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Making the Early Iron Age More Transparent: Thoughts on the Exchange of Amber and Glass

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Introduction: A New Project

Amber and glass artefacts are typically small objects that, regardless of their size, provide significant **evidence of trade activity** during the Early Iron Age. Since June 2023, our new project, entitled ***"Amber Roads of the Early Iron Age in Central Europe"***, has been investigating amber artefacts across Europe with the objective of **determining the origin** of amber by applying natural science methods, **reconstructing long-distance networks**, and researching **socio-economic and artisanal aspects**. The project focuses on the **Early Iron Age (Ha C until Lt A)**.

The project is funded by the **GAČR** (project no.: 23-07284K) and the **DFG** (project no.: 511425466).

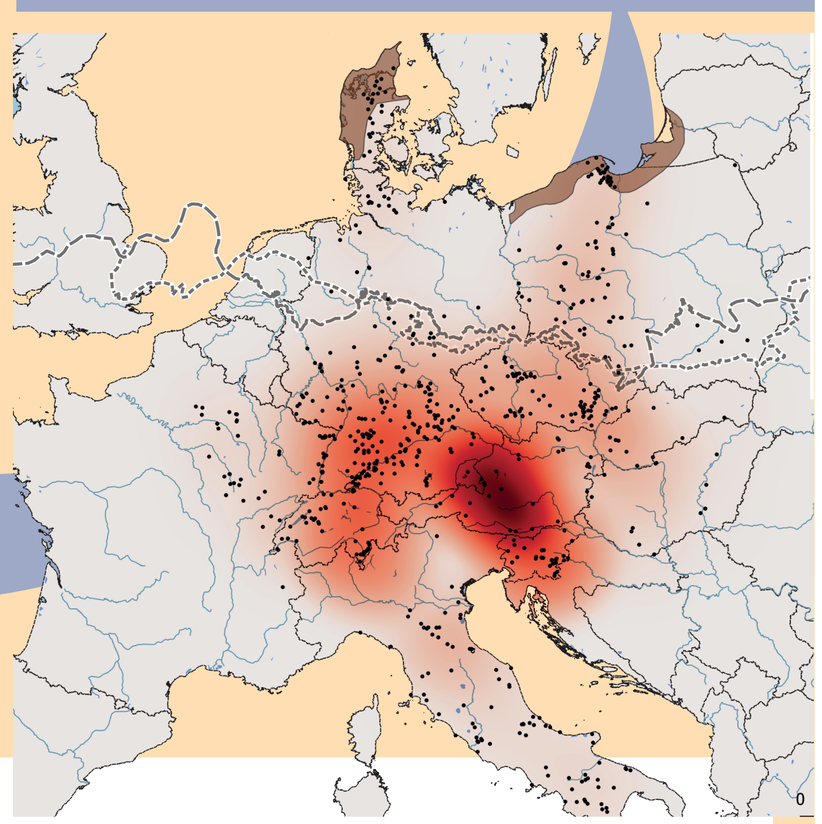
Scan the QR-Code for further information about the project

Why study them?

It has often been hypothesised that the raw material, **amber, was transported** from the Baltic area **to northern Italy** and beyond, where it **was processed**, and the finished products **returned north of the Alps**. There they were discovered in various features. In Central Europe, **amber and glass are frequently found together** in the same grave. This has led to the premise that **glass and amber** may have been used as **barter goods**. However, there is a lack of research verifying or falsifying this hypothesis of the exchange of glass and amber.

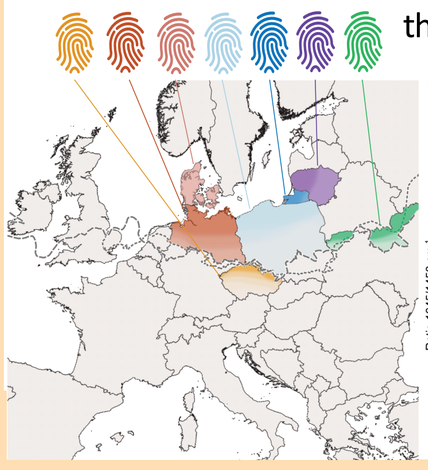
Fun Fact:

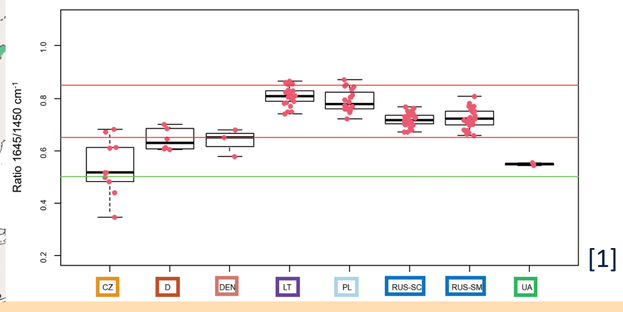
Despite the existence of numerous natural deposits of amber across the globe, the majority of amber recovered from archaeological sites that have been analysed is **Baltic amber (succinite)**, which originates from the regions bordering the North Sea and Baltic Sea.



Methods

Chemical analyses, such as infrared spectroscopy, Raman spectroscopy or gas chromatography, can be employed to **identify the origin of amber** samples. These methods yield individual signals, which function as a "**molecular fingerprint**," thereby allowing the origin to be identified.





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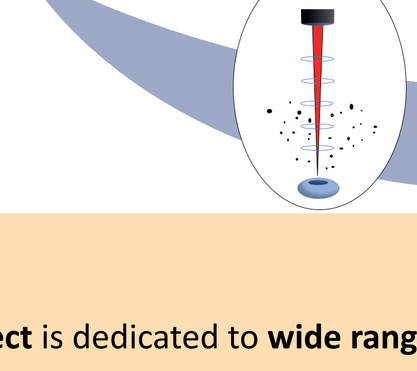
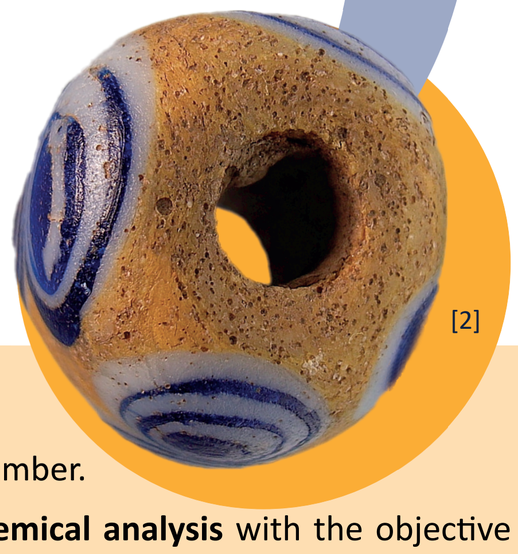
Glass

Unlike amber, glass is **produced artificially**. The main components are **silica** (SiO_2) from quartz or sand (about 70%), a **flux** mainly from sodium or plant ash (15-20%), and **calcium** (lime) from sand or shells.

Glass artefacts are frequently found **alongside amber** north of the Alps, where - as far as research has shown - glass was **not produced**, suggesting the **possibility of south-north exchange**. The basic principle of determining the provenance of glass can be established by isotopic analysis or techniques such as **LA-ICP-MS**, through the signals received by **analysing the trace elements** present **in sand.**





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This leads to the following questions:

1. Is there any **evidence of** an **exchange** or interaction **between amber and glass**?
2. To what extent can **analyses** of the chemical composition of amber and glass be used **to identify places of origin** and **trade routes**?
3. How is the **supply** of raw materials **organised in an area** with little or **no raw material**?

What next?

The **Amber Project** is dedicated to **wide ranged chemical analyses** of amber.

Furthermore, I intend to subject **glass** objects to a **trans-regional chemical analysis** with the objective of **determining** their **provenance**. **A comparison** to glass material from other regions is of the utmost **importance** in order **to identify differences and similarities** and to draw **conclusions on production sites**. The potential influence of trade models on the distribution of amber and glass will be analysed, with **network analysis**. A further focus is the **examination of workshops** that processed amber and glass. Additionally, it is necessary to employ **counter-mapping** in order to explain the absence of certain finds.

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[1] M. Chytráček/L. Kučera/D. Mischka/Z. Golec Mírová/M. Golec/J. Martínek/K. Hagemann/V. Zemek, The Origin of Amber in the Hallstatt Centre of Heuneburg and its Background in the Ha D1–D3 Period. In prep.
[2] https://www.altehochkulturen.de/p/keltische-augenperle-aus-gelbem-glas-fo-umgebung-hersbruck.

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