



AN AUSTRALIAN ARCHAEOLOGICAL CONSERVATOR IN EASTERN CRETE

A comparison of practices and methodologies.

An International Specialised Skills Institute Fellowship

REBEKKA HOCKING

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1. ACKNOWLEDGEMENTS

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Personal acknowledgements:

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2. EXECUTIVE SUMMARY

Conservation is a small but rapidly developing sector with new research and techniques constantly being developed. The need for archaeological conservation in Victoria is growing thanks to major urban development projects alongside strengthened cultural heritage legislation. However, there are limited training opportunities for archaeological conservators in Victoria. Emerging conservators must therefore look overseas to develop the skills necessary to excel in the industry in Australia.

In Victoria, conservation activities are not usually undertaken in the field. Therefore, archaeologists often have a limited understanding of the role and abilities of conservators. Similarly, conservators do not always understand archaeological processes or the demands of working in the field. Yet collaboration and mutual understanding between the fields is necessary for the best possible outcomes for archaeological artefacts.

The Fellow travelled to Crete, Greece for two months with the aims of:

- » enhancing their practical conservation skills,
- » networking with conservators and archaeologists who are actively collaborating in the study, preservation and understanding of archaeological artefacts,
- » gaining knowledge in how to better preserve our archaeological material,
- » promoting the need for further collaboration between conservators and archaeologists.

The Fellow's learnings came from a nine-week internship with the Institute for the Study of Aegean Pre-History Study Centre for East Crete (INSTAP SCEC),

undertaking specialist training with archaeological material and a series of site visits.

- » Trained specialist professionals are required to maintain Australia's cultural heritage.
- » Collaboration between conservators and archaeologists is needed to ensure the preservation of our cultural material.
- » Conservation and preservation need to be taken beyond museums, collections and into the field.

The Fellow built upon their professional network and expanded their field of reference through direct comparison with a Fellow conservator undertaking a similar program at the Agora in Athens.

Several recommendations have arisen from the fellowship including:

- » introduction of basic principles of conservation/ archaeology subjects in tertiary level courses;
- » the sorting of artefacts by material as they are excavated;
- » development of Field Conservation Guidelines for archaeologists;
- » development of a collaborative workspace with facilities for the analysis, conservation and short-term storage of archaeological material.

3. FELLOWSHIP BACKGROUND

The need for archaeological conservators in Victoria has never been greater, thanks to the strengthening of cultural heritage laws (Heritage Act 2017). These laws now require developers to also fund the conservation of archaeological material, alongside funding the excavation and analysis before they can disturb a significant area of historic cultural heritage. These changes have led to increased interaction of archaeologists with conservators and have emphasised the need for further collaboration between the two fields in the Victorian sector.

Fellowship context

The legislation changes have also highlighted the lack of archaeological conservation training opportunities in Victoria and Australia as a whole. There is only one master's level conservation program in Australia at The University of Melbourne. This course allows for specialisation in objects, paintings or paper. These are very broad categories, particularly objects which can encompass modern art, digital media, museum collections, ethnographic material, furniture and textiles as well as archaeological objects. Further training must therefore be undertaken to develop one's specialisation. Often in the form of internships, volunteering or short courses. The aims for the Fellow's internship are outlined below;

- » skill enhancement of the Fellow in the practical skills of archaeological conservation
- » network with archaeologists and conservation professionals
- » gain knowledge in the processes and methodologies of an established conservation lab working with a variety of active excavations.

Fellowship methodology

In order to further develop the Fellow's specialisation in archaeological conservation an internship was undertaken at INSTAP SCEC under the guidance of Kathy Hall. This internship also involved a series of site visits, often with guided tours. Several independent site visits were also undertaken by the Fellow, alongside trips to several archaeological museums on Crete. Finally, the Fellow's experiences were discussed and compared with another emerging Victorian conservator undertaking a similar internship at the Agora in Athens, Greece.

Training:

INSTAP SCEC

Training at the INSTAP SCEC involved treating a wide variety of archaeological artefacts. Hall provided direction when required, but also allowed the interns to develop their own treatment methodologies and research and experiment with new treatments.



Mechanically cleaning a copper alloy saw (photo courtesy of Kathy Hall).

Site visits:

- » Chryssi
- » Mochlos
- » Spinalonga
- » Vassiliki
- » Chamaizi
- » Palekastro
- » Gournia
- » Knossos
- » Petras Cemetery
- » Azoria
- » Phaistos
- » Gortyna



Rebekka Hocking visiting the Minoan House of Chamaizi, Crete (photo courtesy of Elena Bowen)

Observation of collections:

- » Archaeological Museum, Chania
- » Archaeological Museum, Heraklion
- » Archaeological Museum, Sitia

Discussions:

» Grace McKenzie– Agora Athens

Fellowship period

The Fellowship was conducted across 9 weeks during June - August 2019, in the town of Pachia Ammos, Crete, Greece.

Fellow biography

Rebekka Hocking is an emerging archaeological conservator in Melbourne, Victoria. She studied ancient history in her undergraduate degree and has worked as an archaeologist since 2015 on projects in both Victoria and Europe. Since graduating the Masters of Cultural Materials Conservation, from the University of Melbourne Rebekka has been working in both the archaeology and conservation sectors and hopes to eventually develop a role which merges both fields. Rebekka has been a member of the Australian Institute for the Conservation of Cultural Material (AICCM) since 2017.



Rebekka Hocking at Petras Minoan Cemetery (photo courtesy of Elena Bowen)

Abbreviations / Acronyms / Definitions

INSTAP SCEC	Institute for the Study of Aegean Pre-History Study Centre for East Crete
AICCM	Australian Institute for the Conservation of Cultural Materials
RH	Relative Humidity
PVB 30H	Polyvinyl Butral 30H
UNESCO	United Nations Educational, Scientific and Cultural Organization

4. FELLOWSHIP LEARNINGS

This internship primarily involved working on large and small conservation treatments from a variety of excavations associated with INSTAP SCEC. The Fellow worked under the direction of conservators Kathy Hall and Matina Tzari. Materials treated included ceramic, metal (bronze, iron and lead), stone, glass, bone and plaster. The Fellow worked alongside two other interns; Madeline McLeod and Elena Bowen. They worked on treatments both individually and as a group. The level of interaction with archaeologists varied from project to project. It was very valuable to have the archaeologists working nearby whilst treating their artefacts. This allowed for discussions about the material composition and use of objects as well as what level of conservation was required for analytical purposes.

This internship allowed the Fellow to constantly treat a variety of artefacts, greatly improving their hand skills and working on treatments that will be transferable to their work in Australia. Students and staff at INSTAP SCEC have diverse backgrounds and levels of experience. All their input is valuable, as they provide different perspectives and skills sets. The Fellow's time at the INSTAP SCEC was a great opportunity to develop a professional network whilst keeping abreast of continuing developments and innovations in both conservation and archaeology. Alongside developing hand skills, the focus of the internship was observing the practices and methodologies of the INSTAP SCEC with the intention of applying these where possible in Victorian practice.



From left Rebekka Hocking, Madeline McLeod and Elena Bowen at Mochlos, Crete (photo courtesy of Angus Smith)



Rebekka Hocking and Elena Bowen gap filling a ceramic storage vessel (photo courtesy of Kathy Hall)

Practices and methodologies

“Many materials are most in jeopardy when first exposed to the atmosphere after many centuries of burial” (Cronyn 1990, p. 5). This is due to the vast change from the dark, relatively stable environment underground to the light, windy environment above ground with fluctuating temperatures and relative humidity (RH). This is due to the vast change from the dark, relatively stable environment underground to the light, windy environment above ground with fluctuating temperatures and relative humidity. There is also an inherent risk associated with the handling and transportation of artefacts. Damage to artefacts during this time can be minimised in several ways; having an onsite conservator to provide advice and immediate treatments, sorting artefacts by material in the field, educating archaeologists on identification and what to expect from particularly vulnerable material types and transporting artefacts to the lab as soon as possible. Conservators are becoming steadily more involved in archaeological excavations in Victoria. The Fellow wanted to observe the strategies used to minimise damage and deterioration to artefacts at the INSTAP SCEC, with the aim of eventually applying them to Victorian practice.

Artefact collection in the field

Before arriving at the INSTAP SCEC artefacts are sorted by material in the field. Any whole vessels are bagged separately with the internal soil retained for residue analysis and in case it contains any small sherds. This is better for the artefacts overall, as they are not damaged by heavier materials being placed on top of them in mixed finds buckets, as well as allowing them to be immediately placed in appropriate storage conditions once they arrive at the lab. Hall provides each excavation with all the artefact related equipment they will need, i.e. storage bags and boxes, Tyvek labels, twist ties, permanent markers and a basic conservation first aid kit.

“The first or preliminary packing undertaken on-site is a crucial part of the conservation process during the excavation and recovery of archaeological

materials. Often it determines the future survivability of the artefact itself and any potential analytical significance or associated information” (Pedeli and Pulga 2013, p. 97). Usually artefacts are collected into plastic bags, however bones and plaster fragments are collected in paper bags during excavation. The paper bags reduce the risk of these fragile, porous artefacts sweating and becoming mouldy (as they would in plastic). Instead they can breathe within the paper bags and dry out slowly which helps to prevent cracking and delamination. Many of the bones brought to the INSTAP SCEC are human bones from inhumations, so it is particularly important that they are processed correctly. Excavations associated with INSTAP SCEC are primarily undertaken throughout the middle of the year when the weather is warm and very dry, making these paper bags a very practical solution. In Victoria, excavations occur year-round and these paper bags would not last long over our wet and muddy winters. However, canvas or cotton bags like those used for geological samples could be a viable alternative.

Sorting artefacts by material as they are excavated is a recommended practice (Pedeli and Pulga 2013, p. 97-102). The Fellow has encountered this practice on excavations in both Italy and Greece however, in their experience, it is rarely undertaken in Victoria and archaeologists are often resistant to it. It is usually argued that sorting in the field ‘takes too long’ and is something that can be undertaken in post excavation processing. However, the sorting of artefacts in the field should be undertaken from the very point of excavation, as previously discussed this is one of the most vulnerable times for an artefact, it should therefore be receiving the most ideal conditions from this point. There is also the possibility that artefacts will remain packed under these initial conditions for longer than anticipated. Archaeology is an unpredictable industry; weather, a huge influx of finds or a sudden funding cut will all quickly effect the artefact processing schedule. The Fellow has observed artefacts being stored in these initial bags for days, weeks and in some unfortunate instance’s years.

Additionally, the double handling of artefacts created by sorting post excavation is a massive waste of time, artefact analysis and conservation is also going to be

extended due to artefacts breaking and being damaged from being stored this way. Finally, the Fellow has seen artefacts damaged beyond analysis or repair from careless excavators throwing them into buckets of mixed finds.

Transportation and temporary storage of artefacts

As discussed above, it is important to get artefacts back to the lab and into ideal storage conditions to help protect them in their vulnerable state. However, excavations associated with INSTAP SCEC range from five minutes down the road to a one- or two-hour drive or sometimes boat ride away, so, the regularity of bringing materials to the lab varies from site to site. Excavations which are situated close to the centre, or which have a lot of artefacts bring their finds in at the end of every day. Excavations based further away might bring their artefacts weekly. It should be observed, that the Ministry of Culture requires a transport permit when moving cultural material (Hall 2019, pers. comm. 9 August). This permit is obtained through the local archaeological museum and ensures that excavation directors and the INSTAP SCEC are aware of how much material has been excavated and the location of that material. All the archaeologists are also aware that they can call a conservator from the INSTAP SCEC lab to come out at any time to help them excavate and transport a particularly significant or delicate artefact.

The artefacts are transported in the bags and crates provided by the INSTAP SCEC. By providing these crates the centre helps ensure that the artefacts are stored in appropriate containers, that will not have negative chemical reactions with artefacts, and that the crates will all be compatible for stacking and fitting into the storage shelves at the centre.

In Victoria archaeologists are responsible for packing and storing their own assemblages during excavation and analysis. Archaeologists must submit an Artefact Management Proposal to Heritage Victoria prior to beginning excavation. This proposal outlines the facilities and equipment which will be provided for artefact management as well as how conservation issues will be addressed

(Heritage Victoria 2015, p. 13). Despite these requirements, archaeologists do not always seem to have a clear plan for how they will manage their artefacts or have the equipment and storage materials ready when the excavation begins. Cost effectiveness is also sometimes prioritised over quality in terms of storage materials. Similar to the situation in Crete, excavations in Victoria are often located several hours away from the archaeologist and/ or the conservator's office, which raises the issue of where artefacts should be stored whilst the excavation is underway. The quantity of artefacts recovered from an excavation is also often unpredictable which further complicates the issue of storage and transportation. The centralised nature of INSTAP SCEC allows them to bulk order storage equipment such as crates and bags, additionally their location in Greece allows many of these things to be acquired cheaply. Whereas in Victoria historical excavations are undertaken by a range of different archaeological companies of various sizes.

Long-term artefact storage

The INSTAP SCEC provides long-term storage for artefacts from its associated excavations. Different materials have various ideal environmental requirements for long-term preservation, ideal conditions for one material type may be disastrous for another. INSTAP SCEC therefore provides dedicated rooms with environmental controls for the storage of sensitive materials such as metals and bones, alongside their general storage spaces for less sensitive materials.

The key requirement when storing metal is to keep the RH as low as possible to try and prevent further corrosion. Different types of metals have varying RH thresholds, but there is no lower RH limit for the storage of metals (Erhardt and Mecklenberg 1994, p. 35). These conditions are maintained at the centre inside a dedicated room in which the air conditioner runs all the time to maintain a temperature around 24 degrees Celsius alongside a building dehumidifier. A data logger is then connected to an alarm which is activated if the RH exceeds 39 per cent (Hall 2019, pers. comm. 9 August). Whilst the system maintains ideal conditions for copper alloy artefacts, it cannot quite achieve the ideal conditions of

15 per cent RH or lower for iron artefacts. However, as excavations at the INSTAP SCEC are predominantly focussed on the Minoan period (3000 – 1100 BCE), copper alloy artefacts are far more common than iron artefacts. When INSTAP SCEC does have iron artefacts to store, individual microclimates are created for these artefacts using escal pockets and silica gel which are then stored inside the metals room. These microclimates maintain an RH of below 15 per cent and are also created to allow metal objects to be stored in the lab whilst they are undergoing treatments.



Rebekka Hocking creating an escal pocket to store a copper alloy saw in the lab (photo courtesy of Kathy Hall)

The ideal environment for storing bones is to keep the RH as stable as possible. Fluctuations in the RH can cause the bones to warp and crack (Cronyn 1990, p. 281). As is discussed above, INSTAP SCEC manages a lot of human remains,

so it is important that these are stored correctly. The bone storage room is a central room in the basement of the INSTAP SCEC. It has no windows and as the basement is used for artefact storage, the windows of surrounding rooms are never opened. These factors contribute towards keeping the temperature and RH in this room relatively stable. The data logger in this room demonstrates that the temperature and particularly the RH stay quite stable throughout the year. If something did cause a dramatic change in the conditions within this room these changes would be picked up by the data logger and steps could be taken to improve the environment.

These dedicated storage spaces combined with the practice of sorting artefacts by material on site, means that artefacts can be placed under ideal storage conditions as soon as they are received by the INSTAP SCEC. In Victoria only once excavation, analysis and conservation have been completed, are artefacts sent to Heritage Victoria for long term storage. Heritage Victoria have climate controlled storage facilities for different material types. They also have requirements regarding the packing and conservation of artefacts, which must be met before an assemblage will be accepted into their facility.

However, the period between artefacts being excavated and lodged with HV for permanent storage often extends into years. In the meantime, artefacts are stored by the archaeologists. These ideal conditions and dedicated storage rooms are obviously not an easy solution for most Victorian based archaeological companies, particularly as they are only required during the excavation and analysis of an assemblage. There are some ways around these problems, such as creating microclimates with silica gel and airtight packaging, however these microclimates are not always a practical solution when dealing with large assemblages. This is where a collaborative workspace with facilities for conservation, analysis and short-term artefact storage could be ideal.

The Fellow has found that iron is a very common material on Victorian historical archaeological sites therefore a metals storage room would be ideal. Human

remains are less common, unless a cemetery is the specific focus of the excavation. However, water logged organics; wood, worked and unworked animal bone and shell, leather and textiles are common. These artefacts require a stable RH to prevent damage to their physical structures and temperatures of 4 degrees Celsius and lower are useful to prevent biological issues such as mould and pests (Cronyn 1990, p. 76). Refrigerated storage would therefore be highly useful in the proposed collaborative workspace.

Presence of conservators on archaeological sites

The conservators at INSTAP SCEC do not set up conservation work spaces on site during excavations. This was unfortunate as the fellow intended to observe the practices and equipment involved in an on-site set up for potential application in Victoria. However, the INSTAP SCEC conservators consider themselves 'on-call' to any excavation which may find delicate or significant artefacts. The frequency with which they tend to get called out depends on both the archaeologists running each excavation and the proximity of the excavation to the lab, as well as the type of site. As the archaeologists return to INSTAP SCEC to study their artefacts the conservators remain in close contact with them if necessary. Hall provides each excavation with documented guidelines on preserving artefacts. These guidelines include material identification, when to call a conservator, how to pack fragile artefacts and welcomes people to visit the conservation labs and ask questions. These guidelines are a valuable resource for archaeologists and the Fellow intends to develop something similar to use on projects she is involved with in Victoria.

The only active excavation during the Fellow's time at INSTAP SCEC was the cemetery site at Petras. The conservation team made a site visit to Petras, which included a detailed tour.



Tour of the excavation at the Petras Minoan Cemetery (photo courtesy of Kathy Hall)

A tour of the site is important for understanding the context from which artefacts originated. If performing artefact conservation on site is not possible, then frequent site visits are the next best thing. They aid conservators to identify trends in the material and develop treatment methodologies that streamline processing. Viewing the site can also help conservators to better understand the environment artefacts are recovered from and therefore can help to identify strange or unusual aspects of an artefacts condition. These aspects may either help with the treatment of the artefact or should be pointed out to the relevant archaeologists for analytical purposes. Regular visits to the site or when possible the continued presence of a conservator will continue to reinforce these benefits.

Conservation of the archaeological site itself is managed by a different conservator, who is associated with the INSTAP SCEC but does not work out of the conservation lab at the centre.

Interdisciplinary education

One aspect of the Fellow's experience which they hadn't anticipated was learning about the diversity between the programs other interns were enrolled in. Whilst the demand for conservation training in Australia is not likely to justify such a variety of courses, aspects of these courses could be incorporated into the Australian program. Cardiff University offers a Conservation Practice (MSc) within the school of History, Archaeology and Religion (Cardiff University). This program works closely with the Archaeology Department with cross over modules for students from both departments (M. McLeod 2019, pers. comm., Conservation Practice MSc student). This relationship allows conservation students to consistently treat archaeological artefacts. This valuable interaction will also produce graduates with an understanding of one another's roles and processes when they inevitably work together in the future. Working in Melbourne, the Fellow frequently encounters a lack of understanding between the two disciplines. This is understandable given the rapid pace at which the conservation industry is developing and the complete lack of crossover between the two at a tertiary level. Introducing cross-over courses at Victorian universities could be difficult as the main degrees are currently taught by different institutions. However, incorporating basic elements of conservation into archaeology degrees and exposure to archaeological processes during the Masters of Cultural Materials Conservation would be a good start.

The Masters of Cultural Materials Conservation currently offers a variety of elective subjects including the conservation of photographs, audio visual preservation and Ngarranggarni: Gija art and country (The University of Melbourne 2019). An archaeological conservation elective would be a great way to not only expose conservation students to archaeological sites, practices and materials, but also an opportunity to educate them about Heritage Victoria's requirements for

archaeological conservators, including the Artefact Conservation Proposal and conservation treatment records.

Conservation and preservation outside of the museum

At the INSTAP SCEC, artefacts were being conserved before being analysed and put into long term storage, this is similar to the process undertaken in Victoria. Archaeological conservation has a different focus to museum-based conservation. Archaeological material may be frequently handled, it is often stored for long periods under less than ideal conditions and in many cases is unlikely to come into any further contact with a conservator after its initial treatment. These factors must all be considered when determining conservation strategies, particularly in terms of gap filling, storage solutions and adhesive options.

Learning to work around these considerations was an important skill which the Fellow learned during her internship. One particularly challenging project was a stone 'Blossom vase'. Only half of this vase was recovered from excavation, in a very fragile state. The vase was faced on its internal surface with gauze and adhesive prior to being excavated to hold its many fragments together. Whilst very fragile the vase was also quite heavy as it was made of stone. The Fellow had not had much opportunity to work with stone artefacts in the past, so this was an interesting project. The goal of the treatment was to consolidate the vessel for it to be handled safely during analysis and to re-adhere the loose fragments to allow for more accurate analysis.



Exterior surface of stone blossom vase before treatment

Interior surface of stone blossom vase before treatment (after removal of gauze)



Despite being made of stone, the surface of the vase was easily scratched, so cleaning it was slow going and required testing several techniques. The cracks of the vessel then had to be injected with adhesive. An adhesive that would not weaken over time and slump under the weight of the stone. Polyvinyl Butral 30H (PVB 30H) dissolved in ethanol was determined to meet these criteria, a fifteen per cent solution was used as a consolidant and the thirty per cent solution was used as an adhesive. Once the external surface of the vase was consolidated with the injected adhesive, it was faced with gauze to ensure all the fragments held together whilst the internal surface was treated. The gauze facing was removed from the internal surface which was cleaned and consolidated using the same techniques as the exterior. Once the vessel was fully consolidated, all the facing was removed and any excess adhesive was cleaned off. Any loose stone fragments which refit to the vessel were then re-adhered. Finally, fragile areas of the vessel were gap-filled using microballoons and Paraloid B72 to ensure the stability of the vessel when it was being handled during analysis. These fills were in-painted to reduce their visibility when viewing the vessel as a whole.

This treatment project allowed the Fellow to become familiar with a variety of treatment materials they had never used before. The artefact required extra stabilisation measures because despite being stone, which is often considered a rather robust material and therefore handled with less care, it was very fragile. The fragile, yet heavy nature of the artefact also necessitated a creative storage solution, involving customised foam supports. Overall, the treatment of this object was very educational.



Exterior surface of stone blossom vase after treatment



Interior surface of stone blossom vase after treatment

Site conservation

Whilst the focus of the Fellow's research is the conservation of artefacts onsite and soon after excavation, it was interesting to observe the changing approaches to the conservation of the archaeological sites themselves. The Palace of Knossos was an obvious place to start with its extensive restoration by Arthur Evans in the early 20th Century. This restoration is viewed today as unethical, as it far exceeds the reassembling of existing but dismembered parts and is based on the conjecture of Evans rather than purely the archaeological evidence, requirements outlined by both the UNESCO's World Heritage Convention (1972) and the Charter of Venice (1964).

Arguments for the reconstruction of archaeological sites include the educational value of the reconstructed site and its improved accessibility to tourists (Stanley-Price 2009, p. 35-37). However, the Fellow believes the reconstructions at Knossos mislead those who already have limited knowledge on the topic, which is not beneficial to anyone. Meanwhile, there are several other sites on Crete, including Phaistos, generating archaeological tourism without the major reconstructions such as those at Knossos.



The iconic reconstructed North Entrance at Knossos



A view across the predominantly original West Propylaea of Phaistos

Discussions with Agapitos Legakis, a site conservator at the INSTAP SCEC, demonstrated that site conservation today is a balancing act between what is best for long term preservation and the desires of community associated with an excavation. Backfilling a site (covering the site with all the excavated soil) is generally the most secure and cost-effective way of preserving a site. As the site is returned to the conditions in which it has survived for thousands of years and it doesn't require many additional tools or materials than those used in the original excavation. However, once a site is excavated the towns nearby appreciate the visible connection to their history as well as the additional tourism it generates. Therefore, they often don't want a site to be backfilled (A. Legakis 2019, pers. comm.). Conserving the site without backfilling requires a more interventive and costly approach, and whilst it will slow down the deterioration of the site due to exposure to the elements, it will not be able to halt it completely.

These concepts are not currently relevant to the Fellow's work in commercial archaeology in Victoria, nevertheless they are thought provoking and relevant to the general field of archaeological conservation. All the excavations the Fellow has been involved with in Victoria have been undertaken in order to record any historical archaeology before the area is disturbed by developments. There is no question of how the site should be preserved because it no longer exists.

The artefacts are the only physical remnants of these excavations, and are one of the few ways which the public can connect with the archaeology that exists (or existed) below their feet. The stratigraphy and features of the excavation have been recorded using photos, plans and context sheets but they are no longer able to be physically viewed by either archaeologists or the public. Therefore, the preservation of these archaeological artefacts is vital from the moment they are excavated right through to their long-term storage.

Collaboration between conservators and archaeologists

Collaboration appeared to be an important aspect of the work undertaken at INSTAP SCEC. This was evidenced in a variety of ways. During the Fellow's time at INSTAP SCEC a series of lectures were held in Greek and English on a wide variety of conservation and archaeology topics. The layout of the building itself facilitated collaboration with open-plan research areas, multi-disciplinary offices and communal spaces all located around a central courtyard. The conservation lab has a very central location in this layout. Hall has an open-door policy in the lab, archaeologists are encouraged to come in, check out their materials, ask questions and borrow equipment. She likes to say yes whenever possible to archaeologists' projects or suggestions to encourage them to return. Hall also seeks out the archaeologists when she finds something interesting relating to their objects or if an intern has a question about an artefact type or material. This collaboration and discussion also extends outside the INSTAP SCEC to people throughout Crete, America and elsewhere.

During her time at the INSTAP SCEC, the Fellow collaborated with archaeologists on multiple projects. Including developing a method for casting moulds of botanical impressions in wall plaster from Minoan house tombs. The impressions were difficult to study due to the specific nature of the impressed materials and the condition of the plaster. The purpose of these moulds was to improve the accessibility of the plaster, allowing the impressions to be analysed without causing any damage to the plaster artefacts. Hocking worked with her fellow intern, McLeod and one of the project archaeologists, Ariel Pearce.



A wall plaster fragment (right) and the silicone mould produced from it (left).

These plaster fragments were selected for further study because they contain impressions of seeds and other organic materials. The seeds, stalks and chaff were used to help adhere the fine exterior plaster layer to the initial coarser plaster of the house tomb. Identifying the exact materials used would allow for comparisons between different building styles and phases. It would also allow archaeologists to determine whether special materials were selected or whether materials used were those available nearby.

Whilst the main conservation aspect of this project was to prevent the plaster fragments being damaged during analysis. It was interesting to see how conservation materials and skills can be utilised in associated disciplines.



McLeod (left) and Hocking (right) casting silicone moulds from the plaster fragments.



Grace McKenzie-McHarg (photo courtesy of Craig Mauzy)

Experience comparison with Grace McKenzie McHarg

Grace McKenzie-McHarg is a Melbourne based archaeological conservator. She achieved her masters in Cultural Material Conservation from the University of Melbourne, after completing an undergraduate degree with Honours in Archaeology at La Trobe University, Melbourne. She has since worked as a conservator on classical excavations in Pompeii, Athens and Paphos.

McKenzie-McHarg undertook an eight-week conservation internship at the Athenian Agora Excavation in 2019. Her internship was very similar to that of the Fellow except that she was only conserving artefacts from the excavation of the Athenian Agora, which was over the road from the conservation lab.

The lab at the Athenian Agora excavation was established specifically for that excavation, and only treats their material. It has been established for 25-30 years. The lab is very conveniently located to the site, so artefacts are brought in several times a day and significant or delicate items can be brought to a conservator immediately. This is ideal, due to the previously discussed vulnerability of artefacts upon excavation. The Agora conservation lab is run by Head Conservator Maria Tziotziou throughout the year, with the assistance of three conservation interns throughout the excavation season.

In contrast the INSTAP SCEC works with a wide variety of projects, therefore its processes vary depending the excavation team and their relationship with the centre. However, this set up more closely resembles the way a private conservator would work with excavations in Melbourne. Some relationships are always going to be better than others, and some archaeologists are going to have a better appreciation of conservation and its requirements than others.

The conservators at the Agora maintain daily communication with the archaeologists, and regularly visit the site to stay up to date with the excavation. However, the conservation lab is in a separate building from the archaeologist's offices, so they do not work as closely as the staff at INSTAP SCEC. The most common arrangement in the Fellow's experience in Victoria is that conservation is undertaken at a separate location to where the archaeologists are working. Conservation also seems to generally be undertaken at a later date to the analysis of the assemblage. This reduces the ability of the results of the conservation treatment to influence the interpretation of the artefacts. Good communication is therefore key to ensuring the archaeologist is informed of the conservator's findings before the completion of conservation of the entire assemblage and submission of the associated paperwork.

Similarly, to the INSTAP SCEC, at the Athenian Agora conservators are available all the time to go out on-site and deal with sensitive artefacts. Whilst this wasn't necessary during either McKenzie-McHarg's or the Fellow's own time, it seems more likely to occur at the Agora excavation, where conservators are much more conveniently located to the site. The Fellow believes that the reason archaeologists do not always call conservators to site when they should be related to the sometimes-excessive travel times between the lab and the site, but also to the archaeologists simply not wanting to bother the conservator. This issue is further exacerbated in Victoria by the costs associated with a site visit from a conservator. The Fellow does not have a solution for this issue, aside from emphasising the

necessity of expertise when dealing with sensitive artefacts, and that dealing with the conservation of an artefact straight away will likely be a less involved (and expensive) process than allowing the artefact to deteriorate for an extended period before seeking conservation advice.

Overall McKenzie-McHarg had a similar experience to the Fellow of a well-run, well-resourced lab environment with supportive mentors. Her hand skills and confidence in performing treatments benefitted greatly from this experience and she would recommend a similar internship to other emerging archaeological conservators in the Victorian sector.

Collaborative treatments and storage space

One major advantage of the INSTAP SCEC is the centralised nature of their work. Whilst the excavations happen across various locations, the research, artefact analysis, report writing, conservation and long term storage all take place within the same building. This allows them to purchase high quality materials in bulk, and provide specialised storage facilities. It also encourages collaboration between disciplines. Whilst exactly this kind of facility is not feasible in the commercial Victorian sector, many elements of it are transferable to a collaborative treatment and storage space that fills the space between an active excavation and long term storage at Heritage Victoria.

Archaeological offices often don't have the floor space for the storage and analysis of large assemblages. They then must rent extra office space or storage units. Even when they do have a large storage area it does not necessarily meet the environmental requirements of the artefacts. A purpose designed facility with appropriate storage spaces, including refrigerated, frozen and low humidity spaces available for short-term rental could therefore be a viable solution.

This workspace could provide analytical equipment, such as microscopes and fume hoods, which are beyond the means of most conservators operating as sole traders. Additionally, if conservators are working from the same building in which the artefacts are already being stored, the number of times the artefacts must be relocated is reduced, as is the risk of artefacts being damaged during transportation. Facilities such as a photography area, a computer lab and an artefact drying space could be utilised by both archaeologists and conservators.

The collaborative workspace alongside providing work and storage spaces could sell or rent storage equipment such as crates, artefact bags (plastic, cotton and paper) and labels. Providing these options would take the confusion and hassle out of artefact storage for archaeologists, as well as ensuring that artefacts are not going to have negative reactions to storage materials.

5. PERSONAL, PROFESSIONAL AND SECTORAL IMPACT

Personal

Undertaking the Fellowship has increased the Fellow's confidence in performing conservation treatments and in tackling less familiar objects and material types. The Fellow has expanded their professional network amongst conservators and archaeologists from Greece, America and the United Kingdom. Personally, she has established friendships and embraced the opportunity to work with ancient artefacts from periods in which she has long held fascination.

Since returning from her Fellowship the Fellow has gained full-time employment in archaeology with the opportunity to undertake conservation work within the company as it arises. She hopes to influence some of the practices within her new workplace with the knowledge she has gained over the previous year.

Professional

The Fellow has encouraged her conservation peers to undertake similar internships to consolidate their hand skills and knowledge. Including by sharing connections in her new network, with members of her established network in Melbourne. The Fellow plans to implement aspects of the artefact management strategies that she observed in Crete into her current work in Melbourne. A part of this work involves training recent archaeology graduates and archaeology assistants, which will help spread these methods throughout the next generation of archaeologists.

Sectoral

The Fellow attended the 2019 AICCM National Conference in November, during which it was acknowledged that a lack of hand skills and treatment knowledge in recent graduates is an issue affecting both graduates and employers in the industry. Discussions were centred around internships and other training opportunities outside of the university setting. Whilst the Fellow's experience overseas on an internship was very positive and she encourages other conservators to engage in similar experiences, she hopes that eventually this training and knowledge can be acquired within the Australian context.

6. RECOMMENDATIONS AND CONSIDERATIONS

The Fellow believes that an independent collaborative work and storage space could resolve many of the current issues in archaeological artefact storage, analysis and conservation treatment. Ideally this space would offer leasable work areas and equipment to conservators and archaeologists, alongside environmentally controlled storage areas and storage materials for during and after excavations. Once this workspace was established it could also provide the opportunity for university students from both conservation and archaeology to engage with the materials and processes involved in analysing and preserving an archaeological assemblage.

Interdisciplinary education is a key recommendation based on the Fellow's experiences. An elective in the Master of Cultural Materials Conservation based on archaeological conservation, particularly on Australian practices would be invaluable to those wishing to enter the workforce here. Similarly, a subject on the basics of conservation would be beneficial to archaeology courses. It is important for archaeologists to understand the basic purpose and mechanisms of conservation in order to provide the best care for their artefacts, but also that they understand that conservation treatments require specialist training and should not be undertaken by those without it.

Conservation guidelines for archaeologists in the field can also be a helpful way to communicate basic practices that will help protect artefacts before they can be treated by a conservator. These guidelines would be beneficial to both archaeologists without any conservation knowledge as well as a useful reference for those with a basic understanding.

Finally, the Fellow recommends that all archaeological artefacts are sorted by material in the field, as they are being excavated. Sorting in the field reduces the double handling of artefacts, protects sensitive artefacts from being damaged, allows artefacts requiring conservation to be sent directly to a conservator and streamlines the process of storing artefacts under the appropriate environmental conditions.

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