

University of Ljubljana, Faculty of Arts, Department of Archaeology
and
Samara State University of Social Sciences and Education

24th Neolithic Seminar

*Neolithisation Processes in
Eurasia: Retrospect and Prospect*

Programme
and
Abstract book

Friday 26th – Saturday 27th
October 2018



Programme

*The conference will be held in the conference hall
in the City Museum of Ljubljana.
Due to a tight schedule,
each paper will have 20 minutes for presentation.*



Friday, 26th October

Morning session:
9:00–12:30

Chair:
Çiler Çilingiroğlu and Maria Ivanova-Bieg

‘Gene-culture coevolution’, ‘niche construction’ and neolithisation processes: introduction to the conference

Mihael Budja

Department of Archaeology, Faculty of Arts, University of Ljubljana, Slovenia

Migration, mobility and population histories in Meso-Neolithic Southeastern Europe: integrating aDNA evidence with other proxies

Dusan Borić¹, Ron Pinhasi² and David Reich³

1 The Italian Academy for Advanced Studies in America, Columbia University, New York, USA; 2 Department of Evolutionary Anthropology, University of Vienna, Vienna, Austria; 3 Department of Genetics, Harvard Medical School, Boston, United States of America

Complex interactions during neolithisation: the case of Danube Gorges

Zuzana Hofmanova

Faculty of Science and Medicine, Department of Biology, University of Fribourg, Fribourg, Switzerland

Population trends in the Central Balkan Early Neolithic (6200–5350 BC): new data and new results

Marko Porčić^{1,2}, Tamara Blagojević² and Sofija Stefanović^{2,1}

1 Department of Archaeology, Faculty of Philosophy, University of Beograd, Beograd, Serbia; 2 Biosense Institute, University of Novi Sad, Novi Sad, Serbia

discussion & coffee/tea

Keeping it in the family? The Neolithic up close and personal
**Daniela Hofmann¹, Olivia Cheronet², Penny Bickle³, Zdeněk Tvrđý⁴,
 Kelly Carlson⁵, Daniel Fernandes⁵, David Reich⁶ and Ron Pinhasi⁵**

1 Archaeological Institute, University of Hamburg, Hamburg, Germany; 2 Department of Evolutionary Anthropology, University of Vienna, Vienna, Austria; 3 Department of Archaeology, University of York, York, United Kingdom; 4 Anthropos Institute, The Moravian Museum, Brno, Czech Republic; 5 Department of Evolutionary Anthropology, University of Vienna, Vienna, Austria; 6 Department of Genetics, Harvard Medical School, Boston, United States of America

Neolithization process in the central Zagros: Asiab and Ganj Dareh revisited
Hojjat Darabi¹, Tobias Richter²

1 Department of Archaeology, Razi University, Kermanshah, Iran; 2 Centre for the Study of Early Agricultural Societies, University of Copenhagen, Denmark

The emergence of the Neolithic in Southwest Asia and its subsequent spread, in palaeoclimatological perspective

Bernhard Weninger¹, Karin Bartl², Barbara Horejs³, Raiko Krauß¹ and Eelco Rohling⁴

1 Institute of Prehistory, Early History and Medieval Archaeology, Eberhard Karls University Tübingen, Germany; 2 German Archaeological Institute, Berlin, Germany; 3 Institute for Oriental and European Archaeology, Austrian Academy of Sciences, Vienna, Austria; 4 Research School of Earth Sciences, Australian National University, Australia

discussion & lunch break



Afternoon session:
14:00–18:00

Chair:
Eszter Bánffy and Daniela Hofmann

Contextualising Karaburun: a new area for Neolithic research in Turkey
Çiler Çilingiroğlu¹, Didem Turan²

1 Department of Protohistory and Near Eastern Archaeology, Faculty of Letters, Ege University Izmir, Turkey; 2 Department of Protohistory and Near Eastern Archaeology, Faculty of Letters, Yuzuncu Yil University, Van, Turkey

The Balkans during the process of neolithisation: adaptation and cultural transformation

Eylem Özdoğan

Prehistory Department, Faculty of Letters, İstanbul University, İstanbul, Turkey

Diversity in early farming foodways in the Balkans: the organic residue record

Maria Ivanova-Bieg¹, Lucy Cramp²

1 Institute of Prehistory and Near Eastern Archaeology, University of Heidelberg, Heidelberg, Germany; 2 School of Arts, University of Bristol, Bristol, United Kingdom

Trajectories of the Neolithic into the central Balkans. First results of new fieldwork in southern Serbia

Barbara Horejs

Institute for Oriental and European Archaeology, Austrian Academy of Sciences, Vienna, Austria

The decline of 'clayscapes' and the rise of the Bandkeramik

Eszter Bánffy

Roman-Germanic Commission of the German Archaeological Institute, Frankfurt am Main, Germany

discussion & coffee/tea

Archaeological contexts of interaction between the Japanese Islands and the East Asian mainland during the Middle to Final Jōmon

Tao Li, Mark J. Hudson

Department of Linguistic and Cultural Evolution, Max Planck Institute for the Science of Human History, Jena, Germany

Jōmon resilience and the expansion of agricultural systems to the Japanese Islands

Mark J. Hudson, Tao Li

Department of Linguistic and Cultural Evolution, Max Planck Institute for the Science of Human History, Jena, Germany

Prehistorical language shift on the Japanese Islands: from Jōmon languages to Yayoi language

Martine Robbeets

Department of Linguistic and Cultural Evolution, Max Planck Institute for the Science of Human History, Jena, Germany

Discussant, Junzo Uchiyama

Sainsbury Institute for the Study of Japanese Arts and Cultures, Norwich, United Kingdom

discussion & conference dinner

Saturday, 27th October

Morning session:
9:00–12:00

Chair:
Barbara Horejs and Bernhard Weninger

The spread of Early Linear Pottery culture settlement in Slovakia

Noémi Beljak Pažinová, Tatiana Daráková

Department of Archaeology, Constantine the Philosopher University in Nitra, Nitra, Slovakia

The first vs. the second neolithisation in East-Central Europe

Marek Nowak

Institute of Archaeology, Jagiellonian University, Kraków, Poland

The transition to the Neolithic in The Upper Volga region, Central Russia

Nataliya A. Tsvetkova

The Russian museum of ethnography, Sankt-Peterburg, Russian Federation

Environmental conditions and the neolithisation of Sava river valley – the first results of interdisciplinary research

Katarina Botić¹, Fabian Welc², Leszek Marks³ and Radoslaw Mieszkowski⁴

1 Institute of Archaeology, Zagreb, Croatia; 2 Institute of Archaeology, Cardinal Stefan Wyszyński University in Warsaw, Poland; 3 Department of Climate Geology, Faculty of Geology, University of Warsaw, Poland; 4 Institute of Hydrogeology and Engineering Geology, Faculty of Geology, University of Warsaw, Poland

Climatic factors and development of Neolithic-Eneolithic cultures in the steppe zone of the Low Volga region (Oroshaemoe and Algay sites).

Marianna Kulkova¹, Alexander Vybornov²

1 Russian State Pedagogical University, Sankt-Peterburg, Russian Federation; 2 Samara State University of Social Sciences and Education, Samara, Russian Federation

discussion @ coffee/tea

Global processes, regional dynamics? Radiocarbon data as an analytical method of the social dynamics at the end of Mesolithic and during the development of the Neolithic at NW of Mediterranean

Héctor Martínez-Grau^{1,2}, Ferran Antolín¹ and Joan Anton Barceló²

1 The Integrative Prehistory and Natural Sciences Archaeology, Basel University, Basel, Switzerland; 2 Department of Prehistory, Autonomous University of Barcelona, Barcelona, Spain

Absolute age-calibration of Neolithic settlement stratigraphies in Bulgaria

Lennart Brandtstätter, Raiko Krauß

Institute of Prehistory, Early History and Medieval Archaeology, Eberhard Karls University Tübingen, Germany

Absolute age-calibration of Early Neolithic settlement in SW-Germany land use and chronology of the LBK in the district of Tübingen

Raiko Krauß¹, Jörg Bofinger²

1 Institute of Prehistory, Early History and Medieval Archaeology, Eberhard Karls University Tübingen, Germany; 2 State Office for the Preservation of Monuments in Baden-Württemberg, Esslingen, Germany

discussion & lunch break



Afternoon session:

14:00–18:00

Chair:

Ekaterina Kashina and Marianna Kulkova

On the origin of pottery in Baikal-Yenisei Siberia

Ivan Berdnikov

Institute of Archaeology and Ethnography, Siberian Branch of the Russian Academy of Sciences, State University, Irkutsk, Russian Federation

The development of Neolithic pottery technology in Zagros Mountains and Northern Mesopotamia

Natalia Petrova

Department of Archaeology, State Historical Museum, Moscow, Russian Federation

The earliest European Russian North ceramics: where are the southern roots?

Ekaterina Kashina, Natalia Petrova

Department of Archaeology, State Historical Museum, Moscow, Russian Federation

Re-evaluation of red-slipped, impressed and white-on-red pottery in Western Anatolia and the Balkans, at the turn from 7th to the 6th millennium cal BC

Canay Alpagut

Institute of Prehistory, Early History and Medieval Archaeology, Eberhard Karls University Tübingen, Germany

discussion & coffee/tea

Mothers, babies and figurines in the Neolithic of Central Balkans

Ana Tripković¹, Mihailo Radinović¹, Marko Porčić^{1,2} and Sofija Stefanović^{2,1}

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² Biosense Institute, University of Novi Sad, Novi Sad, Serbia

The human-suid relations in Early Neolithic Europe: a case study of the Bulgarian site Džuljunica-Smārdeš

Donna A. J. de Groene¹, Petar Zidarov² and Canan Çakırlar³

¹ Faculty of Archaeology, Leiden University, The Netherlands; ² Department of Archaeology, New Bulgarian University, Sofia, Bulgaria; ³ Groningen Institute of Archaeology, University of Groningen, Groningen, The Netherlands

Study of the burial ground Ekaterinovskiy Cape in the steppe – forest-steppe Volga Region

Arkadii Korolev¹, Anna Kochkina², Dmitriy Stashenkov² and Aleksandr Khokhlov¹

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² Samara Museum for History and Regional Studies, Samara, Russian Federation

general discussion & closing remarks



Abstract book

‘Gene-culture coevolution’, ‘niche construction’ and neolithisation processes: introduction to the conference

Mihael Budja

It is broadly accepted that neolithisation processes in Eurasia involve both demic and cultural mechanisms that reflect patterns of human genetic and cultural evolution. Major attention has been focused on the population replacement, and on the emergence of agriculture as one of the most important developments in the history of humanity, due to its socio-economic implications and its vital role in the formation of complex societies. The hypothesis that the European Neolithic was introduced by the migration of farming groups originating in the Near East has long since been discussed by Childe in archaeology and by Coon in physical anthropology. After the ‘second Darwinian revolution’, known also as ‘neo-Darwinism’ or ‘modern evolutionary synthesis’, the discussion was continued in evolutionary biology and archaeology, as well as in population genetics (genome-wide studies on modern populations and ancient (a)DNA). The Darwinian concept of ‘descent with modification’ was associated with culture and social evolution in prehistory, and correlated to human genotypic and phenotypic evolution, and to hypothesised early Neolithic demic diffusion. In this presentation we discuss Cavalli-Sforza’s and Feldman’s ‘gene-culture coevolution’, Boyd’s and Richerson’s ‘dual inheritance theory’, and Laland’s, Odling-Smee’s and Feldman’s ‘cultural niche construction’. They suggested mathematical modelling to show how innovations and cultural processes, like agricultural practices or domesticating livestock and dairy farming, and modification of selective environments can modify selection on human genes and drive evolutionary events in the early Neolithic. Twelve signals of selection at loci associated with diet, pigmentation and immunity, and two independent episodes of selection on height were identified. The lactose persistence example can be representative of hypothesised interactions of cultural traits with genes within the suggested ‘gene-culture’ coevolution and ‘culture niche construction’. However, we point out the interpretative paradox, since the earliest appearance of the allele’s frequency of lactase persistence in Europe appeared not before the middle of the third millennium BC.

Migration, mobility and population histories in Meso-Neolithic Southeastern Europe: integrating aDNA evidence with other proxies

Dusan Borić, Ron Pinhasi and David Reich

The most recent dramatic increase in the number of genome-wide analysed skeletal remains from southeast Europe is making a profound impact on our rethinking of a variety of problems of culture change in the past that for years have been debated by

archaeologists from a variety of theoretical positions. In general, the most promising aspect of the genome-wide revolution in archaeology is gaining an ability to make informed and profound integration of genomic evidence and other strands of archaeological data in reaching a new understanding. In this paper, we focus on how well the newly available aDNA evidence can be reconciled with current thinking about the transition from foraging to farming in southeast Europe. While this corner of Europe will be looked at in its entirety, a particular focus will be placed on the area of the Danube Gorges where one is now able to utilize both the evidence from a robust sample of aDNA-analyzed individuals with a high endogenous aDNA yield (some individuals with >80%) and results coming from the application of a suite of other science-based methodologies.

Complex interactions during neolithisation: the case of Danube Gorges

Zuzana Hofmanova

One of the most studied questions in ancient DNA research is neolithisation: the most striking subsistence change in human prehistory. While next generation sequencing techniques are revolutionizing genetic research of this period via production of unprecedented amount and quality of ancient DNA, genetic analysis of ancient skeletal remains is still easily influenced by contamination, poor DNA preservation, sequencing errors and reference bias. We have developed statistical pipeline ATLAS that incorporates these uncertainties directly to the analysis through genotype likelihoods and results in increased power and accuracy for population genetic inferences. It also provides several standalone inference methods that – among others – include reference-free determination of genetic diversity within and between individuals and populations. Through accurate patterns of ancient genetic diversity it is then possible to elucidate how past societies were organized and interacted with each other.

The utility of these approaches is demonstrated on genomic data we obtained from up to 9000 years old samples from sites associated with Lepenski Vir culture, including the settlement at the eponymous site. Contrasts in population-genomic and cultural affinities of our samples revealed that settlements from this region and periods differed strikingly in their interaction with immigrating farmers: while some exhibited strong barriers to gene flow (potential isolation), others incorporated multiple individuals of genetic ancestry common to Aegean farmers. Genetic data thus provide crucial insights into an active role of these fisher-hunter-gatherers during the neolithisation of the area of Central Balkans. We further focus on investigating the structure of their sedentary society and the focus is especially placed on sex-specific cultural practices as evidenced by individual differences in X-chromosomal *vs.* autosomal diversity.

Population trends in the Central Balkan Early Neolithic (6200–5350 BC): new data and new results

Marko Porčić, Tamara Blagojević and Sofija Stefanović

The Balkan Neolithic demography has become an important research subject in the past few years. In several recent studies an attempt was made to reconstruct population trends by applying the method of summed calibrated radiocarbon probability distributions (SCPD) to the existing corpus of published radiocarbon dates. In this paper we present the preliminary results of the paleodemographic reconstruction of the Early Neolithic (6200-5350 BC) population trends in the Central Balkans based on the entirely new set of radiocarbon dates sampled specifically for the purposes of the SCPD method.

Keeping it in the family? The Neolithic up close and personal

Daniela Hofmann, Olivia Cheronet, Penny Bickle, Zdeněk Tvrđý, Kelly Carlson, Daniel Fernandes, David Reich and Ron Pinhasi

Neolithisation is generally conceived as a large-scale process taking place over an extended period of time and at a continental scale. What is often side-lined in research agendas is that ‘admixture’, ‘interbreeding’ and so on are also always manifested at the local and personal scale of routine relations. In this paper, we use a whole-genome study from the Linearbandkeramik cemetery of Nitra to discuss both long-term and personal dimensions of relatedness, and whether and how these were represented in grave good assemblages. This provides a unique insight into Neolithic community life and how its structure may have facilitated ‘neolithisation’ more widely.

Neolithisation process in the central Zagros: Asiab and Ganj Dareh revisited

Hojjat Darabi, Tobias Richter

Fieldwork in the central Zagros Mountains between the late 1950s and late 1970s produced evidence for early Holocene Neolithic settlements in this mountainous zone along the ‘Eastern wing’ of the Fertile Crescent. Following a long hiatus in fieldwork that lasted until the mid-2000s, new investigations at sites such as Sheikh-e Abad, Jani and East Chia Sabz have highlighted once more the potential of the early Neolithic sequence in this region for understanding Neolithization processes in southwest Asia. We present some initial results of recent fieldwork at two pivotal Neolithic sites in the

Kermanshah province: Tappeh Asiab and Ganj Dareh. Tappeh Asiab was originally excavated by Bruce Howe as part of Robert Braidwood's expedition to Iranian Kurdistan in 1960, while Philip Smith excavated Ganj Dareh between 1968 and 1974. Tappeh Asiab was re-investigated in 2016, and new excavations were launched at Ganj Dareh in 2017 and continued in 2018.

The emergence of the Neolithic in Southwest Asia and its subsequent spread, in palaeoclimatological perspective

**Bernhard Weninger, Karin Bart, Barbara Horejs,
Raiko Krauß and Eelco Rohling**

In this contribution we expand on the hypothesis that the emergence of the Neolithic life-style within the Fertile Crescent, as well as its subsequent geographic dispersal, was not an overall slow and gradual process (as assumed in Wave-of-Advance Modelling, WAM). In many aspects, the emergence and spread of the Neolithic is better described as Event Sequence with an initial abrupt 'switch', followed by an extended period of 'stasis' (*i.e.* Punctuated Equilibrium, *sensu* Gould and Eldredge). Of particular interest for such PE-type neolithisation is that its slow 'stasis' component has a pronounced local/regional character, whereas the rapid 'switch' occurs on very wide (supra-regional) geographic scales. Indeed, from the perspective of WAM, these characteristics of PE may appear to be contra-intuitive. Nevertheless, examples at hand are the unexpectedly late but then abrupt neolithisation of the entire British Isles (~6000 cal BP), further, the Wild/Domestic Transition that occurred simultaneously in large parts of the Near East (10.2 ± 0.2 ka cal BP), as well as the sudden arrival of Neolithic farmers/ herders in the Aegean (8.6 ± 0.05 ka cal BP). The Aegean PE-example is of particular interest: following the sudden arrival of the Neolithic, there follows some 500 years of stasis before the next jump occurs. This immediately takes the Neolithic far North into the Pannonian Basin, as well as far West to the Iberian Peninsula and Morocco. Entirely synchronous, but in an eastward direction from North Mesopotamia, we observe an equally rapid expansion of the Neolithic into vast new territories, followed by cultural 'stasis', which Olivier Nieuwenhijse has recently described as 'globalisation of the Halaf'. Following this general introduction to PE-type neolithisation modelling, our paper will discuss in more detail the palaeoclimatological and environmental background for settlement shifts observed at the Late Neolithic site of Shir (West Syria). Based on a recently developed ¹⁴C-chronology, at Shir the observed site shifts are clearly synchronous with regional drought (as documented in Jeita cave, Lebanon), and with globally recognisable (atmospheric and marine) Rapid Climate Change (RCC), *i.e.* extreme cold-winter conditions. In contrast, at the site of Sabi Abyad, the impact of Rapid Climate Change (RCC 8.6–8.0 ka cal BP)

has not been recognised. As an important component of PE-type neolithisation, finally, we will discuss the rapid long-distance (maritime and terrestrial) connections between the Near East and the Aegean during the RCC-interval, as well as the conspicuous existence of Neolithic connections between the Caucasus and the Pannonian Basin, immediately following the RCC-interval.

Contextualising Karaburun: a new area for Neolithic research in Turkey

Çiler Çilingiroğlu, Didem Turan

Recent pedestrian surveys in the Karaburun Peninsula near the modern city of Izmir and across the Greek island of Chios discovered multiple early prehistoric sites. This presentation introduces preliminary observations pertaining to the pre-Neolithic and Neolithic findings in this area. Especially discovery of forager sites of Late Pleistocene and Early Holocene ages is highly significant as these present the first tangible proof of pre-Neolithic forager presence in western Turkey.

Also a new Neolithic site, called Kömür Burnu, has been investigated using intensive survey methods. The material culture from the site suggests a date between 6200–6000 cal BC for the Neolithic occupation. P-XRF characterization of obsidian pieces from Kömür Burnu revealed that these were acquired from two different sources. These constitute the first evidence for the participation of Karaburun early farmer-herders in the long-distance exchange networks that were active in Neolithic Anatolia and the Aegean. We will present the evidence from the site to infer on the life ways and connections of Neolithic communities in this marginal zone of western Turkey.

The Balkans during the process of neolithisation: adaptation and cultural transformation

Eylem Özdoğan

The emergence of farming societies in the Balkans has been one of the main topics of Balkan prehistory since the beginning of the last century. It has been widely accepted that the Neolithic penetrated very rapidly in the Balkans as a whole and current data indicate certain similarities between Anatolia, the Aegean, and the Balkans at this time. However, how the Neolithic way of life adapted to the Balkans and what changes have been observed are not questions often discussed with the neolithisation problem. I will focus on the data from Eastern Thrace and discuss the problem from this perspective.

Diversity in early farming foodways in the Balkans: the organic residue record

Maria Ivanova-Bieg, Lucy Cramp

The spread of pioneer farmers from the Aegean littoral into the interior of the Balkans was accompanied by pronounced changes in lifestyle, including higher (probably seasonal) residential mobility, smaller community sizes, loss of sophistication in material culture, and adjustments in farming – a phenomenon which has been designated by some authors as “*the First Temperate Neolithic*“. The adaptation of farming, and of the food system based on it, to changing biogeographic conditions across the Balkans involved not only preferences for particular plant and animal species, but also for the specific cultural techniques of their use. This paper presents an overview of organic residue analysis of pottery in the Balkans, revealing a wealth of complex food practices at different regional scales – from the cereal and meat consuming groups of the south to the dedicated milk consumers of the north, and the fish-loving farmers in the Danube gorges. The findings add substantially to our understanding of the ‘Mediterranean’ and ‘First Temperate’ farming strategies and foodways, providing direct evidence for latitudinal adjustments of animal foodstuffs and food-related techniques across the Balkans and the adjacent Carpathian Basin.

Trajectories of the Neolithic into the central Balkans. First results of new fieldwork in southern Serbia

Barbara Horejs

The Neolithic represents a crucial time of immense social, cultural, economic and environmental change in human history, as people in the Balkans move from Mesolithic hunter-gathers to Neolithic settled agricultural communities accompanied by new technological developments and material culture types. With the spread of the Neolithic way of life currently being seen as associated with migrations from Anatolia towards the Aegean, the Balkans represent a key area for understanding the timing, nature, dispersal and direction of societal change evident in the archaeological record. However, although connectivity between the central Balkans and the Aegean-Anatolian world is widely accepted for the beginning of the Neolithic, a combined study of new technologies and the meaning behind shared cultural features (Neolithic package) has seldom been undertaken so far. It is widely accepted that the Starčevo cultural horizon, as the earliest Neolithic on the central Balkans, plays an important role for our understanding of the neolithisation process in the region. The scarcity of well-excavated and published data prevents any detail studies of Neolithic pathways and their regional com-

plexities, especially along the Southern Morava River Valley. A new project aims to fill this gap in southern Serbia by investigating the early Neolithic (pre-Vinča horizon) and providing new primary data for this debate. First results of this new fieldwork in the Leskovac district will be discussed by presenting new Neolithic sites detected by geoarchaeological surveys of the Pusta Reka Project. The first outcome of the new excavations at Svinjarička Čuka within this cooperation of the author with the Archaeological Institute in Belgrade and the Museum of Leskovac will be presented.

The decline of ‘clayscapes’ and the rise of the Bandkeramik

Eszter Bánffy

The paper focuses on cultural changes in the first half of the 6th millennium cal BC, with Körös and Starčevo groups in the northern marginal zones of the Balkans (mainly the southern part of the Carpathian basin). This time and zone were determined by clay as the fundamental and abundant building block of almost the entire material culture, architecture, everyday life, and cult practices. The traditional system of subsistence patterns ceased to fully function when these first farmers occupied cool and wet hilly forested landscapes: the environmental and cognitive challenges gradually led to the decline of this clay-centred orbit, ‘clayscapes’. The need for new elements in the subsistence involved the increasing significance of cattle over caprinae: this shift infiltrated into ritual activities.

The newly identified large clay cattle figurine type is taken as an embodiment of the last instance among the South-East European communities of the clay world, while changes in the depictions already reflect the transformation of lifestyles. Besides defining the monumental early Neolithic clay figurine type, its analogies over South East Europe and its ‘biography’, a broad scope of environmental and (social) zooarchaeological analyses, with issues of early dairying are involved. The target is to present one possible narrative on the fading of the South-East European ‘clayscapes’, towards the birth of the LBK and the Central European Neolithic.

Archaeological contexts of interaction between the Japanese Islands and the East Asian mainland during the Middle to Final Jōmon

Tao Li, Mark J. Hudson

Although Jōmon Japan was geographically relatively isolated, a number of material culture parallels point to interaction between the archipelago and the mainland. This evi-

dence has been discussed by specialists since at least the 1920s but its overall significance for the evolution of Jōmon society has never been properly assessed. The archaeological record of interaction across the Sea of Japan is complex: there was no overall trajectory toward increased interaction over time and chronological and regional diversity was high. In this paper we focus on the Middle to Final Jōmon phases (c. 5500–2800 BP), the time when agricultural societies were expanding from China to Korea and the Russian Far East. We first summarize the archaeological evidence for interaction including plant remains, pottery, stone tools, ornaments and bronze, and then attempt to model possible social contexts for that interaction.

Jōmon resilience and the expansion of agricultural systems to the Japanese Islands

Mark J. Hudson, Tao Li

Although agricultural systems are inherently expansionary, recent research has shown that rates of expansion can vary depending on a range of social and ecological circumstances. Three types of factors have been invoked in this respect. Firstly, the structural relationships between people and their plants and animals vary depending on the type of agriculture involved. For example, the West Asian Neolithic complex had high redundancy which made it easier to expand. Wet rice farming, by contrast, had lower redundancy and was associated with large investments of labour in paddy fields and other irrigation systems, factors which made ‘agricultural involution’ more common than expansion. Secondly, climate change can impact the expansion or contraction of agricultural systems. In East Asia, it has been proposed that farming expanded north in warmer periods. Alternatively, colder periods are sometimes argued to have led to conflict, resulting in the movement of peoples with farming to new territories. Thirdly, cultural factors can affect the reception or rejection of agricultural systems. In this paper we will concentrate on the third question of how Jōmon societies reacted to the agricultural systems that had reached Korea and the Russian Far East 1000–2000 years before they eventually arrived in Japan.

Prehistorical language shift on the Japanese Islands: from Jōmon languages to Yayoi language

Martine Robbeets

Ainu, a language until the 20th century spoken on the Island of Hokkaido, Sakhalin and in the Kuril Islands, systematically deviates from Japanese and the so-called Transeura-

sian languages. The Transeurasian languages are a group of structurally homogeneous and – arguably genealogically related – languages including Turkic, Mongolic, Tungusic, Koreanic and Japonic languages. Ainu has been regarded as a marginal pocket of an earlier language type whose lineages became isolated before the large-scale language spreads in Eurasia. In this paper, we will examine evidence for language shift, whereby some of the ancestral speakers of Ainu abandoned their native language and adopted a new target language, notably proto-Japonic, the linguistic ancestor of Mainland Japanese and the Ryukyuan languages. Using a protocol for establishing substratum interference proposed by Thomason (2009), we will attempt to establish substratum interference in proto-Japonic under influence of an ancestral state of the Ainu language. Integrating linguistic evidence with findings from genetics and archaeology, we will argue that proto-Japonic can be regarded as the language of the incoming Yayoi immigrants, whereas ancestral Ainu can be associated with one of the indigenous languages spoken by the Jomon populations.

The spread of Early Linear Pottery culture settlement in Slovakia

Noémi Beljak Pažinová, Tatiana Daráková

The presentation will focus on the spread of Early Linear Pottery culture (LPC) in Slovakia and the current state of Early LPC research within the selected territory. So far 72 sites are known from Slovakia dated to Early LPC. Most of the sites are known only from surface collections, and in only four cases, dwellings have been documented. Settlement features / pits have only been discovered in 34 sites. Finally we know graves only from three sites. Our paper will also incorporate the elaboration of Early LPC pottery from the point of view of typology and decoration. The analysis of the rest of material culture and finding contexts will not be absent either. The main purpose of the presentation is to evaluate the research possibilities of the Early LPC in Slovakia and subsequently compare them with findings from Central Europe.

The first vs. the second neolithisation in East-Central Europe

Marek Nowak

The origins of the Neolithic in East-Central Europe are associated with migrations of groups, mirrored archeologically as the Linear Band Pottery culture, after the mid-6th millennium BC. Communities of this culture settled in mainly small enclaves distinguished by ecological conditions favourable to farming. The situation of this kind persisted into the 5th millennium BC, when these enclaves were inhabited by post-Linear

groups. This state of affairs changed from *c.* 4000 BC onwards due to the formation and spectacular territorial expansion of the Funnel Beaker culture (TRB). In East-Central Europe this expansion covered the areas previously inhabited by both hunter-gatherers and farmers. Thus, deciphering the mechanisms of genesis and spread of TRB is crucial for the understanding of the full neolithisation of East-Central Europe and of further development of the early Neolithic cultural patterns. This problem has been under debate for over 100 years, yet a consensus of opinions among specialists has not been reached. Data obtained recently in the south-western Baltic zone seem to be important in this matter. They suggest that the crystallisation of the 'Funnel Beaker' cultural model took place there in the late 5th millennium BC.

The transition to the Neolithic in the Upper Volga region, central Russia

Nataliya A. Tsvetkova

The beginning of the Neolithic in The Upper Volga region (7100/7000 years uncal BP) is associated with the appearance of ceramics decorated by simple puncture impressions. The undistinguished differences between the Final Mesolithic and the Early Neolithic stone industries suggest that this cultural invasion was transphenomenal. The resemblance of stone toolkits derived from the Upper Volga sites and from sites from adjacent territories interferes with the identification of the separate Early Neolithic cultures with non-ornamented or puncture-ware ceramics. The first pottery emergence in the Upper Volga did not result in shifts in economy. Soon after the non-ornamented/puncture-ware ceramics tradition has been established, the local cultures were discontinued by the populations with multi-compound comb-ware pottery. The spread of the non-ornamented/puncture-ware ceramics was not followed by fundamental changes in the stone or bone inventory and therefore this episode should be regarded as a transition between the Mesolithic and the Neolithic ('neolithisation' episode). The later rise of the Neolithic appeared *c.* 6500–6400 years uncal BP and was marked by shifts in the economy and by the local ceramic manufacture development accompanied by thin-bifaces technique appearance. These changes give evidence of the Neolithic revolution in the Upper Volga basin provided by the complete replacement of populations.

Environmental conditions and the neolithisation of the Sava river valley – the first results of interdisciplinary research

Katarina Botić, Fabian Welc, Leszek Marks and Radosław Mieszkowski

In 2016, a Croatian-Polish team conducted geoarchaeological prospection of several Neolithic sites, including Early Neolithic Slavonski Brod – Galovo and Vinkovci – Sopot sites. Preliminary results show oscillation in humidity with pronounced drought episodes during the Early Neolithic period which is most visible in the data obtained from Slavonski Brod – Galovo. Previous archaeological excavations on this site yielded settlement features dated to the beginning of the Starčevo culture just after 6000 BC and continuing to at least 5500 BC. However, the 2017 and 2018 campaigns uncovered a new settlement horizon consisting of settlement features dug in, what appears to be, the first layer of sediment covering the site. This younger settlement horizon was eventually covered by more sediment and abandoned. New excavations confirmed that this site was settled during two pronounced drought episodes refuting initial assumption that the settlement could have been abandoned precisely because of the drought. Preliminary results also show that the sediments are most likely of diluvial origin which again refutes the first assumption of their alluvial source. Situation at Vinkovci – Sopot site is less clear but confirms Galovo results to a certain degree.

Climatic factors and development of Neolithic-Eneolithic cultures in the steppe zone of the Low Volga region (Oroshaemoe and Algay sites)

Marianna Kulkova, Alexander Vybornov

The research of recently excavated (2014–2018) stratified multilayered archaeological sites Oroshaemoe and Algay in the steppe zone of the Low Volga region gave new results about chronology and paleoenvironment during Neolithic-Eneolithic periods. For reconstructions the geochemical indication of paleoclimate method, radiocarbon dating, and archaeological observations were applied.

These data allowed us to suggest that the first evidences of site occupation were during the Early Neolithic period. The Orlovskaya cultural layers at Oroshaemoe and Algay sites were dated to *c.* 6200 cal BC. In this episode, the climatic conditions were temperately humid and warm. These conditions prolonged to *c.* 6000 cal BC. After that the anthropogenic impact decreased and at Oroshaemoe a sterile layer without any artifacts was formed. The conditions probably shifted to arid climate *c.* 6000–5900 cal BC according to geochemical evidences. At Algay, the next stage of developed of this culture is dated to *c.* 5800–5500 cal BC. In this period the climate was humid and warm,

whereas c. 5500–5400 cal BC cold and dry conditions with less anthropogenic activity are registered. The last stage of Orlovskaya culture (5400–5100 cal BC) corresponds with a humid, temperately warm climate. The episode of strong aridization (c. 5100–5000 cal BC) was registered in geochemical data as well as in the presence of sterile deposits without archaeological finds at both sites. A new stage of occupation is connected to the carriers of Cis-Caspian culture which is dated to 5000–4800 cal BC at Oroshaemoe. This culture is characterized by the first attributes of a production economy. The humid and warm conditions changed to arid conditions during about 100 years which is confirmed by a sterile layer. After, the Khvalinian Eneolithic culture appeared c. 4800–4500 cal BC according to archaeological observations. This period is characterized by a transition to warm and humid conditions as supported by pollen and phytolith analyses.. With these data we could correlate past climate with the development of archaeological cultures in this region during the Neolithic-Eneolithic period.

Global processes, regional dynamics? Radiocarbon data as an analytical method of the social dynamics at the end of Mesolithic and during the development of the Neolithic at NW of Mediterranean

Héctor Martínez-Grau, Ferran Antolín and Joan Anton Barceló

It is the goal of this paper to test the validity of radiocarbon dates and Summed Calibrated Dates Probability Distribution (SCDPD) as proxies to compare social dynamics over a large period of time and region. Through the statistical analysis of the c. 4000 radiocarbon dates (between c. 10 000–2300 cal BC) available for the NE Iberian Peninsula, SE France, northern Italy and Switzerland we aim to discuss processes of socio-economic evolution from the last hunter-gatherers to the end of the Neolithic period. An important focus of the work will be on the quality of the data, its filtering and the state of research in each of the regions under study. And one of the goals is to observe to which extent the SCDPD reflect social dynamics in each region, and how comparable these dynamics are across the different areas.

Absolute age-calibration of Neolithic settlement stratigraphies in Bulgaria

Lennart Brandtstätter, Raiko Krauß

According to recent genetic studies, the neolithisation process in the Balkans was triggered by an immigrant population from Western Anatolia. The natural landscape of

the region, which is strongly articulated by mountains, plays an important role for the direction of diffusion of the Neolithic concept. This process of neolithisation is directly related to the end of the 8.6–8.0 ka cal BP extreme climate (cold-winter) interval and related social and economic transformations in the communities north of the Aegean. According to the model of Punctuated Equilibrium (*Weninger et al.*, this conference), the initial neolithisation can be described as sequence of events with an initial abrupt ‘switch’, followed by an extended period of ‘stasis’. Having been developed in response to an increasing number of high-resolution climate records, this model requires further archaeological testing. Within the framework of the research project “*Chronological studies on the process of neolithisation along the Danube*” funded by the German Research Foundation (DFG), we aim to establish a chronological framework in order to understand the societal transformations along the lower Danube, from the advent of the Neolithic until the formation of the Copper Age. Our present focus is on radiocarbon sampling from known settlement stratigraphies, in particular from previously excavated multi-layered sites. The concept is to expand on the already existing series of ^{14}C -dates, by supplying a number of site-specific ^{14}C -chronologies based on high-resolution age-modelling of stratified ^{14}C -ages. The studies include a critical re-evaluation of the available ‘older’ ^{14}C -ages, both in terms of sampling quality and of radiometric accuracy/precision, based on pottery analysis in combination with comparative stratigraphic studies. The overall aim of the project, which is presently in the phase of refined chronological phase modelling, is to achieve a deeper understanding of the regional and supra-regional processes of cultural change.

Absolute age-calibration of Early Neolithic settlement in SW-Germany land use and chronology of the LBK in the district of Tübingen

Raiko Krauß, Jörg Bofinger

In 2017 new archaeological fieldwork at two Early Neolithic sites in the district of Tübingen, Ammerbuch-Entringen and Ammerbuch-Pfäffingen was initiated. These sites are situated on the southwestern periphery of the overall distribution area of the oldest LBK. At the same time they lie in the overlap area with La Hoguette, one of the oldest ceramics-producing cultural groups in western Central Europe. The excavated sites provide new data on the first permanent settlements in the region and their influence on landscape genesis. Based on the available stratigraphic sequences, it is now for the first time possible to construct a radiocarbon-based high-resolution chronology for the development of the LBK in southwestern Germany. Accompanying paleoecological studies provide a better understanding of the influence of the first farmers and live-

stock herders on the natural environmental change. The first results of our investigations show that dramatic changes in the landscape already occurred during the very first settlement, and which continue until today, and offer new insights into the chronological positioning of the advent of the Neolithic in Central Europe.

On the origin of pottery in Baikal-Yenisei Siberia

Ivan Berdnikov

The analyses and evaluation of 44 radiocarbon dates for early ceramics (Net-impressed and Khaita) of Baikal-Yenisei Siberia were conducted. The AMS-dates demonstrate that the first evidence of pottery are fixed in a time span of 8510–8380 cal BP in Southern Angara region. In the Cis-Baikal region ceramics did not appear earlier than 8156–7951 cal BP, and in the Tunka valley in a time span of 7839–7689 cal BP. Pottery traditions in the Baikal-Yenisei Siberia were probably brought to this region by the Kitoi population, which began settling here *c.* 8500–8400 cal BP.

The development of Neolithic pottery technology in Zagros Mountains and Northern Mesopotamia

Natalia Petrova

We present here a review of the available information on the initial pottery production in the Zagros Mountains and in Northern Mesopotamia of the earliest known vessels made of unbaked clay (or accidentally baked ones), vessels made of limestone and gypsum (White Ware), and early Neolithic ceramics from sites like Ganj Dareh, Jarmo and others.

Further emphasis is placed on ceramics technology analysis conducted by the author of Northern Mesopotamian Plain Early Ceramics Neolithic sites dated to the Proto-Hassuna and Hassuna periods. The ceramics of sites such as Tell Sotto, Yarimtepe I, Kul-tepe, and Umm Dabagiya contain dung of ruminants, the concentration of which decreased over time. Ceramics are constructed with slab or coiling technology that depends of the vessels type. Pottery technology of Proto-Hassuna and Hassuna periods was related to the preceding tradition of ceramics production in the Zagros area.

The earliest European Russian North ceramics: where are the southern roots?

Ekaterina Kashina, Natalia Petrova

The small group of early ceramics was detected in 1960s to 1990s at a number of multi-layer sites of Russian northern regions (Arkhangel'sk, Vologda, Karelia, Komi), but underestimated as a source, directly pointing to ceramic production origins in the boreal forest zone *c.* 5500-5000 BC. The so-called 'Kargopol type' ceramics demonstrate archaic technological traits – a straight rim, round holes under the rim, and a clay paste with added sand temper. The mapping shows a wide distribution of these vessels (more than 1000km by longitude), almost without changes at least in volumes and decoration pattern, probably reflecting birch bark vessel features. There were no similarities with the neighbouring early ceramic types of the Russian Plain central part, dated to the 6th millennium BC, but obvious parallels existed with younger types of Comb and Pitted Ware of the 5th millennium BC. We recognize this phenomena as a key to further understanding of how the process of ceramics production emergence 'acted' in the zone of the Russian boreal forest, where sedentary and foraging local hunter-gathering groups existed at the same time.

Re-evaluation of red-slipped, impressed and white-on-red pottery in Western Anatolia and the Balkans, at the turn from 7th to the 6th millennium cal BC

Canay Alpagut

Over the past decades, the discussion of socio-cultural interactions between Anatolia and the Balkans during the Neolithic period has become a significant component in our understanding of the Neolithic expansion. As a result of recent research in Western Anatolia and Southeastern Europe, we can now provide answers to a number of questions concerning the connections between these two regions within the Neolithic period. There is general agreement that at the turn from 7th to the 6th millennium cal BC, Neolithic populations spread to Southeastern Europe from Anatolia and the Aegean regions. However, the early farming communities in Southeastern Europe and Western Anatolia not only shared certain common traits, but simultaneously initiated a number of new local traditions. The main focus of the present study is to re-assess in detail the socio-cultural developments in Western Anatolia and the Balkans at the end of the 7th millennium cal BC based on chronological and cultural connections between red slipped, impressed and white-on-red painted pottery styles. The studies are based primarily on

material from the Marmara region and the neighbouring areas of SE Europe (Thrace, Macedonia, Northern Bulgaria, Walachia).

Mothers, babies and figurines in the Neolithic of Central Balkans

Ana Tripković, Mihailo Radinović, Marko Porčić and Sofija Stefanović

Neolithization brought great changes to the prehistoric communities in different parts of Eurasia. One aspect of change, thoroughly studied in recent years, is the Neolithic demographic transition. It has been suggested that the demographic expansion on the onset of Neolithic was caused by increased fertility – increase in the number of pregnancies and consequently babies – which was feasible due to sedentary life and more stable food supplies. These changes in fertility and daily life could have been displayed in material culture. In this study we analyse anthropomorphic figurines as possible representations of body and corporeality. In order to test the hypothesis that Neolithic figurines are related to fertility (*i.e.*, that they directly represent pregnant women), we record attributes of figurine bodies that are related to pregnancy and sex on figurines from different sites in the Central Balkans. If they are, the attributes related to fertility should be frequently depicted on figurines, especially in the initial stages of Neolithic, when the population boom happened.

The human-suid relations in Early Neolithic Europe: a case study of the Bulgarian site Džuljunica-Smārdeš

Donna A. J. de Groene, Petar Zidarov and Canan Çakırlar

The Bulgarian site Džuljunica-Smārdeš, dating to 6205–5529 cal BC, is one of the earliest Neolithic sites in Europe. Both domestic cattle and domestic caprines are well represented in the zooarchaeological assemblage. Sus, in contrast, are extremely rare at the site. It is not known if the earliest Neolithic people in Europe did rear domestic pigs at all, practised some form of pig management, or only hunted wild boar.

This research investigates the human pig relationships, using biometry, kill-off patterns, and isotopic dietary analysis. With this integrated methodological approach, it might be possible to characterize human-suid relationships in this pivotal early Neolithic site with greater accuracy. Understanding this relationship at this site contributes to the broader debate on how neolithisation and domesticates spread through Europe, and which bio-cultural mechanisms were responsible for differential patterns of animal exploitation.

Study of the burial ground Ekaterinovskiy Cape in the steppe and forest-steppe Volga Region

Arkadii Korolev, Anna Kochkina, Dmitriy Stashenkov and Aleksandr Khokhlov

The burial ground Ekaterinovskiy Cape is being excavated from 2013. We have studied 93 burials, which form several rows at the site. Skeletons prevail, which lie stretched out on the back with hands alongside the body. Less common are skeletons in a crouched position on their back with bent knees. Some burials contain human bones that are not in anatomical order. One of the graves (no. 79) is represented by piled up bones of two men and a woman that were covered with red ochre. Non-ordinary burial places are located in the central zone of the burial ground and are accompanied by a 'prestigious' inventory: stone scepter, wands of the horn, ornaments from canine fangs, and other objects. Additionally, sacrificial areas with ceramics were found at the site. We conducted an anthropological and archaeozoological study as well as started sampling bones and ceramics for the first ^{14}C dates. Preliminary results show that the burial ground can be dated to the second half of the 6th millennium BC.





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