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EDITORIAL

The 5th International Conference on Preserving Archaeological Remains *In Situ* (PARIS5): 12–17 April 2015, Kreuzlingen (Switzerland)

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Introduction

The fifth Preserving Archaeological Remains *In Situ* (PARIS) conference took place in April 2015 in the town of Kreuzlingen on the Swiss shore of Lake Constance in Canton Thurgau. It followed the previous conferences that took place in London (1996 and 2001), Amsterdam in 2006, and in Copenhagen in 2011 (Gregory & Matthiesen, 2012, 1–2). The venue had been chosen following the presentation of the Interreg IV project 'Erosion und Denkmalschutz am Bodensee und Zürichsee' (Erosion and monument conservation on Lakes Constance and Zurich) by Marion Heumüller in Copenhagen, which generated much interest (Brem, et al., 2013). The conference was held on campus and in the well-equipped auditorium of the A-Level College of Pedagogical Studies (PMS) in Kreuzlingen (Figure 1). Over the course of six days more than sixty scientists debated the topic of *in situ* preservation of both archaeological sites and artefacts. They put forward a variety of solutions to protect sites currently threatened by degradation and erosion, but also raised the difficulties of preserving sites in the face of climate change.

Twenty-five lectures were given, twelve posters were presented, two guided tours undertaken and three excursions organized. The main responsibility for the organization of the conference lay with Hansjörg Brem, Urs Leuzinger, and Nicole Esslinger (conference secretary), and they were supported by Claudia Peyer (PMS). The scientific board was comprised of Urs Leuzinger (Chairman), Mike Corfield, David Gregory, Andreas Mäder, Henning Matthiesen, Boris Schibler, Helmut Schlichtherle, Jane Sidell, Jim Williams, and Claus Wolf. PARIS5 was supported by Canton Thurgau, the state of Baden-Württemberg, the town of Kreuzlingen, the Swiss Academy of Humanities and Social Sciences, the Swiss Archaeology Association, and the National Information Centre on Cultural Heritage (NIKE). We would like to extend our deepest gratitude to all these institutions.

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FIGURE 1 The participants in the PARIS5 conference in Kreuzlingen in the spring of 2015. *Photograph by S. Benguerel, Thurgau Department of Archaeology, www.archaeologie.tg.ch*

The conference was divided into five sessions: (1) Past Mitigations — Successes and Failures, (2) Degradation Processes, (3) First Things First, (4) The Lake Constance Area, (5) Monitoring and Mitigation. Interesting papers on all these subjects were delivered, now published by Tim Williams and his editorial team at Taylor & Francis, to whom we express our gratitude for their considerable support.

Many problems — One Goal

Whilst the examples presented at the conference in Kreuzlingen were heterogeneous and varied, the goal of all researchers was the same, that is, to preserve cultural heritage *in situ*. In order to come as close to this target as possible, very different procedures have been undertaken, from prospection and survey to trial excavation, resaturation, burying, covering and wrapping, chemical and physical measuring, and of course laboratory testing. One of the alarming factors highlighted a number of times is the threat not only from construction or wave action but by climate change, both warming and increased precipitation. This has become apparent in northern Norway, where numerous Neolithic and medieval sites are more prone to decay following rising summer temperatures (Vandrup Martens, et al., Chap. 1). The same applies in the Alpine region where melting glaciers have exposed numerous archaeological sites in recent decades (Grosjean, et al., 2007). Expanding populations of shipworms *(Teredo navalis)*, swans and neophytes such as eastern crayfish *(Orconectes limosus)* also destroy archaeological layers and submerged wooden remains (Eriksen and Gregory, Chap. 2).

Laboratory and field measurements

Several contributors dealt with fundamental research both in the laboratory and in the field. The research involved a variety of tests to establish the mechanical and chemical

influences on archaeological finds and features caused by overlying sediments, compaction, piling, loading, oxidation, pH values, temperatures, and humidity (Leskovar, et al., Chap. 3; Groenendijk, et al., Chap. 4; Ngan-Tillard, et al., Chap. 5; Gregory, 2015). Particular emphasis was placed on wetland sites, which are of course more difficult to preserve than dryland sites, but generally much richer in content. To predict the chances of organic preservation in the mid- to long-term, detailed understanding of the conditions in waterlogged or periodically wet sediments is required. Several authors tackled groundwater-level fluctuations, conductivity, pH values, oxygen content, and redox potential. The aim in these cases was to ascertain whether the depositional environment could be changed, stabilized, or ideally even improved by putting in place particular protection measures. A prime example is the UNESCO World Heritage Site of Bryggen in Bergen in Norway (Matthiesen, et al., Chap. 6; de Beer, et al., Chap. 7), where a comprehensive series of measurements have been recorded in recent years concerning this set of problems, probably making this the most thoroughly monitored site in the world. Similar projects have been undertaken at other sites, for instance in western Greenland (Hollesen, et al., Chap. 8), Denmark (Tjelldén, et al., Chap. 9), Great Britain (Malim, et al., Chap. 10; Wagstaff, et al., Chap. 11), Belgium (Devos, et al., Chap. 12), and Trondheim (Petersén and Bergersen, Chap. 13).

High-precision LIDAR measurements and the use of multibeam echo-sounding equipment on land and in the shallow littoral zone to observe and quantify sediment deposition and layer degradation is another innovative and promising approach to the protection of archaeological sites (Huisman, et al., Chap. 14; Wessels, et al., 2015). Comprehensive measurements of waves and currents being carried out by researchers from the Limnological Institute at the University of Constance on Lake Constance are breaking new ground with regard to successfully stopping the erosion processes at prehistoric pile-dwelling sites (Ostendorp, et al., Chap. 15). Another new approach is the application of ground-penetrating radar at Neolithic and Bronze Age wetland settlements in Switzerland and Germany (Baum, et al., 2014). The data provide more information on the state of preservation and threat posed by erosion and will assist in devising suitable measures for sustainable protection of these archaeological zones.

Covering, rewetting, protective constructions

The descriptive title 'Wrap a Wreck' (Speleers, et al. Chap. 16) is representative of several papers. In this case, the team wrap shipwrecks which have come to light in the drained Zuiderzee (Netherlands), like gifts, using plastic sheeting. The technique is intended to stop the sediment from dehydrating further and to guide rainwater into the wooden remnants of the ships. Close monitoring has shown that the wrapping is successful in rewetting the wooden features.

Launched in 2012, the Australian Historic Shipwreck Preservation Project (AHSPP) aims to archaeologically examine and protect historical wrecks off the coast of Australia. Two wrecks — the *Clarence* (1850) and the *James Matthews* (1841) — have been selected and covered with sandbags (Richards, et al., Chap. 17). The long-term monitoring of both wrecks will show how the reburial environment around the covered areas might change over time.

Considerably older than the Australian wrecks is the Late Bronze Age dugout canoe from Shardlow Quarry in Derbyshire, which was discovered in 2003 (Williams, et al., Chap. 18). Once recorded, the boat was left *in situ* whilst gravel extraction continued in the surrounding area. Monitoring of the sediment covering over a period of more than ten years has since shown that no new damage has been done to the boat, and as a consequence monitoring was suspended in 2015. One of the key points raised by this paper was the need to include timeframes for monitoring projects, including identifying when it is no longer necessary.

Probably the most unusual preservation of a boat was undertaken in London. An extension to a hospital was constructed above a Roman barge that had been discovered in 1958 and legally protected since 1980 (Sidell and Panter, Chap. 19). A legal agreement was drawn up identifying the acceptable and unacceptable ranges for water level, pH, and redox values, with a timetable for monitoring. It has been agreed that should the monitoring indicate poor conditions for preservation, the hospital operator will undertake and carry the costs of a complete excavation. This is a rare example of planning for remedial action if monitoring demonstrates problems with a preservation *in situ* project. Unfortunately, when the 4.5 m deep trial pit was dug, the team of archaeologists failed to take any samples for dendrochronological analysis. The boat can be dated by pottery to the period between AD 190 and AD 225.

The covering in the areas of the prehistoric pile dwellings on the shore of Lake Constance is not as thick (Brem and Leuzinger, Chap. 20; Köninger and Schlichtherle, Chap. 21). Archaeologists have attempted to stop the erosion caused by waves and currents by placing geo-textile on the sites and covering it with layers of gravel. The monitoring carried out so far has shown that the measures are yielding promising results. Mechanical destruction has been prevented; the next step will be to ascertain whether and to what extent chemical processes will continue to degrade the organic materials beneath the coverings.

Large-scale burial with plastic sheeting and sediment in the area of medieval farm mounds are currently ongoing in the region of De Onlanden south-west of Groningen in the Netherlands (Vorenhout, Chap. 22). The measure is intended to prevent the organic remains from drying out whilst also preventing the archaeological layers from being damaged by the roots of plants.

Test excavations, rezoning, and burial were necessary for completely different reasons in the area of the Roman military camp at Fectio, Bunnik (de Groot, et al., Chap. 23) and the early medieval cemetery at Borgharen, Maastricht (de Kort, et al., Chap. 24), both in the Netherlands. Illegal metal detectorists had wreaked havoc at both sites but by creating an archaeological park, rezoning a tract of farmland as a nature reserve, laying a metal grid and depositing 0.5 m of sediment, the detectorists were eventually deterred. Thanks to the fact that the area was no longer farmed, the use of fertilizers also ceased, which will have an additional positive effect on the preservation of metal artefacts.

Rewetting measures were also an important and much-discussed topic at the PARIS5 conference. Whilst the Iron Age lakeside settlement at Glastonbury and the Neolithic 'Sweet Track' in Somerset were both excavated and examined in detail, the finds and features that still remain in the ground are severely threatened by desiccation. Certain areas have since been sustainably conserved by wetting (Brunning, 2011) but other sections of the trackway are located on private property which prevents them from being actively monitored or preserved.

A very successful example of a close collaboration between nature protection, archaeology, and landowners exists in the area of Lake Federsee in Baden Württemberg. Exchanging tracts of land, rezoning, and infilling drainage ditches in an area of more than 26 km in length resulted in large-scale waterlogging of many prehistoric wetland settlements (Köninger and Schlichtherle, Chap. 21). Another promising project, albeit on a smaller scale is the rewetting work currently being carried out in the Seebachtal Valley in Canton Thurgau, where wooden features of the Late Bronze Age lakeside settlement at Hüttwilen/Ürschhausen-Horn are benefiting from the raised groundwater levels (Brem and Leuzinger, Chap. 20).

Research into sustainable urban drainage systems (SUDS) in the Netherlands is proving interesting (Boogaard, et al., Chap. 25). Three case studies — the Montferland Motte, the city mound of Vlaardingen, and Weiwerd in Defzijl — were selected to highlight engineering methods to keep groundwater levels stable and as high as possible within an urban context. Retention basins, drainage systems, permeable paving, and rainwater swales and gardens are all relatively low-cost constructions that can assist in preserving archaeological layers, and online information is making these projects and techniques widely accessible.

A similar procedure is being employed at the UNESCO World Heritage Site of Bryggen in Bergen (Rytter & Schonhowd, 2015; de Beer, et al., Chap. 7). The organic layers measuring up to 10 m in thickness beneath the historical town centre are at high risk of desiccating, however, the data gathered in recent years show that the rewetting measures have been successful so far. Nevertheless, intensive monitoring of the site must remain in place for the foreseeable future.

Several contributions dealt with protective constructions at archaeological sites and the problems surrounding tourist access to underground and underwater features. The new subterranean visitor centre 'DOMunder' in the centre of Utrecht exhibits extraordinarily well-preserved features from the Roman and medieval periods (van Os, et al., Chap. 26). Ventilated glass covers and low lighting have been put in place with a complex monitoring system intended to prevent fluctuating humidity leading to plant growth or mould. Another challenge will be to eliminate damage occurring as a result of the visitors themselves.

The studies at the world-famous Neolithic settlement at Çatalhöyük in Turkey (Pye & Çamurcuoğlu Cleere, 2009) show how two cover buildings, built in 2003 and 2008 respectively, are intended to protect the fragile eighth millennium BC mudbrick architecture and decoration from erosion and other harmful environmental influences. Analysis has shown that wind and temperature variations are the main factors that affect the archaeology. A monitoring programme was launched at the end of 2011 which, among other things, involves three protective model shelters to improve conditions in terms of dust, climate, and other factors.

Finally, two marine projects deal with issues of preservation and tourist access to underwater sites. Iron cannon from a fifteenth/sixteenth century shipwreck located off the Catalan coast near the Punta Santa Anna at Blanes remain on the seabed (Riera, et al., Chap. 27) and local divers, in collaboration with the Catalonian Centre of Underwater Archaeology, aim to protect these artefacts on one hand, whilst making them accessible to the interested public as part of an underwater park on the other. To prevent damage, a monitoring programme has been put in place with the divers recording the cannon.

FIGURE 2 When your work is done, relax! The organizing committee of PARIS5 having lunch on the shore of Lake Constance.
Photograph by U. Leuzinger, Thurgau Department of Archaeology, www.archaeologie.tg.ch

In Indonesia, in the waters around the Raja Ampat Archipelago, archaeological remains include the wrecks of crashed aircraft from the Second World War (Dillenia, et al., Chap. 28). The area forms a popular underwater tourist attraction but earthquakes form a major threat to the survival of these wrecks. In close collaboration with geologists and tourism experts, archaeologists are developing strategies to protect these sites.

Outlook

The final lecture at the conference was provocatively entitled 'Relax, Don't Do It' (Huisman, Chap. 29). There could not be a better visualization of such relaxation than the picture showing the scientific board of PARIS5 having lunch on the shore of the lake … (Figure 2). The entirely serious background to the paper was the fact that, whilst we have made great progress in recent decades, it still remains difficult to quantify the speed at which decay occurs: what is acute damage, what will decay over the period of a generation, and what is a natural taphonomic process that will take place quite 'normally' over a period of several hundred years? Moreover, archaeologists often depend on costly and complex high-tech data where a return to low-tech observations and common-sense estimates might offer more success in the future. Only in cases where the changes to the environment are clearly recognizable and take place relatively quickly can such counter-measures help to prevent the destruction of an *in situ* feature. In cases of unstoppable decay, high-precision measurements are generally of little use and a different course of action, for instance excavation, must perforce be considered. A well-documented excavation is sometimes better than a closely observed process of *in situ* decay.

In conclusion, the conference on Lake Constance tackled a range of pressing issues, from cutting-edge science to issues of presentation to tourists and taxpayers. Many interesting papers were presented at PARIS5 and intensely debated with scientific exchanges between researchers from all over the world proving enlightening and highly motivating. The results are now presented in these conference proceedings and are intended to assist *in situ* preservation of as many sites as possible around the world, and also provide guidance on when not to preserve *in situ*. We hope that there will be a PARIS6 event in London, UK in the coming years which will build upon the solid foundations of the five preceding conferences.

Bibliography

Baum, T., Mäder, A., Mainberger, M. & Schindler, M.P. 2014. Site Management in Rapperswil-Jona, Untiefe Ost: Eine Multidisziplinäre Annäherung. *Archäologie Der Schweiz*, 37(4): 34–39.

Brem, H., Eberschweiler, B., Grabher, G., Schlichtherle, H. & Schröder, H.G. 2013. eds. Erosion und Denkmalschutz am Bodensee und Zürichsee. Ein internationales Projekt im Rahmen des Interreg IV-Programms, Alpenrhein-Bodensee-Hochrhein' zur Entwicklung von Handlungsoptionen zum Schutz des Kulturgutes unter Wasser. Bregenz: Vorarlberg Museum.

Brunning, R. 2011. Archaeological Strategies for Terrestrial Wetland Landscapes. In: F. Menotti, eds. *The Oxford Handbook of Wetland Archaeology*. Oxford: Oxford University Press, pp. 451–463.

Gregory, D. & Matthiesen, H. 2012. The 4th International Conference on Preserving Archaeological Remains In Situ (PARIS4): 23–26 May 2011, the National Musem of Denmark, Copenhagen. *Conservation and Management of Archaeological Sites*, 14(1–4): 1–6.

Gregory, D.J. 2015. Development of Tools and Techniques to Survey, Assess, Stabilise, Monitor and Preserve Underwater Archaeological Sites: SASMAP. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XL-5/W7*: pp. 173–177.

Grosjean, M., Suter, P.J., Trachsel, M. & Wanner, H. 2007. Ice-Borne Prehistoric Finds in the Swiss Alps Reflect Holocene Glacier Fluctuations. *Journal of Quarternary Science*, 22(3): 203–207.

Pye, E. & Camurcuoğlu Cleere, D. 2009. Conserving Çatalhöyük, a Neolithic Site in Anatolia. *Archaeology International*, 12: 42–46.

Rytter, J. & Schonhowd, I. 2015. *Monitoring, Mitigation, Management – The Groundwater Project – Safeguarding the World Heritage Site of Bryggen in Bergen*. Oslo: Riksantikvaren, 116.

Wessels, M., Anselmetti, F., Artuso, R., Baran, R., Daut, G., Gaide, S., Geiger, A., Groeneveld, J.D., Hilbe, M., Möst, K., Klauser, B., Niemann, S., Roschlaub, R., Steinbaucher, F., Wintersteller, P. & Zahn, E. 2015. Bathymetry of Lake Constance – A High-Resolution Survey in a Large. *Deep Lake. Zeitschrift Für Vermessungswesen*, 140(4): 203–210.