Travels, transmissions and transformations in temperate northern Europe during the 3rd and 2nd millennium BC: THE RISE of Bronze Age societies

The project's goal was to identify degrees of mobility of people, things and ideas in order to understand the nature of social and cultural interaction during the 3rd and 2nd millennium BC, that were formative for European later history.

The project has been financed by an Advanced Researchers Grant from the European Research Council. **Principal investigator:** Kristian Kristiansen, Professor in Archaeology, University of Gothenburg, Sweden.

Project Description

The project aims to explore the role of travels, transmissions and transformation during the 3rd and 2nd millennium BC in northern Europe. It does so by adopting an interdisciplinary methodological approach that combines science and culture. Isotope tracing in combination with recent advances in ancient DNA is employed to test human origins and movements during the two millennia, as well as the origin of wool and textiles. Lead isotope is adopted to trace the origin of copper. Based on this the project will document and explain the forging of new identities and new types of interaction during the 3rd and 2nd millennium BC in temperate northern Europe, but with implications for a much larger region of western Eurasia.

This project is organized around four thematic research groups:

1. **Human Mobility**
2. **Bronze Age Textiles**
3. **Copper production**
4. **Travels, transmissions & transformations**

1.

Human Mobility

Human Mobility deals with isotope analysis as a means to test human mobility and diet, as well as ancient DNA analysis to map the origin of the analyzed individuals and their kinship.

This project is divided into two subprojects:

- Buried identities. Humans, burial practices, mobility and social identity in southern Scandinavia in the 3rd and 2nd millennium BC
- Ancient DNA

Buried identities

In this project, we will contribute new data and interpretations of this period by studying the buried persons themselves and their genetic and geographical provenience. Comparisons will also be made with reference material from earlier periods and other regions, such as Germany and Poland.

A systematic comparison of bioarchaeological data with variations in burial practices and artifact compositions will provide us with new insights on socially effective ways of classifying people during these periods, and contribute to our understanding of how gender, ethnicities and elites were constructed.

Ancient DNA

The key focus of the ancient DNA study will be to exploit recent technological and computational developments, in order to reconstruct the genetic history, and origins, of the Nordic and north European populations of the 3rd and 2nd millennium BC.

When compared with pre-existing European Neolithic ancient DNA datasets and modern DNA datasets, the new data will supplement and add historical depth to the strontium isotope analyses, as well as resolve kinship between the ancient samples.

2.

Bronze Age Textiles

Bronze Age Textiles deals with strontium isotope analyses to trace possible trade in textiles/movements, as well as archaeological analysis of textile production technologies.

This project is divided into two subprojects:

- Bronze Age textiles and strontium isotopic analyses
- Bronze Age textiles: production, use and exchange

Bronze Age textiles and strontium analyses

This study aims at establishing provenience of Bronze Age textiles and skins from the well-preserved oak coffin burials in the Danish National Museum.

Strontium isotopic signatures are conveyed from eroding geological materials via soils through the food chain into the human and animals soft tissues, where strontium substitutes for calcium. Since the path of strontium isotopic ratio through the food chain is unfractionated, it is possible to apply the method also to animals and hence to their products, in this case fiber, and consequently, textiles.

Bronze Age textiles: production, use and exchange

The aim of this study is to investigate the evidence for textile production, use and exchange in Bronze Age. The study will analyze textile-related material culture, which can be divided into four broad categories: tools for textile manufacture, spin combinations and the development of tabby, twill etc., the spread of knowledge concerning the function of textile-related tools and their use, the relationship between the textile development and changes in fashion. The contribution to the project will be complete the picture of textile production in northern Europe and its connection with other parts if the continent.

3.

Copper production

Copper production deals with lead isotope to trace the origin of copper production, and to reveal the extent of trade.

Tracing the copper sources

The research group deals with lead isotopes to trace the origin of metals, and to reveal the extent of trade. The aim is to understand 2nd millennium metalwork in its Scandinavian context by:

- Identifying exchange patterns and technological transfers across Europe
- Testing the hypothesis of Nordic copper production

Technological and stylistic similarities suggest that metalworking styles were shared across the Nordic region despite an otherwise huge regional variation. The project's twofold perspective will invigorate the discussion about Bronze Age core–periphery relations and the dynamics between different regions. Metals are highly malleable and the extent of recycling not yet fully mapped. Yet, in combination with archaeological insights into the social aspects of trade, gift-giving and technology, the tracing of sources provides a key to understand metal production and exchange.

There are more than 1600 trace element analyses of Scandinavian metalwork. Yet, attempts at tracing the origin of metals remain inconclusive and currently rest, in the final analyses, on distribution patterns and hypothetical matches with Bronze Age mines. Lead isotopy, which may help pinpointing the sources, has until recently only been conducted on a few objects. Ling et al. [link to Extraction of copper] have been able to demonstrate that metals reached Scandinavia from a much wider range of sources than hitherto imagined. Together the two projects will provide the first indications of the origins of copper in the Scandinavian Bronze Age.

The 130 lead isotope analyses which are to be conducted within the scope of the Rise will add significantly to the amount of data available for the Nordic region. In order to avoid extensive new sampling, an effort has been made to reuse old samples. Altogether 20 Early Bronze Age objects from the Bronze Age centers in northern Jutland are now being analysed along with 30 samples from Norway. In addition, supplementary analyses of ore bodies from the Scandinavian Peninsula and surface registrations, aimed at detecting and dating ancient workings, will be conducted.

4.

Travels, transmissions and transformations

Travels, transmissions and transformations deals with mobile technologies and their impact on cultural interaction, as well as origins and the formation of cultural identities in order to contextualize the former projects.

This project is divided into two subprojects:

- Travelling technologies and ideas
- The dialectic between interaction and identity formation/ethnicities

Travelling technologies and ideas

The project will examine the cultural origin of the spoke wheel technology (chariots) and specify and compare its ideological impact across a large part of Europe.

The dialectic between interaction and identity formation/ethnicities

It is possible to delimit various forms of social and ultimately ethnic identity, through a careful analysis of the geographical distribution of social institutions and the symbolic meaning of their material culture. Based on this, the formation, consolidation and dissolution of cultural and ethnic identities in material culture will be studied in order to gain insight into the historical long-term processes of these concepts. It includes a better understanding of the relationship between processes of hybridization and of homogenization in the formation of cultural identities.

Publicity

2013

EUROPA conference: The rise of Bronze Age society: new results from science and archaeology. Bradford, 14-15/06/2013

A two days conference celebrating Prof. Kristian Kristiansen and The Rise project was organized in Bradford, UK by the Prehistoric Society.
http://www.prehistoricsociety.org/events/event/the_rise_of_bronze_age_society_new_results_from_science_and_archaeology/%20http:/www.prehistoricsociety.org/gallery/europa_2013

2015
1.

The Rise project was acknowledged in the ERC 2015 Annual Report.

2.

Frei et al. 2015, Tracing the dynamic life story of a Bronze Age Female, Scientific reports. Read at: https://www.nature.com/articles/srep10431

The Archaeological Institute of America magazine Archaeology has branded the Rise research about the Egtved girl as one of the top 10 Archaeological discoveries of 2015.

In the news:

Coffin remains tell life story of ancient sun-worshiping priestess (Science magazine, https://www.sciencemag.org/news/2015/05/coffin-remains-tell-life-story-ancient-sun-worshiping-priestess)

Glimpse of Bronze Age girl's daily life from hair, clothes (CBS NEWS, https://www.cbsnews.com/news/glimpse-of-bronze-age-girls-life-from-hair-clothes/)

Bronze Age Woman Had Surprisingly Modern Life (National Geographic, https://www.nationalgeographic.com/news/2015/05/150521-bronze-age-woman-egtved-modern-archaeology/)

Prehistoric Danish girl 'probably born in Germany' (BBC News, https://www.bbc.com/news/world-europe-32835804)

Des chercheurs retracent l'histoire d'une femme de l'Age de bronze (Le Figaro, https://www.lefigaro.fr/sciences/2015/05/22/01008-20150522ARTFIG00323-des-chercheurs-retracent-l-histoire-d-une-femme-de-l-age-de-bronze.php)

Mädchen pendelte zwischen Schwarzwald und Dänemark (Der Spiegel, https://www.spiegel.de/wissenschaft/mensch/bronzezeit-frau-pendelte-zwischen-schwarzwald-und-daenemark-a-1035067.html)

Dansk nationalsymbol kan ha varit svensk (DN, https://www.dn.se/nyheter/vetenskap/dansk-nationalsymbol-kan-ha-varit-svensk/)

Egtvedpigen var indvandrer (Politiken, https://politiken.dk/viden/art5577095/Egtvedpigen-var-indvandrer)

3.

Rasmussen et al. 2015 Early Divergent Strains of Yersinia pestis in Eurasia 5,000 Years Ago. DOI: https://doi.org/10.1016/j.cell.2015.10.009.

In the news:

Bronze Age plague wasn't spread by fleas (Sciences news https://www.sciencemag.org/news/2015/10/bronze-age-plague-wasnt-spread-fleas)

Bronze Age skeletons were earliest plague victims (Nature news http://www.nature.com/news/bronze-age-skeletons-were-earliest-plague-victims-1.18633)

Plague infected humans much earlier than previously thought (Cell Press, https://www.theguardian.com/science/2015/oct/22/plague-has-infected-humans-since-bronze-age-dna-study-shows)

Plague has infected humans since Bronze Age, DNA study shows (The Guardian, https://www.theguardian.com/science/2015/oct/22/plague-has-infected-humans-since-bronze-age-dna-study-shows)

Plague traced back to Bronze Age (BBC news, https://www.bbc.com/news/health-34603116)

Historiens største dræber har levet blandt os i årtusinder (videnskab.dk, https://videnskab.dk/kultur-samfund/historiens-storste-draeber-har-levet-blandt-os-i-artusinder)

4.

Allentoft et al. 2015 aDNA and population genomics, Nature 14507, https://www.nature.com/articles/nature14507.

In the news:

Debate article in Nature: Human evolution: Ancient DNA steps into the language debate (John Novembre, https://www.nature.com/articles/522164a)

News in Nature: DNA data explosion lights up the Bronze Age (Ewen Callaway, http://www.nature.com/news/dna-data-explosion-lights-up-the-bronze-age-1.17723)

Organized conferences, seminars, and sessions

2012

Conference: ***3rd & 2nd Millennium Mobility: Isotopic investigations***

Seminar: ***Prehistoric Salt Production***

2013

Conference: ***Italy, Mediterranean and Europe in the Bronze Age***

Session: ***Towards new horizons. Advances in provenance methods and their repercussions in archaeology***

Session: ***Gender identities in the making – prehistoric dress and network patterns in a supraregional perspective***

2014

Conference: ***Landscape history revisite***

Conference: ***Human, Animals, Mobilities***

2015

Conference: ***Textile production and trade***

Conference: ***Bell-Beaker interaction***

2016

Conference: ***Trade Before Civilization***