

# Impact of COVID-19 crisis on archaeology: challenges for the future

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**Abstract** – This paper focuses on the global coronavirus (COVID-19) pandemic crisis that has had profound impacts on archaeological research activities and cultural heritage communication. We describe impacts on academic as well as contract archaeology, professionals, and cultural heritage institutions. We discuss current practices during the pandemic period, and we explore challenges for the post COVID-19 era, particularly in academic archaeology. Universities were quick to replace face-to-face lectures with online learning, but the closures affected learning and examinations on the sector of archaeology. The pandemic crisis raises questions about the value offered by a university education which includes networking opportunities as well as educational content. To remain relevant, universities will need to reinvent their learning environments so that digitalization expands and complements student-teacher and other relationships. During the pandemic, organizations and projects provided fundings for online teaching and learning, activities such as webinars and online readings groups and other ways to stay active until a return to the normality is possible. Many archaeologists explored new tools for improving the digital documentation and related skills to be best prepared for future field seasons. In coming years archaeologists will face many challenges. We explain why the community could adopt Open Science practices, not entirely new in archaeology, to overcome all these challenges and why creativity and openness to new ways, to new opportunities of working are needed, rather than trying to go back to business as usual.

**Key words** – archaeology; academic archaeology; COVID-19 crisis; post COVID-19 era; digitalization; Open Science

**Title** – Auswirkungen der COVID-19 Krise auf die Archäologie: Herausforderungen für die Zukunft

**Zusammenfassung** – Dieser Aufsatz fokussiert auf die weltweite Krise, die von der COVID-19 Pandemie ausgelöst wurde und die tiefgreifende Auswirkungen auch auf die archäologischen Forschungsaktivitäten und die Kommunikation zum kulturellen Erbe hatte. Wir beschreiben Auswirkungen auf die akademische wie auf die privatwirtschaftliche Archäologie, auf Fachleute und Institutionen des Kulturerbes. Wir diskutieren aktuelle Praktiken während der Pandemiezeit und untersuchen Herausforderungen für die Zeit nach COVID-19, insbesondere in der akademischen Archäologie. Obwohl Universitäten ihre üblichen Präsenzveranstaltungen schnell durch Online-Lernen ersetzten, wirkten sich die Schließungen auf das Lernen und die Prüfungen auf dem Gebiet der Archäologie aus. Die Pandemiekrise wirft Fragen über den Wert auf, den die Hochschulbildung, die Networking-Möglichkeiten und die Bildungsinhalte umfassen. Um relevant zu bleiben, müssen Universitäten ihre Lernumgebungen neu erfinden, damit die Digitalisierung die Beziehungen zwischen Schülern/Studenten und Lehrern / Dozenten und andere Beziehungen erweitert und ergänzt. Während der Pandemie stellten Organisationen und Projekte Mittel bereit für Online-Lehre und -Lernen, für Aktivitäten wie z. B. Webinare und Online-Lesegruppen und boten andere Möglichkeiten an, aktiv zu bleiben, bis eine Rückkehr zur Normalität möglich war. Viele Grabungsarchäologen erforschten neue Werkzeuge zur Verbesserung der digitalen Dokumentation und der damit verbundenen Fähigkeiten, um für zukünftige Feldkampagnen optimal gerüstet zu sein. In den kommenden Jahren werden Archäologen vor vielen Herausforderungen stehen. Wir erklären, warum die Gemeinschaft Open-Science-Praktiken anwenden könnte (die in der Archäologie nicht ganz neu sind), um all diese Herausforderungen zu bewältigen, und warum Kreativität und Offenheit für neue Wege und neue Arbeitsmöglichkeiten erforderlich sind, anstatt zu versuchen, in alte Gewohnheiten und Wege zurückzukehren.

**Schlüsselwörter** – Archäologie; Universität; COVID-19 Krise; Nach-Corona-Zeit; Digitalisierung; Open Science

## Introduction

In this paper we describe impacts of global coronavirus (COVID-19) pandemic crisis on cultural heritage, on preventive archaeology and on academic archaeology. We explain why the community could adopt Open Science practices, to overcome all the challenges for the post COVID-19 era. The impact of the global coronavirus (COVID-19) pandemic has marked a decisive transition in our societies. The dramatic loss of human life, damaging economic impact and pressing - consequences of physical distancing measures and isolation, as well as the long-lasting effects of school closures and the overall disruption to private, professional lives and livelihoods, will require us to rethink

our current models and imagine more sustainable and resilient pathways for the future. Lockdown affected our travel, teaching, research, and communication. But we have learned a lot of new: Virtual communication, sharing data and knowledge on-line, and limiting our carbon footprint.

## Cultural heritage and COVID-19

Within these wider realities, the global coronavirus (COVID-19) pandemic crisis affected all museums, monuments, and other heritage sites worldwide. Due to the public health protection measures, restrictions on mobility and a drastic decrease of tourism they have seen their attendance declined

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and much income lost but profited significantly from using available online platforms to stay connected with audiences and offer cultural content and experiences. At some museums as at the British Museum the treasures have been scanned to gigapixel level. We can see the disputed Parthenon Frieze; we can search a huge number database of more than 4 million objects. Several organizations conducted surveys on the impact of the COVID-19 crisis on cultural heritage institutions during the first global lockdown and follow-up surveys: UNESCO (United Nations Educational, Scientific and Cultural Organization: UNESCO, 2020b; 2021a), ICOM (International Council of Museums: ICOM, 2020a; 2020b; 2021), and NEMO (Network of European Museums Organizations: NEMO, 2020; 2021).

### Preventive archaeology and COVID-19

On preventive archaeology the situation has become insecure for self-employed archaeologists and smaller companies. Some companies had to discharge staff and terminate temporary contracts (AITCHISON, 2009; CLEARY ET AL., 2014; SCHLANGER & AITCHISON, 2010; AITCHISON ET AL., 2020; DOUGLASS & HERR, 2020; HEALD & AITCHISON, 2020; LENNOX, 2020; RESCUE, 2020; SALAS ROSSENBACH ET AL., 2021; see also GARCIA, 2020). Based, on results of a survey of the European Archaeological Council (EAC, 2020), it seems that many preventive fieldwork projects continued and undertake some of the necessary rescue work, following the COVID-19 rules for such work. In cities it was more difficult, while in rural areas there were fewer problems.

Also, the survey report of the European Archaeological Council (EAC, 2020) notes that among members often mentioned *“the potential increase in infrastructure development and investments (which usually accompanies governmental action to combat economic crisis), leading to increased demand for archaeological work, rise in contracts and employment in the sector”*.

### Academic archaeology and COVID-19

In academic archaeology, site-based fieldwork, public archaeology (FOX, 2020; REDFERN, 2020), laboratory work, has been affected. In 2020 and 2021 planned fieldwork campaigns and field schools with students and volunteers had to be cancelled (e.g. LEIDEN UNIVERSITY, 2021). Furthermore, in coming years less funding for archaeological projects may be available.

In academic archaeology the universities have experienced a large-scale transition to online learning (KRISHNAMURTHY, 2020); the closures affected learning and examinations, although universities were quick to replace face-to-face lectures with online learning on the sector of archaeology. The pandemic crisis raises questions about the value offered by a university education which includes educational content and networking opportunities. To remain relevant, universities will need to reinvent their learning environments so that digitalization expands and complements student-teacher and other relationships.

In academic archaeology the COVID-19 crisis will be felt for a long time, by graduate students and early-career archaeologists due to the disruptions of field and laboratory work and reduced employment chances (BLOCH, 2020; DI FIORE, 2020; NEVES, 2020; VELEZ, 2021). A large survey with most participants from the USA showed that female archaeological researchers and students are most affected (HOGGARTH ET AL., 2021). According Guntram Geser (2021), *“established archaeologists had more time to analyze data from past field seasons, prepare publications, and applications for new research and public archaeology projects”*. Also, *“it has been observed an increase in access to available data in digital repositories, and it seems that the COVID-19 crisis made archaeologists more aware of the importance of publicly shared data, data repositories and discovery and access services”* (GESER, 2021).

Moreover, looking for reusable new and legacy data, archaeologists also explored tools for improving digital documentation and online platforms for collaborative research, including support of small local teams, where fieldwork was possible (BUDKA, 2020).

Academic archaeologists active on missions in developing countries longed to get back to site may have had to wait some time until this will be feasible. Meanwhile they could reconsider their relations with local communities and researchers as projects are often perceived as not being conducted on equal terms (BUDKA, 2021; CHIRIKURE, 2020a/b; OGUNDIRAN, 2020). In a keynote lecture at the 2020 conference of the European Association of Archaeologists (EAA), Cornelius Holtorf underlined the importance of a more inclusive archaeology for promoting trust, collaboration, and solidarity between communities (HOLTORF, 2020; see also HOLTORF & BOLIN, 2020). Other researchers about necessary changes in this regard, are e.g. Olson (2020) in a reply to observations on research in archaeology and social anthropology by Jobson (2020) and Rosenzweig (2020).

Another matter is increased looting at archaeological sites and illicit trafficking of cultural heritage objects as the COVID-19 crisis has adversely affected the surveillance of archaeological sites (UNESCO IMPACT OF COVID-19 ON ARCHAEOLOGY AND CULTURAL HERITAGE, 2020c). Looting must be prevented, though some projects monitor websites on which cultural heritage objects are offered, e.g., the ATHAR Project.

### Open Science and Challenges for the post COVID-19 era

In coming years archaeologists will face many challenges and the community could benefit from adopting Open Science practices in its efforts to overcome them.

The global coronavirus (COVID-19) pandemic has made more visible many known inequalities across borders and societies. This includes access to archaeological resources, both physical and digital. The ARIADNE infrastructure for archaeological data, and the SEADDA COST Action are working to secure the sustainable future of archaeological data across Europe and beyond, in ways that are Findable, Accessible, Interoperable and Re-usable (FAIR). An ARIADNEplus study suggests that the overall message to be drawn from the impacts of the COVID-19 crisis is “no return to business as usual”, instead progress in Open Science practices should be promoted.

The rights conveyed by Article 27 (1) of the Universal Declaration of Human Rights (UDHR) regarding the pursuit of science cover two aspects: active participation in the process, and the sharing of benefits. Extending substantially beyond the accessibility of information, both require enabling measures and environments. They strongly resonate with the principles of Open Science, which the recently adopted UNESCO Recommendation on Open Science defines as “practices aiming to make multilingual scientific knowledge openly available, accessible and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community.” The benefits of Open Science practices, like open sharing of research data and publications, have been exemplified in research on COVID-19.

In archaeology the request to follow open research practices is not entirely new, it has been expressed by researchers for several years (e.g.,

BECK & NEYLON, 2012; BECK, 2013; COSTA ET AL., 2012; KANSA, 2012; LAKE, 2012; MARWICK ET AL., 2017; WILSON & EDWARDS, 2015).

Particularly the Open Science in Archaeology paper by Marwick et al. (2017), published by a large group of distinguished archaeological researchers, has greatly added to the awareness of the Open Science agenda in the field. Often described as “open science,” these new norms include data stewardship instead of data ownership, transparency in the analysis process instead of secrecy, and public involvement instead of exclusion. According to Marwick, Open Science makes archaeological research transparent, reusable, and accessible, and promotes ethical practices (MARWICK ET AL., 2017). These practices encourage transparency and they enhance research credibility. Researchers can readily explain their data, analytical processes, and workflows.

Open Archaeology, including open sharing of research methods, tools, data, novel forms of research collaboration, and a deeper involvement of citizens, can greatly extend the societal relevance and reach of archaeological knowledge. Scientific projects are complex social undertakings and open collaboration may be just as important as open methods and open data in providing transparency of scientific processes. However, many archaeologists are not yet well prepared for Open Science practices. As the matter is complex, strong leadership regarding policies/mandates, supportive institutional measures and state-of-the-art digital repositories are necessary.

The right of everyone “To enjoy the benefits of scientific progress and its applications” is furthermore explicitly protected by multilateral state treaty, namely Article 15 (1) of the International Covenant on Economic, Social and Cultural Rights (ICESCR). Therefore, national states hold responsibility for making Open Science work and to provide means of access to required infrastructure. But responsibility does not end at national level. The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, particularly, Sustainable Development Goals SDG10 is to “reduce inequality within and amongst countries”.

The wider momentum from international projects such as PARTHENOS, ARIADNEplus and SEADDA can be used to further highlight the issue of data management and gain from international expertise regarding to data archiving practices and administration and connect with other countries working to solve similar problems.

## Discussion and Conclusion

Moves towards Open Science as advocated by EU (European Union) policies are now reflected in National policies, pushing organizations and individuals to move towards implementing best practice. A major aid in this regard is the development of efforts as HELIX and HARDMIN in Greece, which will provide a comprehensive environment for research conduct and data deposition and would work towards infrastructure integration among the different parties (PISPIRINGAS ET AL., 2019).

In education, the incorporation of courses in data curation practices and open science methodologies in archaeological curricula, at both the postgraduate and undergraduate levels, will provide the necessary acclimatization of the new generation of scholars and professionals to current data stewardship practices and Open Science conduct (POLYMEROPOULOU ET AL., 2020).

This should be tied to greater efforts for pressing issues related to personal archiving, i.e. data collections produced during archaeological interventions in all sectors that remain on outdated hardware, or on hard disk drives that will no doubt become obsolete, especially after the completion of a contract or a career.

The key is raising awareness on those issues relevant to digital data preservation and reuse and attempting to build consensus on the best strategies to change mindsets and advocate for the benefits of Open Science.

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