**Subject:** Archaeometry Special Issue – Chronological modelling: formal methods and research software

Dear XX XXXXX,

We would like to personally invite you to contribute to an (online only) Archaeometry Special Issue on the subject of "Chronological modelling: formal methods and research software". We were very intrigued by YYYYY. We were wondering if you would consider a paper on this topic in the context of modelling chronology, in this or other contexts? If you are interested in taking up this invitation, please let us know by the ZZZZ.

Time and its analysis, the chronology, are at the heart of archaeology: one of the main objectives of the archaeologist is the establishment of a temporal framework for a given layer, site or material culture. But archaeology covers such a wide range of features, dispersed both in time and space, that contextual chronological assessments are constructed using very different tools, languages and techniques. It creates as many different frameworks as there are specialties, with notable differences in approaches depending on whether one is dealing with absolute or relative chronology, Prehistory or recent periods, laboratory techniques or cultural approaches, deterministic or statistical methods, etc. The aim of this Archaeometry Special Issue is (i) to review the state-of-the-art practices of the many different specialities on research software and formal methods for chronological modelling (archaeometric dating, **bayesian, stratigraphic, seriation, temporal logics, etc.), and (ii) to open avenues for the alignment of archaeo-chronological data, according to FAIR principles, semantic web, and regardless of their precision (event date to century or season, summed probability densities, approximate duration, period with bevelled boundaries, etc.).**

**For this last point, i.e. the alignment and semantisation of chronological data, we wish to work in an innovative way, with the collaborative and versioning platform GitHub so that you, and each of the Special Issue authors, can share samples of their time data in interoperable forms that respect the standards of open science. The digital form of the SI will of course allow the linking of research articles and data samples. You can already see this platform under construction here:** <https://github.com/historical-time>

In the modern world, the practice of recycling has undoubtedly become one of the most important strategies to build a long-term sustainable society. However, both the perception and practice of recycling can be traced back into prehistory through the archaeological record. The motivations were likely diverse, and much broader than the economic driver which largely underpins recycling in the modern world. Objects made of stone, jade, mortar, textiles, pottery and bones display evidence of physical reshaping and repair, as do objects of metal and glass. Metal and glass, as materials which can be melted and recast, further freed ancient people from the limitations of the physical form of the original object. This mutability can fundamentally alter what remains in the archaeological record. Illustrating and understanding patterns of recycling and the underlying social organization can significantly advance our knowledge of ancient people, their economic, political and cultural motivations for recycling, as well as the broader interaction between the social and material world.

Although the issue of recycling is not novel in the discussions and debates within archaeology, new theoretical frameworks, methodologies and archaeometric data encourage us to revisit the topic in this special issue. We will invite a series of papers to contribute to (but are not necessarily limited to) the following aspects:

1. Methodological discussions on how to distinguish recycled materials from non-recycled ones: key challenges, practical applications and new types of evidence.

 2. Theoretical discussions on how to relate the choice of recycling to the broader social, political, economic and cultural matrix.

3. New data and case studies contributed to long-term debate on recycling in crucial regions or periods.

Final manuscript submission deadline: 1st March 2021

We hope you will consider contributing to this edition.

Yours sincerely,

Victoria

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