a medium to convey meaning and reinforce societal hierarchies. Red, often associated with vitality, life, and blood, symbolized strength, power, and possibly life after death, frequently appearing in burial rituals and ceremonial artifacts. On the other hand, white represents purity, transition, and spiritual renewal, often used in funerary practices to signify the passage between life and death. By analyzing archaeological evidence from present-day Poland, particularly burial contexts—including personal ornaments and remains of pigments —this paper argues that the intentional use of red and white played a fundamental role in Neolithic communities. Furthermore, the selection of prestigious raw materials, sourced locally and through long-distance exchange, underscores their dual economic and symbolic significance. These findings contribute to a broader understanding of how Early Neolithic societies employed color and raw materials as a cultural language to express identity, social status, and spiritual ideologies. A multidisciplinary approach, incorporating anthropology, ethnography, and cultural context, will be used to achieve a more nuanced and comprehensive understanding of color symbolism.

08 Intersecting Identities and Social Dynamics during the Neolithisation of Europe

Session co-organizers: Berta Morell-Rovira[1] & Cristina Tejedor Rodríguez[2]
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This session seeks to explore the multifaceted nature of identity—encompassing dimensions such as age, gender, status, kinship, hierarchy, and alterity—within European last hunter-gatherer and first farming communities. Our goal is to approach how identities were formed, expressed, and negotiated both individually and collectively, highlighting the intersections of material culture, bioarchaeological evidence, and theoretical frameworks.

Studies drawing from funerary and settlement contexts, as well as those addressing broader spatial or temporal patterns, are especially invited. We also welcome methodological approaches such as isotopic analysis, ancient DNA, physical anthropology, network analysis, and spatial analysis, which can help unravel the complexities of identity and social dynamics. Additionally, contributions exploring themes of alterity and confronted identities—focusing on how individuals and groups navigated cultural and social differences—are also warmly invited to enrich the discussion.

This session aims to provide a platform for advancing discussions on the formation, negotiation, and expression of identities during the Neolithisation. We invite contributions that address these questions through innovative perspectives and multidisciplinary approaches. By integrating diverse methodologies and theoretical frameworks, we hope to deepen our understanding of social interactions, power dynamics, and the processes shaping individual and collective identities in prehistoric communities.

08-01 Power, Politics and social organization in the Early Neolithic period in Europe

Martin Furholt[1]

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While the Early Neolithic period sees the emergence of very diverse social phenomena and forms of social organization, there are a number of underlying social and economic conditions which structure the context in which those dynamics unfold. This concern, among others, the constitution of power, the distribution of resources and spatial behavior, the conceptualization of community and environment. In the archaeological discourse, those conditions are, in my view, often misrepresented, or the consequences of this mis-representation for our archaeological narratives are undervalued.

For this reason, this contribution aims to discuss the concepts we apply to power, coercion, violence, mobility, socio-spatial organization, cosmologies and rationality, and their effects on our view of identities and the dynamics of social organization during the Early Neolithic. Especially, the notion of politics within and between social groups will be discussed, as it is highlighting people and communities in the Neolithic as historical self-conscious actors pursuing individual or collective interests, engaging in and solving conflicts. This will be exemplified using archaeological material from the Early Neolithic period in central Europe, with a focus on the LBK communities, their ditched enclosures and signs of conflict connected to them.

08-02 Interacting with the dead in Neolithic Italy

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All societies have multiple ways of dealing with the dead, but of all prehistoric periods in Europe, perhaps Neolithic people had the greatest variety. Taking Italy as an example, recent taphonomic research has documented simple burials, exposure, removing bones from burials, casual destruction of bones, ritual re-use of bones, deposition of defleshed bones, skull curation and deposition, and use of bone as an expedient raw material for tools. These did not form random processes but a comprehensive system for managing the dead to produce social relations.

Its key principles included gradually integrating the dead into villages as a generalised ancestral presence, selection of specific bones as ritually interactive elements, and the use of bone as a magical substance - all principles distinguishing the Neolithic from earlier periods and gradually changing in later prehistory.

08-03 Exploring Early Neolithic Ornaments: Technical Traditions and Cultural Interaction in Dalmatia

Alice Vassanelli[1], Emil Podrug[2], Natalija Čondić[3], Solange Rigaud[4], Elisabetta Starnini[5], Niccolò Mazzucco[5]

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The symbolic dimension played a fundamental role in the emergence of the technological innovations associated with Neolithisation. This perspective challenges the traditional interpretation of personal ornaments as purely aesthetic objects, emphasising their active involvement in the socio-productive sphere, and their ability to reflect the cultural and technological transformations that accompanied the spread of the Neolithic.

As part of a broader research programme that intends to examine the role of personal ornaments in the first farming communities of the Mediterranean region, this work aims to present the first results of early Neolithic ornaments from sites in the region of central-northern Dalmatia. Stressing the importance of ornaments as a tool to investigate the cultural interaction between the earliest Neolithic groups, the study examined finds from the sites of Pokrovnik, Rašinovac, Crno Vrilo and Smilčić.

The study focused on the technological and traceological analysis of these artefacts, to investigate the technical traditions employed for their manufacturing and their use.

The results highlight the key role of aesthetic and symbolic objects in reflecting the identities and social structures of early communities in this Dalmatian area, while also providing valuable insights into the broader processes of cultural reconfiguration that characterised the Early Neolithic period in the Mediterranean.

08-04 Foreign Influence or Local Tradition? The Role of Personal Ornaments in Early Neolithic Social Identity in Central Europe: A Case Study from Poland

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During the Neolithic period in Europe, the production and dissemination of personal ornaments increased significantly, driven by shifts in social organization, advancements in craft production, expanding exchange networks, and the procurement of raw materials. This period reveals a complex interplay of continuity and change in ornament use across time and geography, highlighting identity formation and negotiation between different cultural groups.

Present-day Poland, situated on the periphery of southern influences - particularly Danubian traditions from the Transcarpathian region- experienced these influences through the introduction of foreign materials and techniques. Notably, various ornaments appear exclusively in richly furnished female burials associated with early Neolithic communities in the second half of the fifth millennium BC.

Our research examines the hypothesis that certain members of agricultural communities -especially women- maintained ties with hunter-gatherer groups, as evidenced by their use of ornaments typical of Mesolithic traditions. We investigate whether these individuals distinguished themselves within their communities by preserving ancient traditions or if the ornaments served as markers of their social status, group identity, or affiliation with specific traditions and communities.

Our study considers whether Early Neolithic communities in Poland inherited, adopted, or adapted Mesolithic ornament traditions, reflecting broader processes of alterity, identity formation, and interaction between indigenous hunter-gatherer groups and farming communities. We examine the role of these ornaments within elaborate decorative assemblages, such as hip belts, headdresses, and appliques, often composed of hundreds of beads from diverse materials. Through an analysis of their typology, raw material sources, and wear traces, we explore their significance as visual markers of identity, social status, wealth, prestige, connections to tradition, ancestor veneration, and ritual practices.

08-05 Shell of the Azov-Black Sea mollusk Trytia nitida in a Neolithic child burial from the Ust-Aleyka 5 cemetery (Barnaul Pri-Ob Region)

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In 1982, a “vertical” burial of a child (aged 1.5–2 years) with a rich accompanying inventory was excavated in the village of Ust-Aleyka, Altayskii Krai, within the Barnaul Pri-Ob region. The grave goods included stone artifacts, ornaments made of bone and mammalian teeth, shells of bivalve mollusks (*Unio*), and bones of a marsh harrier (*Circus aeruginosus*), marmot (*Marmota*), and sable (*Martes zibellina*). AMS radiocarbon dates obtained from animal bone pendants yielded results of 4446-4346 cal BCE (IGAN-5829) and 4318-3802 cal BCE (NSKA-01941).

A significant find in the burial was a shell of the marine gastropod mollusk *Trytia nitida*. This species is currently widespread along the Atlantic coast of Europe, as well as in the Mediterranean, Black, and Azov Seas, but has never inhabited the Altai region or neighboring territories of southern Western Siberia.

In Southern Europe, ornaments made from *Trytia nitida* shells have been documented from the early stages of the Upper Paleolithic. However, a comprehensive review of archaeological sites in the Northern Mediterranean where *Trytia* shells have been found remains challenging. In Western European literature, *Trytia nitida* is often referred to as *Nassarius reticulatus* or *Nassarius reticulatus var. nitidus*. Additionally, the mollusc *Cyclope neritea* is sometimes classified under the genus *Trytia*.

The discovery of the *Trytia nitida* shell in this Neolithic burial suggests (likely indirect) contact between the Neolithic population in the steppe belt of Northern Eurasia, stretching from the Black Sea region to the Upper Ob River basin.

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08-06 Neolithic Norway - meetings with unexpected (?) outcomes

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The Neolithic of Norway is a complex archaeological mosaic of people, technologies and artefacts. At various points in the sequence, this involves interaction between (relative) newcomers and (relatively) longer-resident people. Explanatory models differ in detail, for example between the Early and Late Neolithic: are novelties brought to the local populations through exogamy, or rather more directly by adventurous immigrating farmers? In most theories, the incoming people are the most active, seeking new territory or resources to feed into their social networks. Very often, such situations are framed as "cultural dualism" – local versus foreign.

In the archaeological material though, we find evidence of old and new traditions mixing in complicated ways, and to greater or lesser extents. For example, in the South-east, there is evidence of so-called cultural packages in the Early Neolithic, suggesting immigrating groups of people sticking to themselves. In the West, there is a mixture of practices until the Late Neolithic. The concept of cultural dualism thus seems too narrow and limiting when considering the variety of cultural and social contexts, and that fact that neither "locals" nor "immigrants" were one monolithic group. In this paper, we will use selected case studies from southern Norway to show how we may get beyond categorising groups as either/or and instead describe the multiple outcomes of complex and open-ended meetings between people.

08-07 From the sea to the (red)neck. Discoidal beads and other small ornaments from the Early Neolithic of Cerro del Cercado (Priego de Córdoba, Spain)

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The manufacture and display of personal ornaments is an outstanding marker of the relationships and social complexity among cultures. The construction of social identities, gender roles, or the simple accumulation of exchangeable goods, represents one of the most interesting aspects in the study of the early Neolithic societies of the Iberian Peninsula. In this sense, perforated discoidal beads represent one of the best potential markers for the knowledge of technological complexity, access to raw materials, and the exchange networks existing between prehistoric societies. In this paper we introduce the preliminary study of a set of small pendants and discoidal beads from the archaeological site of Cerro del Cercado, a settlement located in the interior of Andalusia, dated between 5200-4800 cal. BC. The importance of raw materials of a certain distance, such as the almost systematic use of marine bivalve shells to make most of these beads, and presence of traces of red pigment, raises aspects of great interest that go beyond the merely technological, drawing a complex society depending on an extensive network of exchange in southern Iberia.

08-08 Exploring social dynamics and identity constructionthrough the study of non-adults in the funerary contexts of Late Prehistory (Vth to IIIrd millennia BC) in Central Iberia

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To holistically understand prehistoric populations, it is essential to study all the components that make up society. However, the analysis of human remains often focuses exclusively on adult individuals, sidelining the study of infants and non-adults.

This study explores questions such as: What funerary practices characterize these communities? How far do the remarkable social, economic and ideological changes affect the treatment of non-adultsin funerary contexts? Is the expected high infant mortality rate represented in the archaeological record? If not, could factors such as social differences directly influence infant burials?

The aim of this work is to gather and emphasize the significance of the presence, or absence, of infant and non-adult individuals in the funerary contexts of the interior of the Iberian Peninsula. Additionally, it proposes a methodological approach for the diachronic study of behavioural patterns (Vth and IIIrd millennia BC) related to these population groups, with a particular focus on the analysis of human bone remains, their archaeological context and radiocarbon chronology. The study also examines their association with specific aspects of material culture and different burial customs.

Through this project, we advocate for the integration of non-adult individuals as a fundamental part of society and as a relevant agent that provides crucial insights for a deeper understanding of prehistoric social strategies and their changes.

08-09 Redefining the temporal dynamics of the Linearbandkeramik cemetery horizon: insights from Schwetzingen cemetery (Southwest Germany)

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The Schwetzingen cemetery in southwest Germany, one of the largest Early Neolithic burial sites in Central Europe, provides a unique lens through which to explore identity, temporality, and social dynamics within Linearbandkeramik (LBK) communities. By integrating 50 newly obtained radiocarbon dates with Bayesian modeling, this study reassesses the cemetery temporal framework and its broader implications for funerary practices across central Europe. The findings challenge the prevailing notion of LBK cemeteries as long-lived and gradually evolving, revealing instead that Schwetzingen was in use for a relatively short period of time. This challenges the traditional east-to-west chronological progression of LBK burial sites, suggesting synchronous use across regions.
Contrary to the traditional view of cemeteries as static markers of sedentary societies, the data reveal a high degree of dynamism in burial practices, reflecting evolving social interactions and adaptability. By combining insights from material culture, bioarchaeological evidence, and advanced chronological modeling, this research highlights the importance of multidisciplinary approaches in unraveling the complexities of identity formation and social interaction in past communities.

08-10 Ground cemeteries as evidence of Mesolithic resilience in the Northern Pontic region during 7th - mid-5th mil. BC

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In Ukraine, over 30 cemeteries and several separate extended supine inhumations (almost 1,500 skeletons) from the early 7th to mid-5th millennium BCE represent a distinct funerary tradition that replaced Late Paleolithic flexed burials. These sites, often classified as "Mariupol-type cemeteries", have been widely studied in Ukrainian scholarship but remain underrepresented in broader European archaeology. While traditionally labeled as Neolithic, genetic and archaeological evidence suggests long-term population continuity and a lack of subsistence-based Neolithic innovations, raising questions about the true nature of Neolithisation in the region.

The evolution of burial practices reflects complex processes of identity formation and social transformation. Early cemeteries consisted of small, row-organized graves (e.g., Mariivka, Vasylivka 2, Chapli), which later (the late 7th and early 6th mil. BCE) expanded significantly communities (e.g. Mamai Gora 1, Gard), possibly due to demographic shifts or external pressures from early farming. However, there is no clear evidence of sustained interaction between these foraging groups and neighboring farmers. Instead, material culture variations suggest a high degree of social fragmentation among hunter-fisher communities, despite genetic continuity.

By 5800–5200 BCE, burial traditions became more structured, with kin-based groupings and systematic secondary burials, indicating an increasing emphasis on lineage and social cohesion (e.g., Vovnigi, Vasylivka 5, Vilniansky). Unlike Neolithic farmers, who practiced matrilineal inheritance, these groups followed a patrilineal system. For example, researchers found the burial of two brothers in separate graves, both of which were later used for additional burials, including the son of one brother being placed in his father’s grave. There is no evidence of social stratification in these cemeteries, as individuals of all age groups were buried together.

Around 5200 BCE, a significant transformation occurred as collective burials replaced individual graves, signaling a shift towards a broader communal identity (e.g., Mamai Gora 2, Yasynuvatskyi, Dereiivka West). These burials were simple and uniform, suggesting that people identified more strongly as members of a large, unified community rather than as separate families. This shift likely required a strong motivating factor, such as shared rituals or conflicts that encouraged greater group cohesion.

The latest cemeteries, such as Mykilskyi and Lysogirskyi reflect increasing social instability in the region rather than a natural evolution of burial practices. Archaeologists have found ritual platforms, prestige objects (such as maces, copper artifacts, and carnelian), a mix of burial traditions, and imported goods. For the first time, fire was used in burial rituals, a practice uncommon among local hunter-fisher societies but common in farming cultures like the Cucuteni-Trypillia culture. These developments suggest a period of heightened interaction but also increasing socio-political tensions. Ultimately, collective cemeteries disappeared, replaced by individual graves, marking the end of the region’s forager-dominated social structures.

This study explores how burial practices functioned as a medium for negotiating identity, social belonging, and alterity in a rapidly changing world. The transformation of mortuary traditions in Ukraine reflects not only internal social dynamics but also broader processes of confrontation and adaptation during Neolithisation.

08-11 Genomic diversity and structure of Mesolithic and Neolithic individuals from the Eastern Italian Alps

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The Eastern Italian Alps (EIA, Trentino-Alto Adige region) played a crucial bridging role between Mediterranean and Northern alpine populations since prehistory.
As part of a broader project aimed at understanding how the genomic structure of prehistoric and protohistoric individuals from EIA varied over time, we analysed one Late Mesolithic (6380-6107 cal. BC) and 12 Middle Neolithic (first half of the 5th millennium BC) individuals associated with the Square-Mouthed Pottery Culture (VBQ II and III) using shotgun and enrichment ancient DNA data. Molecular sex was assigned to most individuals, including subadults. Close genetic relationships were identified such as a pair of siblings (La Vela VII site), also supported by the analysis of maternal lineages (mitochondrial DNA).
The study revealed that the Mesolithic male individual shows a high percentage (~84%) of genomic ancestry related to Western Hunter-Gatherers (HGs), along with a genomic contribution (~16%) from Easten HGs. The genomes of Neolithic Alpine individuals show a substantial shift in ancestry reflecting the migration of early Neolithic Anatolian farmers, from whom they acquired ~87% of their ancestry, with a further limited contribution from HGs (~13%). This aligns with archaeological evidence (e.g., material culture, funerary practices)from this area, suggesting cultural interaction between the Gaban group and the VBQ culture. Furthermore, the study shows that admixture events between HGs and farmers occurred locally and non-locally, contributing to the debate on the Mesolithic to Neolithic transition in the EIA. The genomic data of individuals from the Neolithic onwards indicate few genetic exchanges, especially at the paternal level (Y-Chromosome lineages) and a genetic continuity. This suggests a low degree of alterity and the possible formation of a new cultural identity (VBQ) in Alpine prehistoric groups. During the conference, these genetic results will be discussed in light of the isotopic data available for the same individuals (MOLA project).

08-12 Tracing mobility and landscape use in the eastern Italian Alp using oxygen, sulfur, and strontium isotope analyses on Mesolithic and Neolithic burials

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In prehistoric times, the eastern Italian Alps (i.e. the Dolomites, Trentino-South Tyrol, and the Veneto Prealps) constituted a connecting region between Central Europe and the Mediterranean, which, despite its imposing nature, has been crossed by humans since the Mesolithic. The Adige and Eisack valleys, culminating in mid-altitude mountain passes such as Reschen and Brenner, provided essential north-south corridors for the circulation of people, objects, and ideas. Within the EU-funded MOLA project, bioarchaeological data derived from oxygen, sulfur, and strontium isotope analyses of cremated (only Sr) and inhumed individuals buried in the eastern Italian Alps have been integrated with advanced spatial modelling techniques. This interdisciplinary approach has allowed to unravel how social strategies influenced human mobility, landscape use, and identity formation in this mountainous region from the 5th to the 2nd millennium BC. While exotic materials, including cinnabar, rock crystal, actinolite schist, jade, shells, and steatite beads, indicate an interaction with alterity through long-distance cultural contacts with areas north of the Alps, the Po Valley, and the Italian Peninsula, isotope analyses reveal a general stationary pattern for local communities during the Neolithic. This contrasts with an increased mobility observed in later periods, highlighting evolving notions of alterity and belonging, potentially influenced by emerging socio-economic factors. Such analyses are supported by the development of a new high-resolution biologically available strontium isoscape for the eastern Italian Alps, created using a machine learning approach, and new local sulfur baselines derived from faunal remains. The results of the MOLA project will also be discussed in the light of genetic data from the same individuals (Prehistoric Alps project), offering further insights into the construction of prehistoric identities in a mountain environment.

Posters

Anthropomorphic figurines of the Precucuteni culture: workshop practices in the light of archaeometric research

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Since 2017, a multicultural site Topolita, in NE Romania, has been explored with a chronological frame from the Neolithic to Late Antiquity IV Century AD. Most features (including at least seven burnt houses) belong to Precucuteni culture. More than 150 anthropomorphic statuettes were recovered during systematic excavations, most fragmented. As they are one of the most significant types of finds in Precucteni culture, we have decided to investigate them thoroughly. Nine figurines were chosen together with six pottery fragments. Several archaeometric methods were applied to investigate the nature of raw materials and technology. First, petrographic studies of raw materials were made both for figurines and for clay vessels from the site. Optical microscopy (OM) was used to obtain the mineral composition of the clay. Due to the unique status of the figurines, a non-destructive tool such as X-ray computed tomography (CT) was used to investigate the inside structure of the clay statuettes.

Secrets of small-scale sculpture workshops revealed through Computed Tomography. Clay human foot from Early Neolithic site Gwoździec 2, southern Poland

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Gwoździec Site 2 is currently the oldest known Neolithic settlement in Poland. Its significance is further underscored by its location in the foothills, near the Carpathian Mountain passes, which served as migration routes for the first farmers from the south.

In Feature 23, dated to the earliest phase of this settlement, a fragment of anthropomorphic sculpture was discovered. The find represents a fragment of a human leg, including the foot, notable for its realistic and precise craftsmanship. The toes are clearly delineated with short incisions, emphasizing their asymmetrical arrangement, characteristic of a right foot. The ceramic material used for this object consists of relatively fatty clay with an organic temper. A form of internal scaffolding was employed during its construction, leaving a hollow space within the leg.

To investigate the internal structure of this unique figurine, a non-destructive technique—X-ray computed tomography (CT)—was employed. Preliminary analysis of the CT images revealed that the artifact is composed of a uniform, well-prepared ceramic mass. The scans also unveiled the shape of the object used as scaffolding for the clay. This internal structure has an irregular, rough surface with visible protrusions and depressions. Furthermore, by visualizing the pore structure in ceramic mass, it was possible to identify intricate details of the craftsmanship, shedding light on the manufacturing techniques employed in creating the figurine.

Neolithic Bows of The Marmotta (Lake Bracciano, Italy)

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The enormity of the Marmotta archaeological wooden finds include an expanded range of wooden tools related to domestic activities, agricultural work, weaving and other objects of indeterminate function. Among the latter were included numerous fragments of multiple wood species of various lengths and thicknesses. The plane-convexity of this archaeological finds, consistent with the orientation of the growth rings, is a dominant feature of the ancient bows to make the most of the physical characteristics of the wood and of the design geometry. The examination of the remains of wood of La Marmotta deposited in the Museo della Civiltà, in Rome, has allowed us to document 43 bows or possible fragments. It would therefore seem that the choice of wood (Fraxinus sp, Cornus sp, Quercus evergreen, Viburnum Lantana) for the construction of these bows is linked to the ready availability of the raw material surrounding the settlement rather than a discriminating choice of the best possible wood.

Between Technological Innovation and Craft Specialisation: Novel Insights into Figulina Pottery Production in the Southern Po Plain

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Figulina pottery refers to a fine, light-coloured ceramic class that represents a remarkable technological innovation of Neolithic ceramic assemblages across both sides of the Adriatic Sea. Past scholarly research has emphasised figulina wares as potential indicators of an incipient stage of craft specialisation, owing to the complex production technique and advanced pyrotechnology required for their successful manufacture.

While the earliest figulina specimens of the Italian Peninsula date back to the 6th millennium cal. BCE, by the 5th millennium cal. BCE figulina vessels appear beyond their core production area, including at several sites of the Po Plain in northern Italy. In this region, the exceptional presence of figulina sherds at numerous sites, among ceramic assemblages dominated by coarse, tempered wares, underscores the significance of this peculiar ceramic production that strikingly diverges from the region's Neolithic material culture. Using an integrated archaeometric approach that combines petrography, XRPD, and p-XRF analyses, this research aims to investigate the production technology and provenance of a pool of fifteen samples retrieved from five Neolithic sites located in the present-day Emilia-Romagna region.

Our results offer novel insights on the manufacturing process and provenance of the raw materials selected for figulina production in this area, highlighting the technological practices adopted by the figulina makers of the region. Furthermore, figulina production represents a significant technological shift that informs on supra-regional dynamics of technological transmissions between different potting traditions of the Italian Peninsula, challenging the ceramic production model currently hypothesised for Neolithic northern Italy.

Mesolithic-Neolithic transition in the Karst: new evidence and C14 dates

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In the Karst region and northern Istria, the Mesolithic-Neolithic transition occurred around 5500–5400 cal BC with the emergence of the Danilo-Vlaška culture, roughly 500–600 years after the initial spread of Impressed Ware Neolithic groups in the Adriatic. In the Trieste Karst, numerous caves and rare open-air sites have yielded Mesolithic materials, although Castelnovian layers are often truncated or poorly represented. Radiocarbon dates for both the Mesolithic and the Danilo-Vlaška levels are limited. In this paper, we present around ten new radiocarbon dates, spanning from the Early Holocene to the first Neolithic, obtained from old finds in key cave deposits investigated in the late 19th and early 20th centuries (e.g., Pettirosso/Vlaška and Moser caves in Italy and Tominz cave in Slovenia), as well as from Tina Jama, a newly explored cave site where archaeological research began two years ago. As investigations continue to reach the in situ Danilo-Vlaška and Mesolithic layers, archaeological evidence in secondary context confirm that Tina Jama was used by both Castelnovian and first Neolithic groups. The new data confirm a high density of Mesolithic sites and a continuous presence of hunter-gatherer groups from the Sauveterrian until the arrival of the Danilo-Vlaška culture during the mid-6th millennium BC.

A lithic use-wear contribution to understand the toolkit evolution of the lithic industries between the Late Mesolithic and LBK Neolithic in North-Eastern France

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The arrival of agropastoral communities in northern France significantly disrupted local socio-economic dynamics and marked the end of the Mesolithic period. While the populations introduced a range of innovations, they also exhibited notable similarities with the local hunter-gatherers in the manufacture of their tools. These parallels may indicate potential transfers or inheritances between the two groups. To explore these processes, where innovation intersects with tradition, we have chosen to investigate the site of Ensisheim (Alsace, France). Excavations at this site have uncovered occupations associated with lithic traditions dated to the first half of the Late Mesolithic (6400 to 5700 BCE), as well as settlements spanning the entire LBK regional chronology (5355 to 5020 cal BC). Additionally, three loci' lithic assemblages are technically related to the Mesolithic and are contemporaneous with Neolithic settlements in the region (5200 to 4800 BCE). The use-wear analysis of the lithic toolkit from the Ensisheim site enables us to examine the technologies and craft productions of the last hunter-gatherers in contrast to the Neolithic peoples' new lifestyles. From a lithic point of view, this study provides fresh insights into the potential inheritances between the last hunter-gatherers and the first farmers.

Geoarchaeological investigations on the emergence of the Neolithic in Cape St. Vincent (SW Portugal)

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The area of Cape St. Vincent in SW Portugal has some of the earliest evidence in Western Europe for the Neolithic arrival to a coastal region inhabited by coastal-adapted Mesolithic foragers. The region's shell middens with Mesolithic origin also containing pottery are thus prime contexts to investigate such interactions and the meaning of coastal resources and environmental change at local coastal ecosystems throughout the Neolithization.

At Rocha das Gaivotas, an open-air site interstratified within aeolian dunes on a clifftop, several Mesolithic stone combustions structures and discrete shelly layers have been identified. The Neolithic has been identified through pottery sherds and scattered shells embedded in the sands overlying the Mesolithic structures. To obtain new high-resolution data, systematic geophysical survey and multidisciplinary sampling from stratigraphic sections were carried out.

The ground-proofing test-pit based on geophysical data revealed thicker deposits and clearer stratigraphic contacts than in the previously known sector located some meters away, as well as a stone structure associated with pottery. Sediment samples from both Mesolithic and Neolithic contexts yielded n-alkanes compatible with either freshwater plants or bark and twigs from terrestrial plants, in any case altered by low temperatures (>250ºC), thus possibly corresponding to the vegetation lying on the topsoil affected by heating from combustion.

While further research is ongoing, these preliminary results suggest that stone structures were also built in the Neolithic, despite coherent shelly layers remain absent. Moreover, the local paleovegetation remained the same since the Mesolithic.

Technical and Economic Aspects of Lithic Industries at the Early Neolithic Village Site of Crno Vrilo (Zadar, Croatia): Impressed Ware Traditions on the Adriatic Coast

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From the late 7th millennium onwards, the spread of Neolithic lifeways toward the central and western Mediterranean followed a non-linear trajectory, marked by pioneer incursions, pauses, and cultural reconfigurations. In this context, the Balkan Peninsula and the Adriatic—where technical systems transformed—represent a key region for understanding Neolithic trajectories.

Crno Vrilo, a central-eastern Adriatic site in the Zadar hinterland, provides remarkable evidence of the first agro-pastoral communities of the Impressed Ware tradition. Excavated in the early 2000s by Brunislav Marijanović (University of Zadar), it revealed rectangular houses, pathways, and a rich material culture, attesting to a well-structured village (c. 5800–5600 cal BC).

Among its finds, the lithic assemblage—over 4000 well-preserved artefacts—constitutes the largest Early Neolithic collection from littoral Croatia, offering unique insights into domestic lithic production and use. Technological and functional analyses highlight tool maintenance strategies, subsistence activities, and blank selection.

Lithic production at Crno Vrilo is characterized by pressure blade flaking on high-quality exogenous cherts (sourced from the Gargano Peninsula, Italy), reflecting significant socio-economic and technical investement. These blades were used both unretouched and modified into diverse tools, including sickle elements, indicating that cereal cultivation played a central role. Symmetrical trapezoidal armatures show projectile impact and evidence of recycling, while large blades, likely produced by lever pressure and imported as finished products, served various functions except for harvesting.

Within this presentation, we aim to explore the Crno Vrilo technological system in its domestic context and position it within a broader perspective on Neolithisation processes in the central-western Mediterranean and the Balkans.

Migration, niche construction and demography: A modelling approach to the establishment of farming communities in southern Scandinavia

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This poster outlines the archaeological challenges associated with understanding the activities of very small populations, which apply to studying the establishment of the earliest Neolithic groups in most regions. Using the well-documented Neolithic sequence of southern Scandinavia (from c. 4000 BCE onwards) as example, we then discuss both the promise and the problems of coupling assumptions about migration and niche construction into a formal modelling approach aimed at understanding plausible demographic dynamics during the first centuries of farming and Neolithic culture in the region. We provide examples of what might be key parameters of such a research strategy and describe contrasts between the available data and potentially viable assumptions on these parameters that can be frontloaded into the model.

From archaeological excavations to the museum education: symbols and anthropomorphic representations in Neolithic sites of Northern Apulia

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The National Archaeological Museum in Manfredonia (Northern Apulia) is characterised by an articulated exhibition itinerary focused in particular to the story of the prehistory of the territory of northern Apulia, with particular reference to the Neolithic. The museum exhibits finds from old excavations, as well as from more recent or ongoing excavations from the Gargano, Tavoliere and Monti Dauni areas. The museum tour, which is dedicated to the Neolithic, relates the decisive stages that characterised the emergence of the oldest farming civilisations in the Mediterranean.
One section in particular is dedicated to the predominantly anthropomorphic representations of faces on vessels and whole-body representations (figurines), widespread from the Early Neolithic in the second half of the sixth millennium BC, with an evident apotropaic meaning, which refers to the religious and spiritual world of the Neolithic world.
The themes are connected with the importance of food and agriculture among the first farming communities of the Adriatic region and moreover they represent a further evidence of the far reaching maritime network of trans-Adriatic exchange that included the Northern Apulia. Many face vessels and stylised whole-body representations were found in trenched settlements, often come from the compound or main enclosure, or in cult caves. They consist almost exclusively of fragments of vessels and figurines in which the representation of the face is generally well preserved.
The aim of the poster is to present some archaeological artefacts, with the aim of describing this distinctive phenomenon of expressions of religion and systems of belief which derive from a common ideological heritage in the Neolithic communities.

Longhouse from Zelgno 16 as an example of a farmstead of the Brześć Kujawski culture

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The goal of this study is to present and discuss the recently excavated longhouse of the Brześć Kujawski culture (BKC) along with related features and artefacts – such as pottery and flints – from Zelgno site 16 located in Chełmno Land, Poland in the broader context of patterns of the BKC. The BKC belonging to the Lengyel culture sphere of interaction emerged in the Polish Lowlands in the second half of the 5th millennium BC. It is characterized by unified settlements with trapezoidal longhouses set in foundation trenches, oval interior "cellar" pits, and external pits of various functions including clay-extraction pits, and burials within a settlement. The specific spatial organization and architectonical uniformity can be observed in both densely built settlements as well as at single farmsteads. We interpret them as a carrier of the values significant for the identity of the community.

Anthropomorphic figurines of the Precucuteni culture: workshop practices in the light of archaeometric research

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Since 2017, a multicultural site Topolita, in NE Romania, has been explored with a chronological frame from the Neolithic to Late Antiquity IV Century AD. Most features (including at least seven burnt houses) belong to Precucuteni culture. More than 150 anthropomorphic statuettes were recovered during systematic excavations, most fragmented. As they are one of the most significant types of finds in Precucteni culture, we have decided to investigate them thoroughly. Nine figurines were chosen together with six pottery fragments. Several archaeometric methods were applied to investigate the nature of raw materials and technology. First, petrographic studies of raw materials were made both for figurines and for clay vessels from the site. Optical microscopy (OM) was used to obtain the mineral composition of the clay. Due to the unique status of the figurines, a non-destructive tool such as X-ray computed tomography (CT) was used to investigate the inside structure of the clay statuettes.

At the Crossroads of Change: Zooarchaeological Insights into Neolithization in Northern Italy

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This study presents the results of the zooarchaeological analysis of the Early Neolithic faunal assemblage from the site of Fiorano Fornaci Carani (Modena), one of the key locations associated with the Fiorano culture in northern Italy. The research aims to deepen our understanding of early domestication practices and subsistence strategies during the initial phases of the Neolithization process in this region.
The faunal remains were examined to identify species composition, taphonomic patterns, and biometric data. Preliminary results indicate a diversified economy based on the management of domestic animals, particularly sheep, goats, and cattle, alongside the exploitation of wild species such as red deer and wild boar. Evidence of butchery practices and patterns of resource allocation provide insights into dietary habits and animal management strategies.
The presence of both domestic and wild faunal elements highlights the transitional nature of this site, situated in a landscape shared by early farmers and residual Mesolithic hunter-gatherer communities. The biometric data suggest variability in the size of domesticates, possibly linked to the introduction of non-local livestock breeds or specific selective pressures.
Given its strategic position near key exchange networks and access to essential resources like alpine flint and salt, the Fiorano Fornaci Carani site offers a unique perspective on the integration of early agricultural practices and long-distance connections within the Early Neolithic.
This poster will discuss the implications of the zooarchaeological findings in understanding the dynamics of Neolithization in northern Italy and the role of animal husbandry in shaping emerging Neolithic lifeways.

Ancient DNA Preservation on Neolithic Adhesive Material from "La Marmotta" Sickles: A Study on Early European Agriculture

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Crop cultivation can be traced back to pre-Neolithic times, together with the first harvesting techniques, represented by flint blades likely belonging to sickle-like tools. The findings of these artifacts provide an important approach for research on prehistoric agricultural activities. Nevertheless, the poor preservation can be a major limitation. Therefore, the site of "La Marmotta" with its exceptional richness and preservation offers great opportunities. In particular, the sickles of "La Marmotta" are characterized for the preservation of an adhesive substance attaching the flint blades to the wooden handling structure. This resin-like material has proven to retain diverse plant remains from crops and surrounding vegetation. Here, we intend to add another proxy for the study of these devices. Therefore, we developed a DNA extraction method by testing on adhesive material obtained from replicas of the original sickles, which were tested on the field. Analyses on the extracted DNA matched with the crops harvested during the experiment, the surrounding vegetation and several crop and plant pathogens. Moreover, we applied this protocol on the Neolithic samples, successfully obtaining genetic material, whose preliminary analyses included the detection of some members of the Poaceae family such as Digitaria exilis or Triticum aestivum, together with several microorganisms associated with land vegetation such as Komagataella phaffi or the bacterial genus Rhizobium. Analytical results are currently verified using the aMeta pipeline. Our results indicate a great potential for DNA preservation in ancient adhesive material, adding an incredibly valuable layer of information to the reconstruction of early European agriculture.

Neolithic relations between Sicily and the Balkans

Angelo Vintaloro

Starting from the last centuries of the 7th millennium BC, along the coasts of Puglia, north Italy, Basilicata and Calabria, and in their respective internal territories, we encounter settlements of a different nature that use vases of «impressed ceramic». Between the 6th and 4th millennium BC it made its way along the Tyrrhenian coasts, to reach Sicily, Sardinia, Corsica and Provence, then in Spain and along the Atlantic coasts. In Sicily it stabilized in the Syracuse area, Agrigento area and in the Grotta dell' Uzzo in the Trapani area. Sicily was also the land of origin of the flint, and the obligatory passage for the obsidian coming from Lipari and from Pantelleria, and exported to various parts of Europe. The face, but above all the schematized eye of Stentinello, is identical to that of the Cucuteni Culture in Romania, and of the Tell Brak site in Syria. We will subsequently consider the three large areas affected: the coastal regions of the peninsula, Sardinia, and Sicily. In the Neolithic we find the first relationships with the area south of the Balkans, already influenced by the Middle East. These contacts, mediated by Puglia and Calabria, were optimized in the Aeolian Islands, with the Facies of Serra d'Alto (Middle Neolithic) and the Culture of Diana (Recent Neolithic). This is the period of the commercialization of obsidian, which from the Aeolian Islands reached as far as the Scandinavian countries, and this new wealth caused a further demographic increase, which constantly populated Sicily. These data are confirmed by the latest archaeological research.

Lost and Found: On Socio-Cultural Development in the Polish Lowlands in the 4th Millennium BC

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The appearance of long earth barrows in the Polish Lowlands in the first half of the 4th millennium BC is associated with the popularisation of a new phenomenon - the Funnelbeakerculture (FBC) community. At that time, we observe a settlement explosion, sometimes called the "Great Colonisation" of the Lowlands. This process was associated with a significant change in the relationship between man and the environment. New economic and social patterns were formed at that time, aimed at developing more effective ways of obtaining food, never before encountered here. The worldview of the "colonisers" also required adaptation to new challenges. The new relations of man with his environment required the blurring of the previously clear conceptual boundaries between the "home" zone (*domus*) and the environment (*agrios*). We can observe manifestations of such "domestication" of the landscape in the form of monumental tombs, built from earth and boulders by FBC communities.

Considering FBC's revolutionary nature, discussing its origins becomes extremely important. Many hypotheses about its genesis in the Polish Lowlands are associated with it. These hypotheses can be divided into two groups: (i) indicating the participation of hunter-gatherer communities in its formation and (ii) deriving FBC from Neolithic communities of Danubian origin.

Transferring this discussion to the western part of the Polish Lowlands, to central Greater Poland, allows us to provide several arguments, derived from new discoveries and research, for the great proximity of FBC and the community of early farmers.

The presented arguments from settlement and palaeoenvironmental studies, new discoveries from excavations, and new archaeometric studies of long-known sources allow us to try to re-characterize the community of builders of long earth tombs in the area of Greater Poland.

Neolithic Farmers in the Adriatic: A Fresh Look at Subsistence and Interaction

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The last 20 years of research have provided new insights on early Neolithic farmers in the Adriatic. Excavations, material analyses, and the application of new methodologies have characterized early Neolithic lifeways and the role of trans-Adriatic interactions for the spread of farming. Discoveries of underwater sites have also highlighted some of the taphonomic challenges for Neolithic sites presented by post-glacial environmental change. This poster highlights patterns of Neolithic subsistence practices throughout the Adriatic region and presents high resolution chronologies. The evidence for different types of social and economic interaction suggest that once established, early farming populations created new ecological and social niches that helped structure subsistence strategies throughout the region, and that this spread was neither uniform, structured, nor inevitable.

Decoding Early Neolithic Decorations in the North-western Mediterranean: A Protocol for Analysing Sequential Linear Impressions on Ceramics

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The diffusion of the neolithic lifestyle in the western Mediterranean was driven by two cultural entities forming the *Impressa*-Cardial complex. The earliest neolithic settlements in Mediterranean France, dating to the early 6th millennium BCE, correspond to small agro-pastoral groups from the *ceramica impressa* sphere of Italy. Current data reveal diverse origins for these groups and highlight a cultural and chronological gap between Impressa and Cardial settlements. This raises questions about the role of these pioneer communities in the spread of the Neolithic economy in the region.

Ceramics from these groups are key cultural markers, and studying the variability of decorative traditions has proven essential for understanding the Early Neolithic. Our research focuses on sequential linear impressions (SLI), also known as *sillons d'impressions*, a geometric decorative technique characteristic of the Impressa facies in southern France, and a promising chrono-cultural marker. However, gaps in the characterization of SLI variability and terminological ambiguities hinder comparative studies and limit interpretative frameworks.

The study of Peiro Signado collection (Portiragnes, France), rich in SLI decorations, allowed us to develop an analytical protocol and experimental framework. This protocol introduces precise terminology, descriptive criteria and subcategories to improve characterization. Experiments linking tools, gestures and imprints allow us to validate these criteria and establish a methodological tool for interpreting SLI variability. Applied to other Impressa assemblages from southern France, this approach refined the chronological and cultural attribution of these sites. Extanding this comparison to Italy and Spain could reveal broader decorative traditions and explore potential cultural connections.

Seasonal Mobility and Coastal Subsistence in the Early Neolithic: Insights from Ždrilo Cave

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Ždrilo Cave represents a key site for understanding the early Neolithic occupation along the eastern Adriatic coast. Radiocarbon dating of excavated materials revealed a well-preserved sequence spanning from 5800 to 4900 BC, providing a rare opportunity to investigate the seasonal mobility of early farming communities in the region. The site's substantial record, including abundant faunal remains, lithic artifacts, and evidence of fire-use, offers critical insights into subsistence strategies, particularly in comparison to contemporaneous open-air settlements. As part of the **BivalveSPEECH** project, analyses of shell growth patterns and shell geochemistry are being conducted, which will provide valuable insights into early Neolithic foraging behavior and seasonal migrations. The presence of bivalve middens, alongside other faunal and botanical remains, suggests complex patterns of resource exploitation that may reflect seasonal site use and adaptation to the coastal environment. By integrating multiple lines of evidence, our study on Ždrilo Cave contributes to broader discussions on settlement dynamics, economic strategies, and the role of coastal landscapes in Neolithic lifeways.

A Neolithic Surprise in Smilčić – The First Neolithic Rondel and New Settlement Plans from Northern Dalmatia

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This poster presents the initial results of a geomagnetic survey conducted at five Neolithic sites in Northern Dalmatia. As part of a collaboration between the Department of Archaeology of the University of Zadar and the Institute for Pre- and Protohistory at Kiel University, surveys were carried out at Smilčić – Dugače, Smilčić – Barice, Benkovac – Barice, Pod Jagurom and Graduša – Lokve. These investigations mark an essential first step toward a deeper understanding of the Neolithic landscape and settlement patterns in the region and lay the ground work for further research.

A particularly unexpected and significant discovery was the first Neolithic rondel identified in Dalmatia, a well-known Central European phenomenon, with its closest examples documented about 250 km to the north-east in Slavonia. Belonging probably to late Danilo, the multi-ditch system of the Smilčić rondel and its link to other enclosures at the site describes a yet unexpected perspective to Dalmatia and the Adriatic. This finding shifts the previously known borders of rondel distribution, expanding their spatial range further. The poster will present the geomagnetic plans of this remarkable find alongside the survey results from the other settlement sites, providing new insights into the spatial organization and social dynamics of Neolithic communities in Northern Dalmatia.