KU Leuven Open Science Day

Stone carving research as a potential open science archaeological project

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Abstract

Stone carving leaves characteristic traces on the facing surface of ashlar and on other structural building elements. Apart from their technological interest, these traces also have chronological potential because they change over time and because the periods of their use and change can be determined archaeologically. This has been shown in the past decennia for a large number of medieval buildings in Western Europe, but recently also for the classical city site of Sagalassos (SW Turkey). This site was chosen as a test case, in the first place because it is the working area of the Sagalassos Archaeological Research Project KU Leuven, but secondly because archaeological work is going on regularly every year, thus liberating new masonries with fresh carving traces for observation and registration. Stone carving traces can also be relevant to gain insight into choices and decisions of a society organizing its built environment and its socio-political relevance.

However, one city site cannot reveal much about the broader context of the observed technologies and their changes. Did the observed changes occur everywhere at the same time or were there differences between building sites? In how far were certain technologies and the use of specific tools preferred by certain groups of stonemasons? Did these groups move from one building site to another, thus carrying over technologies to broader areas? The answer to these, and many other, questions can only be given by an extension of this stone carving research to many more sites in West Anatolia, and at the long term to even bigger areas and/or more countries.

Be that as it may, such an extensive research can never rely on one single research unit. Therefore, international collaboration is a must, and collaboration in an open trustful atmosphere becomes a condition *sine qua non*. It is here that collaboration in an open science context becomes a potential option. The registration and analysis of stone carving techniques at many more sites can lead to the identification of contacts between or movements of stonemasons, hereby helping the reconstruction of technological and economic interactions between people working on building sites at different periods.

Such a project has two faces. It has the intention to be open to allow any interested partner to join in, but sufficiently private to secure, temporarily, the data being shared between declared partners until publication. Single and collaborating researchers doing innovative research indeed have the full right to keep their data temporarily private and to publish them first. But the ultimate publication of the results of such a

research also implies linking them to the data via a deposit in accessible repositories. The creation of a private group within [Humanities Commons](#) could be a valid option for a group of allied researchers.

The open science philosophy nevertheless remains the basis of such research, in the first place between declared partners, but also for potential future collaborations. Open science is a key attitude for creating confidence, not only in the results, but also for such a collaborative research project to succeed and for convincing other desirable partners to join in. Open science will also make it evident to use common methodologies and it guarantees equality between partners, both during the research and when it comes to publication. Ultimately, open science increases the transparency of these publications through data sharing, this time not only between partners, but also towards the scientific community outside the group of collaborating researchers.

The interoperability of the databases of the collaborating research groups must be verified to allow a correct exchange and interpretation of the data by all members. This can be achieved by setting up an aggregator to make the metadata of the different participating teams accessible in an [Open Archives Initiative](#) repository. The challenging issue here will be to agree to get the data of all partners compliant with the Dublin Core metadata standard. This part of the project is complicated because of the likely existence of so many metadata-sets as there will be partners. Therefore, the realization of this compliance-issue will require this archaeology project to involve qualified external IT-specialists, particularly because ongoing data sharing among project partners needs specific development, but also to decrease the mental burden on the researchers themselves.

Since working in a standardized way is important in such projects, not only for the digital component but also for the registration of the data, the availability of open educational resources for teaching is a necessary requirement for all declared and potentially new partners. Finally, in view of the open science context in which this project will be developed, the publication in open access journals, authorized and authored by all contributing partners, including appropriate links to the data used in the context of the publications (open science data) is evident, in the first place for scientific but also for teaching purposes.

The preceding lines do not reflect on an active, functioning project yet. This is merely a theoretical anticipation on a potential future collaborative project. The test case of Sagalassos, which is the actual subject of ongoing PhD research, will be finished first; thereafter, the results will be published and the data will be shared in open access,

thus showing its potential to interested partners. As the Sagalassos Archaeological Research Project KU Leuven is still in a learning and an exploring position, this proposal should be considered as a first investigation of the possibilities for this new type of research attitude.

Presentation

Author biography

[Frans Doperé](#) (KU Leuven) is doctor in sciences and a PhD researcher at the Archaeology Research Group. His interests lie within registration and analysis of traces of stone extraction in quarries and of ashlar carving techniques on ancient and medieval buildings. Furthermore, he is involved in chronology of ashlar carving techniques and building archaeology.