MENDING, STICKING AND REPAIRING: RECONSTRUCTING CONSERVATION EXPERTISE IN ARCHAEOLOGY IN THE NINETEENTH AND TWENTIETH CENTURIES

Caitlin R. O'Grady

INTRODUCTION

Archaeology emerged as a scientific discipline with codified expertise and standardised methods in the late nineteenth and early twentieth centuries. During this period, archaeologists and scientists recognised the significant damage incurred by their seventeenth- and eighteenth-century predecessors and its impact on artefactual data —which was highly dependent on provenience and stratigraphy. Heinrich Schliemann (1822–1900), Augustus Henry Lane Fox Pitt Rivers (1827–1900), Wilhelm Dörpfeld (1853–1940), William Matthew Flinders Petrie (1853–1942), and many others sought to professionalise archaeology through the integration of scientific approaches to the excavation, recovery, preservation, and interpretation of archaeological sites and artefacts. Artefacts retained significantly more interpretive value as evidence of the past when archaeologists recorded details about their provenience and relative age. Preservation of recovered artefacts and sites was necessary to establish scientific theories of the past.[1]

Throughout the second half of the nineteenth century, archaeologists and scientists recognised that artefacts incurred significant damage and loss of information through poor recovery methods and the export to Europe and the USA. Standardised preservation techniques established through scientific investigation were ethically necessary. Numerous handbooks and publications promoted the development and distribution of preservation materials and techniques for use in field and museum settings. These established the professionalisation of archaeology within the academy, whereby preservation of archaeological finds was a necessary area of expertise. They also served as a foundation for the development of conservation as a recognised field of study —allied but separate from archaeology.[2]

Understanding the development of early preservation practice requires understanding of how actors (archaeologists, scientists, conservation practitioners/technicians) recognised and engaged with preservation in multiple settings. Examination of attitudes towards other actors provides insight into how each group engaged with each other in private, public and academic settings, and conceived of and acknowledged 'amateurs' and 'professionals' in

disciplinary activities. The specific use of language in handbooks functioned to systemise language used by archaeologists and scientists to differentiate themselves from others and articulate discipline boundaries. Terms provide insight into the specific lexicon used to define and standardise disciplinary knowledge, while also reflecting a specific focus and context of research.[3]

Terms and their meanings are mutable, evolving as experts in conflict aim to identify distinct identities with their own knowledge, skills and expertise. This is a core concept defining the evolution and distinguishing of antiquarians, amateurs and professional archaeologists. Specific disciplinary lexicons retain associations with their initial contexts. As archaeologists and scientists shifted towards standardised technical terms following professional discussion and debate, lexicons evolved before they become a mutually accepted means of disseminating and assessing research. Therefore, the assessment of terms provides a sense of how archaeologists, scientists and others adopted them to describe and action preservation.[4]

Antiquarianism and the road to professionalisation

Prior to professionalisation, a collection mania and the desire to classify and record ancient artefacts drove large-scale collecting and antiquarianism. Early collecting also facilitated political statements of empire and was frequently associated with the work of affluent, white Europeans operating on their own or at the financial behest of royal courts. Unfortunately, there was little attention paid to research-based excavation methods, documentation, ethics, or systematic preservation. Despite this, antiquarian collectors utilised systematised approaches to classify form and function to develop narratives about the past. Philology and commentary acted as epistemological bridges between historical texts, inscriptions and artefacts that scholarly communities negotiated to determine their value.[5]

Collecting and preserving the past required extraction of new material, and antiquarians engaged in excavation, making stabilization of objects, architecture, and sites important, but rarely visible activities. While there has been extensive scholarship investigating the early histories of fine arts conservation (e.g., paintings, polychromy, and sculpture), broader discussions of antiquarian preservation methods used in archaeology are not as prominent. Developing the evolutionary links between antiquarians, ‘amateurs’ and ‘professionals’ is critical for any investigation into conservation as a developing discipline.[6]

Critical assessment of professionalisation and discipline formation

There is extensive sociological literature discussing professionalisation, expertise and the emergence of disciplines. These socially constructed concepts are difficult to separate and scholars have identified an inherent paradoxy in their mechanisms of formation. Despite this, there is consensus in defining professions as having recognised 'esoteric knowledge', autonomy, and a service ideal. 'Boundary-work' (specific demarcation of skills and expertise associated with disciplines and experts) relies on publication, advocacy and education to demarcate and expand the authority of 'professionals' over 'amateurs.' This critical difference between these roles is often analysed economically on the basis of a class system —particularly in the UK. Trigger associates middle- and upper-class access to 'spare time' and funds with the field's shift from antiquarian collecting to the establishment of professional archaeology. Available 'spare time' enabled early practitioners to participate in dialogues promoted by scientific societies —a necessary precursor to establishing disciplines through participation in knowledge production, disciplinary identity and ethics.[7]

Diverse actors engaged in professionalisation, and discipline formalisation results in tension between experts and non-experts. These tensions relate directly to 'boundary objects', or information (e.g., notes, reports, handbooks, images, maps, etc.) that can be understood by actors in more than one setting. Produced by actors for varying purposes and audiences, their negotiation often leads to issues with communication and knowledge transfer. Examination of statements made by archaeologists and scientists through examination of language provides insight into the autonomy of actors through the communication of identity and expertise in 'boundary objects.' As Taylor mentions, "the process of professionalization, in this sense, requires the 'invention of amateurism'." For archaeology and preservation, the selection, meaning and usage of terms vary depending on the period of use, geographic location and discipline. For example, preservation actions shifted from using the terms 'mending' and 'repairing' to the use of 'restoring' and 'conserving' over roughly half a century. To minimise confusion, I use similar definitions to describe actors and their actions. Individuals with acknowledged training in archaeology and science are 'archaeologists' and 'scientists', whilst I refer to early conservators working prior to the development of conservation as a discipline as 'technicians' and 'conservation practitioners'.[8]

Data sources

Critical assessment of handbooks and topic-specific articles published by archaeologists and scientists provides an understanding of how conservation developed within archaeological practice. Publications produced between 1875 and1900 exemplify how

archaeologists and scientists established and disseminated methodologies of research to minimise information loss resulting from dangerous and unsystematic approaches. This period, bounded by the initiation of excavations at archaeological sites in the Mediterranean, Near East and Africa (e.g., Abydos, Amarna, Troy, Ur) by European archaeologists and the initial codification of preservation training at university level, saw the development of preservation as a discipline separate from archaeology. Largely written in English (and French), the reviewed publications include both handbooks and topic-specific articles written for a range of audiences, including students and specialists; academic colleagues and rivals; and the public. Regardless of audience, the surveyed literature includes sections, chapters, or appendices dedicated to preservation delineating recommendations for materials, tools, techniques and the organisation of work. Actors, existing at boundary interfaces between disciplines, facilitated knowledge production and disciplinary identity through their exchanges and movements. Examination of these interactions provides insight into current disciplinary relationships between archaeologists, scientists and conservators.[9]

TERMINOLOGY AND LANGUAGE

Many authors establish clear parameters for the purpose and function of preservation in excavation and museum settings through established lexicons describing actors, their engagement with preservation and interpersonal relationships. This process is standardised though specific definitions that codify knowledge and minimise confusion —either directly in text, or in appendices. Preservation and stabilisation activity is "extremely important, for if done systematically and perseveringly it will become a valuable aid to the scientific work of the expedition.[10]" For Douglas Leechman (1865–1923), a Canadian anthropologist at the Museum of Canada, "There are four definite steps in treatment: cleaning, repairing, restoration, and preserving. It is, of course, obvious that two of these, repairing and restoring, are not always necessary." This concept was further developed by Robert F. Heizer (1915–1979), an American archaeologist who taught at the University of California at Berkeley, in his handbook for undergraduate and graduate students studying in Berkeley's Department of Anthropology; he writes that preservation is

> separated into three categories: preserving, repairing, and cleaning. By preservation we mean the process of strengthening a specimen … Repair, usually with some adhesive, means securing in position separated pieces of the specimen. … Cleaning of specimens in the field means the removal of dirt to facilitate handling, labelling and

> shipping. Repair of specimens and elaborate preservation are rarely needed in California because field work is done relatively close to Berkeley and to the Museum.[11]

From this statement it is clear that infrastructure and lines of communication between archaeologists working in the field and specialists working in associated institutions are critical for success.[12]

Necessary expertise and skills

Handbooks provide insight into the process of codifying necessary expertise and skills for the professional archaeologist engaged in fieldwork. Flinders Petrie, A British archaeologist who held the first Chair of Egyptology at University College London, relates necessary expertise to professional ethics, stating:

> To undertake excavating, and so to take the responsibilities of preserving a multitude of delicate and valuable things, unless one is prepared to deal with them efficiently, both mechanically and chemically, is like undertaking a surgical operation in ignorance of anatomy.[13]

J. P. Droop (1882–1963), a Classical archaeologist who worked at the University of Liverpool, also highlights the need for both theoretical and practical skills, stating that archaeologists should have "a good knowledge of first aid to sick 'anticas', which implies an elementary knowledge of chemistry" and be "well-versed in the practical side of his work." In addition to the necessary theoretical and practical skills, the International Museums Office (IMO) in its 1940 handbook specifies that professionals be familiar with the archaeological and technical publications, prescribing that archaeologists:

> must have practical experience as well as imagination and knowledge gained by studying technical as well as archæological publications. … The best practical work is done in the field or laboratory by those who have a trained hand who, by practicing, have become expert in delicate manipulation.[14]

Sir C. Leonard Woolley (1888–1945), an English archaeologist who excavated Ur and Tell Atchana, specifies that preservation work completed in the field "ought to be reduced to a minimum, so as to leave the laboratory expert with a free hand."[15]

Whilst many archaeologists highlight the need for training in chemistry, others emphasise the importance of relying on scientific experts to achieve their professional and ethical obligations. Athanasios Rhousopoulos (1823–1898), a Greek archaeologist, collector and dealer of antiquities, states that "it has been necessary to ask for help of scientifically educated chemists (and by no means the worst of these), for the responsibility is great." Alfred Vincent Kidder (1885–1963), an American archaeologist and chair of the Carnegie Institution in Washington, D.C working predominantly in the American Southwest, Mexico and Guatemala, confirms the need to develop new preservation methods through collaboration with relevant experts. He writes that in later seasons at the Pecos site in New Mexico "Dr. E. A. Hooton, curator of physical anthropology at Peabody (Harvard) advised on preservation methods for large numbers of skeletons" and accompanied Kidder's field excavation team to assist in improving techniques.[16]

Chemists agreed with Rhousopoulos and Kidder's view, supporting collaboration between the sciences and archaeology. Alfred Lucas (1867–1945), a British chemist who acted as Chemist to the Egyptian Antiquities Service and worked extensively on artefacts recovered from the tomb of Tut-ankh-amen, confirms this view. Speaking from extensive field experience, he writes:

> The aid chemistry can render to archæology, therefore, is not limited to analyses made for the purpose of the identification of unusual materials so as to enable them to be correctly described, or so that the substances used in their manufacture may be known, but includes problems of cleaning and preservation. This is now becoming generally recognized, and the chemist will ultimately take a place as a necessary member of the staff of all museums and archæological expeditions, as he has done in this case for the first time.[17]

Khan Bahadur Mohammed Sana Ullah (active 1917–1946), an Indian chemist who acted as Archæological Chemist in the Indian Archæogical Department, agreed with Lucas, writing that "all problems requiring sound chemical knowledge or objects demanding expert treatment should be referred to the Archæological Chemist of the Archæological Survey of

India." This shared acknowledgement of necessary knowledge, skill and expertise is critical to the 'boundary-work' in which archaeologists and scientists engage.[18]

Terminology describing preservation materials and actions

Early documents discussing preservation techniques use a variety of terms to describe the components, actions and actors involved in stabilisation of archaeological materials. Often, terms are borrowed from existing spheres of knowledge and have their origin in crafts manufacture, trades or the medical profession. This includes the use of 'preservative' to describe substances used in active treatment interventions meant to stabilise artefacts and sites. The Oxford English Dictionary (OED) defines 'preservative' as a substance "that gives protection from disease or infection, prophylactic and having the quality of preserving; tending to preserve; protective and has been in use for multiple centuries." British archaeologist Howard Carter (1874–1939) and Australian archaeologist Arthur C. Mace (1874–1928) use preservative to describe conservation materials and techniques in their 1923 publication on the tomb of Tutankhamen. They describe the condition of artefacts as "in a perishable condition, and needing careful preservative treatment before they could be touched." The term also refers to materials used in the practice of stabilising large assemblages of objects, and they recommend that "vast stores of preservatives and packing material must be laid in." Elsewhere, Carter and Mace make clear that "preservatives" required the necessary knowledge and the requisite decision-making in order to use them properly, which necessitated experimentation. Leechman highlights the need for standardised techniques, as the "lack of preservative treatment and the use of imperfect methods have robbed anthropological students of a vast quantity of material which would have been valuable."[19]

Later publications continued to use the term preservative, including the IMO's 1940 manual. Developed following the IMO sponsored International Conference on Excavations held in 1937 in Cairo and edited by a committee of 20 expert jurists in archaeology, including Harold J. Plenderleith (1898–1997), a Scottish chemist who was Keeper of the Research Laboratory at the British Museum, this volume represents internationally negotiated and codified knowledge and expertise. The handbook established specific methodologies for initiating archaeological projects that responded to existing country-specific legislation designed to protect archaeological resources. Intended to minimise the loss of information during archaeological research and promote international collaboration and exchange, these

methods "[safeguard] the interests of science, [provide] a certain uniformity in the duties assigned to excavators and to the country on whose territory excavations are carried out."[20]

Archaeologists and chemists use more specific terms to describe categories of preservation materials, including the term "cement," whose early usage referred to bricklayers. The OED defines cement as "a substance used to bind the stones or bricks of a building firmly together" and as "any substance applied in a soft or glutinous state to the surfaces of solid bodies to make them cohere." The term cement is a precursor to the more technical term adhesive. Handbooks recommend the use of specific cement formulas with accompanying justification for their use in field and museum settings. Droop recommends

> … some gum or cement such as seccotine, which answers admirably where the climate is dry and warm, for the temporary mending that they need to fit them for the drawing or photography that must be down actually at the excavation.[21]

Later, William C. Orchard (ca. 1865–1948), an artist and preparator at the American Museum of Natural History, describes celluloid or cellulose nitrate as

> … the most satisfactory cement that can be used in pottery repairing … for the reasons that it occupies practically no space in the joins (if properly applied its shrinkage is about seventy per cent), it is thoroughly moisture-proof, and is easily dissolved or removed with a solvent if necessary.[22]

Robert C. Atkinson (1920–1994), a British archaeologist who was Keeper at the Ashmolean, uses cement in reference to adhesives, recipes and their selection by practitioners stating:

> The best cement to use is a subject of controversy, and many workers have their pet formulae. The ideal cement is one that will not become tacky in damp conditions, and yet can be easily softened, so that the fit of sherds can be adjusted during reconstruction.[23]

Elsewhere, cements are recommended for the repair of architectural bricks, disintegrating granite, mosaics, plaster wall paintings, and ceramics. Each author claims and justifies their expertise in the decision-making to select cements through specific reference to

testable material parameters. For most (Petrie, Mesnil du Buisson, Sana Ullah), an understanding of the chemical/physical structure and mechanical properties of the underlying artefact material, as well as the technology used in their production, are critical when selecting cements. The role of solvents and possible interactions with contaminants like soluble salts are also considered. For others (Atkinson, Droop, Orchard, Petrie), working properties and repair reversibility/stability are crucial selection criteria.[24]

Hierarchy and bias

Analysis of language also conveys a hierarchy of actors and reveals bias —reflecting the professionalisation of archaeology within a colonial context. Many archaeologists discuss strategies for mending, sticking and repairing artefacts. Clarence C. Fisher (1876–1941), an American archaeologist who worked in Egypt and Palestine, describes his reliance on, for the most part, unnamed Egyptian workmen to facilitate excavation and stabilisation of artefacts. Recognising the importance of preservation and the need for a skilled workforce, he paid the travel costs to bring Egyptian workmen, whom he had trained, to work at Tel Meggido in Palestine. When describing the process of ceramic reconstruction, Fisher writes, "a native boy trained to this work now begins the search for pieces of the same vessel, fitting and gluing them together." Colonial bias is quite clear in Fisher's statement, as well as a recognition that preservation activities required specific skills that could be disseminated through supervised training.[25]

In the 1930s, George Reisner (1867–1942), an influential American archaeologist working in Egypt who standardised excavation methods by combining those of Flinders Petrie and Dörpfeld, mentions his employment of Egyptian workmen. He writes, "For ten years we have had a skilled Egyptian workman fitting and mending the vessels under the supervision of staff."[26] While Reisner's statement tones down elements of racial bias, it reveals that workmen —especially local and, not-so-local, labourers— still required supervision despite their acknowledged skill. American and European archaeologists held a monopoly on expertise and decision-making over those with lower educational and socioeconomic backgrounds.

William Frederick Badé (1871–1936), an American archaeologist who excavated in Palestine, including in Tell en-Nasbeh, specifically discusses the long-term process of the training of workmen initiated when they were young boys. He describes that "it was important that they should be able to read, write, and speak English," which would facilitate research in the language of the archaeologist rather than that of the region in which he

worked. These training relationships resulted in highly skilled native conservation practitioners or "professional restorers." Badé is a rare archaeologist to name native workmen engaged in preservation. When describing their work, he states

> Dr. C. S. Fisher, during his directorship of various expeditions, developed several Egyptian restorers who became fairly expert. Two of them, especially Mahmoud Kurayem, have repeatedly been in service with us since 1926. On many occasions, notably when the contents of rich cisterns were coming to headquarters, members of the staff, also, gave time to restoration work. But it was the steady task of the professional pot-mender to examine the potsherds from any and all sources, and to reassemble the sherds of any vessel of which enough could be recovered to reconstruct its form.[27]

From this account, Badé presents a paradoxical dichotomy whereby archaeologists instigated and trained local workmen to become finely skilled technicians. However, their skill did not equate to that of preparators working in museums:

> as no permanent restoration work is attempted; only provisional integration with the air of ordinary carpenter's glue (fig. 7) which will readily dissolve in water when the object finally reaches the hands of a museum preparatory.[28]

For Fisher, Reisner and Badé, their conception of preservation's role in archaeology was built on academic relationships, as well as the colonial context in which preservation actions were performed. In this sphere, academic archaeologists have the requisite expertise and decision-making skills to provide training resulting in a skilled and valued native workforce. However, despite this transferal of skill and acknowledged value, the socioeconomic and educational background of the native workforce would never equate to that of training in academia.[29]

BOUNDARY WORK AND BOUNDARY OBJECTS

The process of establishing disciplinary boundaries through the creation and negotiation of 'boundary objects' is revealed by the published language in the reviewed publications. Authors highlight the organisation of work and the need for a number of different types of expertise. When reporting the excavation of Tutankhamen to academic and

public audiences, Carter and Mace write, “then came consideration of their preservation, their removal, and their description - the work of a chemist, of a man experienced in the handling of antiquities, and finally of an archaeologist.” Chemists like Lucas, Plenderleith, Sana Ullah and Scott facilitated preservation through the development of scientifically-sound materials and techniques. Archaeologists including Flinders Petrie and Woolley were expert in removing fragile finds during excavations at Abydos and Ur, whilst others including Carter and Dame Kathleen M. Kenyon (1906–1978), A British archaeologist who excavated at Jericho and Jerusalem and taught at UCL and the University of Oxford, directed the archaeological work. Each individual had recognised skill and in some cases a single actor played more than one role, as exemplified by Flinders Petrie and Woolley.[30]

Statements made by archaeologists further reveal this social process through the creation of ‘boundary objects’ in private and public settings. These include private letters describing professional practice, academic publications and popular literature. Flinders Petrie describes the iterative decision-making process, which relied on his personal expertise, when describing the preservation of the fragile Princesses fresco from Amarna, which depicts Akhenaten and Nefertiti relaxing with their daughters. In a private letter to his wife Hilda dating December 13th–19th, 1891, he writes, “to preserve such a treasure was the question. After measuring, examining the condition and thickness of the plaster and searching for cracks and weak places, I determined how much I could safely remove in one piece.” Woolley echoes a similar perspective in a 1924 private letter to a colleague. He writes,

> I am repairing things + putting them into condition without regard to their ultimate destination: …. the important thing from my point of view is to what, in some cases, can only be done by me or under my supervision, for the repair & preservation of the things I've dug up.[31]

For Flinders Petrie and Woolley, only the archaeologist has the authority and expertise to supervise and direct the conservation of recovered objects. Their authority monopolises, directs, and controls the process of decision-making —both in the field and in the museum setting.[32]

These attitudes regarding expertise and the pre-eminence of archaeologists over other excavation participants were shared in public forums. A 1923 article in The Illustrated London News highlights the necessary expertise held by both Carter and Arthur Robert Callender (1875–1936), a British architect and engineer who worked extensively in Egypt on

excavations, while working with finds from Tutankhamun's tomb. They "supervise each burden, and lend a hand to carry the more valuable treasures themselves." The quote emphasises the western archaeologist's or engineer's (in the case of Callender) claim to authority over those of local or native workmen. These themes are reported elsewhere in the popular literature. Henry Reginald Holland Hall (1873–1930), an archaeologist and curator at the British Museum, writes, regarding the preservation of the Imdugud relief, that "the work of restoring it where necessary has been carried out by Mr. Beck, of Messrs. Brucciani's, under my supervision." Furthermore, the British Museum legitimises his expertise and skill, stating in The Illustrated London News article on 14 May 1927 that the relief was "discovered by Dr. H. R. Hall at Tell al'Ubaid in Babylonia in 1919, and now put together from its original fragments, with necessary restoration in parts; a work of two years' careful study and laborious reconstruction."[33]

Elsewhere it is possible to reconstruct the organisation of labour —both spatially and temporally— used in archaeology. Fisher describes the optimum architectural division of labour in expedition dig houses. He states that at Megiddo

> The fourth (south) side of the inner court is occupied by an open shed divided into alcoves with shelves and racks. Here the pottery from the work is brought to be washed, sorted and repaired before entering the registration rooms.[34]

Space needs and separation of labour are also addressed by Howard and Mace when describing the necessary components of a field laboratory. They state,

> we must have plenty of room. There should be boxes to unpack, notes and measurements to be taken, repairs to be carried out, experiments with preservative materials to be made, and obviously we should require considerable table accommodation as well as ordinary storage space.[35]

In both instances, the spatial and temporal organisation of labour is critical in determining how artefacts move from one space and specialist to the next before they can be examined by the archaeological expert for final interpretation.

These examples provide critical sources for understanding the hierarchical roles; those of archaeologists, scientists and technicians can be clearly discerned from the attitudes conveyed in text and the establishment of field practices. As well, the specific use of

excavation house infrastructure spatially defines this hierarchy. Whilst handbooks provide a basis for professional practice, the creation of professionals, acknowledged by their peers, must incorporate discipline-specific training in an academic setting whereby attendant expertise, skills and competences are disseminated and assessed. This is a crucial component of conservation training, which existed at the boundaries of numerous disciplines.

EDUCATION AND TRAINING

An underlying theme in all of the published handbooks and topic-specific papers is the importance of training and education. Conservation, as a field, was challenging in that it required a significant amount of knowledge, skills and expertise. The IMO handbook states, "the conservation of excavated material is a branch of practical archaeology too often neglected in *fieldwork*, on the ground that it requires peculiar technical qualifications and the facilities of a chemical laboratory."[37] This made training expensive due to the necessary investment in infrastructure and space to facilitate work, as well as skilled experts to provide training, which only large museums with laboratories could offer. However, the establishment of the Institute of Archaeology (IoA) in London provided one of the first academic settings in the UK that supported training of this type.

Sir Robert Eric Mortimer Wheeler, a British archaeologist and the first director of the Institute of Archaeology in London who excavated in the UK and India, and Tessa Verney Wheeler, a British archaeologist who excavated Maiden Castle and Verulamium in the UK (see Figure 6.1), recognised the need to provide comprehensive training in field skills and preservation in an academic setting. <FIGURE 6.1 HERE> Through collaboration with the University of London and a number of donors, the Wheelers facilitated the opening of the Institute of Archaeology in London for teaching in 1937. The institute provided theoretical and practical training in archaeology where it was "…essential for students to have a grounding in other aspects of practical archaeology, such as photography and the drawing and treatment of objects, even if they are not going to specialize in them." For the Wheelers, this meant that archaeologists, as well as technicians specialising in conservation, needed practical experience and training "demanding the highest skill, practice and knowledge available."[38]

Training at the institute was offered from its inception by Ione Gedye and, for a brief time, Delia Parker (see Figure 6.2), both of whom had worked as volunteers responsible for the preservation of finds from the Wheelers' excavations at Verulamium and Maiden Castle. While unsalaried, they offered lectures, practical training in the Repair Laboratory, and

prepared notes for students on preservation practice and interventions in the field. Despite the institution of conservation as a necessary skill set, the primacy of archaeology in making relevant decisions remains clear from the IoA's hierarchical organisation and use of terminology —where technical services incorporated repair, photography and draughtsmanship. <FIGURE 6.2 HERE> Gedye recognised the importance of chemistry in preservation and frequently referenced Plenderleith's 1934 publication in lectures and course notes. At University College London (UCL), Violette Lafleur, an unpaid volunteer who trained with Plenderleith at the British Museum and Lucas in Egypt, offered a popular preservation training course until her 1953 retirement. Focused on practical treatment, Lafleur offered the course repeatedly through the year to allow students to build up their theoretical and practical knowledge in Egyptology and artefact stabilisation.[39]

Through their teaching, Gedye, Parker and Lafleur contributed their knowledge and experience to both students and museum colleagues in professional archaeological and museum practice. In collaboration with the Museums Association, they provided short, concentrated training programmes to professionals already employed by museums. Following World War II, Gedye moved towards formalising conservation training at the institute through the creation of the IoA's Technical Department —newly separated from photography and draughtsmanship— by offering a one-year certificate course. Gedye codified this curriculum in 1950, which formed the basis of the Museums Association certificate course introduced in 1953. Both science and practical museum skills were crucial components of the curriculum, reflecting the technical service aspect of early conservation practice.[40]

CONCLUSION

The early history of conservation as a discipline is intrinsically associated with the professionalisation of archaeology and can be traced through the creation, publication and dissemination of handbooks and subject-specific papers. For archaeologists, understanding and establishing the past relied on the ethical imperative of conservation to prevent unnecessary loss of critical archaeological data. This relationship between preservation and data is a critical one that is rarely acknowledged as being the primary foundation on which archaeological paradigms about the past are built. Preservation actions and the actors that engaged in them dictated archaeological theory through their interactions at the boundaries of disciplinary social networks. Examination of specific terminology and lexicons used by archaeologists and scientists to describe preservation actions and the hierarchy of actors helps to trace these underlying tensions.

In the published handbooks, Badé, Carter and Mace, Droop, Fisher, and Flinders Petrie all provide ample evidence of the social structures used to differentiate authority in a archaeology. This is clear in their descriptions of various conservation acts and actors, where expertise and skills may be acknowledged, but their work could never be elevated above the primacy of the archaeologist. As archaeologists negotiated this divide, they also produced boundary objects in less formal settings (private letters, popular publications) which illustrate the ways in which the invisible components of professional practice are enacted through decision-making, hierarchical valuing of actors and their work, and the organisation of work. This is also clear in private correspondence describing decision-making, the translation and valuation of academic publications in public spheres and the physical organisation of work through excavation infrastructures including laboratory space and excavation houses. In these cases, the mystique attributed to archaeological voices engaged in perceived adventurous engagements with the past has primacy over all.

Whilst the use of handbooks and other publications is critical to understanding past preservation actions, it is the paradoxical acknowledgement by archaeologists that conservation skills, knowledge and expertise are challenging which provided a necessary driver to establish training programmes in academic settings. Conservation is (and was) more challenging than archaeology because it exists at the intersection of multiple disciplines. Gedye, Parker and Lafleur recognised this, and provided students with a number of opportunities to engage with conservation through lectures, provision of notes, and practical learning. It is the intersection of the three which formed the foundation of conservation curriculum development centred in both archaeological and museum practice, and which utilised effectively chemical principles and material properties in decision-making.

BIBLIOGRAPHY

"Cement." *OED Online*, Oxford University Press. Last accessed 18 January 2020. https://www-oed-com.libproxy.ucl.ac.uk/view/Entry/29547?rskey=2ID2vt&result=1&isAdvanced=false#eid.

"Departmental Reports for the Session 1947–1948," *Fifth Annual Report, 1948* (London: Institute of Archaeology, University of London, 1948), 12–22.

"Preservative." *OED Online*, Oxford University Press. Last accessed 18 January 2020. https://www-oed-com.libproxy.ucl.ac.uk/view/Entry/150721?redirectedFrom=preservative#eid.

"Report on Routine Work, 1937–8," *Second Annual Report, 1938* (London: Institute of Archaeology, University of London, 1939), 9–15.

"Retrieving Tutankhamen's Treasures: 1 ½ Miles of Wadding," *The Illustrated London News* (20 January 1923), 84.

"The Nation's New Sumerian Treasure: and Egyptian Frescos," *The Illustrated London News* (14 May 1927), 857.

Atkinson, Richard J. C. *Field Archaeology* (London: Methuen & Co. Ltd, 1946).

Badé, William Frederic. *A Manual of Excavation in the Near East: Methods of Digging and Recording of the Tell en-Nasbeh Expedition in Palestine* (Berkeley, CA: University of California Press, 1934).

Carter, Howard and Arthur C. Mace. *Tomb of Tut-Ankh-Amen Discovered by the Late Earl of Carnarvon and Howard Carter* 1 (London: Cassell and Company, Ltd., 1923).

Daniel, Glyn. *The Origins and Growth of Archaeology* (Harmondsworth: Penguin Books, 1967).

Díaz-Andreu, Margarita. "Archaeology and Imperialism: From Nineteenth-Century New Imperialism to Twentieth-Century Decolonization," in *Unmasking Ideology in Imperial and Colonial Archaeology: Vocabulary, Symbols and Legacy*, ed. B. Effros and G. Lai, Ideas, Debates, and Perspectives 8, (Los Angeles: Cotsen Institute of Archaeology Press University of California, Los Angeles, 2018), 3–28.

Droop, John Percival. *Archaeological Excavation* (Cambridge: Cambridge University Press, 1915).

Drower, Margaret S (Ed.). *Letters from the Desert. The Correspondence of Flinders and Hilda Petrie* (Oxford: Aris and Phillips, 2004).

Fisher, Clarence S. *The Excavation of Armageddon* (Chicago: University of Chicago Press, 1929)

Foundoukidis, Euripide. "Introduction," in *Manual on the Technique of Archæological Excavations*, ed. International Museums Office (Paris: International Institute of Intellectual Co-operation, 1940), 9–20.

Fox, Nick J. "Boundary objects, social meanings and the success of new technologies," *Sociology* 45, no. 1 (2011), 70–85.

Gedye, Ione. "Training Museum Technicians," *The Museums Journal*, 49 (1950), 240–2.

Gedye, Ione. *Notes on the Treatment of Archaeological Objects in the Field & the Laboratory. For the Use of Students of the Institute – not for Publication. University of London, Institute of Archaeology*. Unpublished course notes (1947). From University College London Special Collections.

Gieryn, Thomas. "Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists," *American Sociological Review* 48, no. 6 (1983), 781–95.

Goldstein, Jan. "Foucault among the Sociologists: The 'Disciplines' and the History of the Professions," *History and Theory* 23, no. 2 (1984), 170–92.

Goodrum, Matthew R. "The Creation of Societies for the Study of Prehistory and Their Role in the Formation of Prehistoric Archaeology as a Discipline, 1867–1929," *Bulletin of the History of Archaeology* 19, no. 2 (2009), 27–35.

Hall, Henry. "Sumerian Relief in Copper, c. 3000 B.C.," *The British Museum Quarterly* 1, no. 4 (1927), 85–7.

Heizer, Robert (Ed.). *A Manual of Archaeological Field Methods* (Milbrae, CA: The National Press, 1950, Revised edn.).

International Museums Office. *Manual on the Technique of Archæological Excavations* (Paris: International Institute of Intellectual Co-operation, 1940).

Jackson Williams, Kelsey. "Antiquarianism: A Reinterpretation," *Erudition and the Republic of Letters*, 2 (2017), 56–96.

Janssen, Rosalind M. *The First Hundred Years: Egyptology at University College London, 1892-1992* (London: Petrie Museum, 1992).

Kidder, Alfred Vincent. *An Introduction to the Study of Southwestern Archaeology with a Preliminary Account of the Excavations at Pecos* (New Haven: Yale University Press, 1924).

Leechman, Douglas. *Technical Methods in the Preservation of Anthropological Museum Specimens* (Ottawa: National Museum of Canada, 1931).

Lucas, Alfred. "Appendix II. The Chemistry of the Tomb," in *Tomb of Tut-Ankh-Amen Discovered by the Late Earl of Carnarvon and Howard Carter. Volume II. The Burial Chamber*, ed. Howard Carter and Arthur C. Mace (London: Gerald Duckworth and Co. Ltd., 1927), 162–88.

Marshall, John. *Conservation Manual: A Handbook for the Use of Archaeological Officers and Others Entrusted with the Care of Ancient Monuments* (Calcutta: Superintendent Government Printing, India, 1923).

Mesnil du Buisson, Robert. *La Technique des Fouilles Archéologiques: Les Principes Généraux* (Paris: Librairie Orientaliste Paul Genuthner, 1934).

Museums Association. "The Technical Certificate of the Museums Association," *The Museums Journal* 54, no. 4 (1954), 79–81.

O'Grady, Caitlin R. "Gentlewomen in the Field and Museum: Unacknowledged Pioneers in the Development of Conservation as both Profession and University Discipline – the London Case," in *Engaging Conservation: Collaboration across Disciplines,* ed. Nina Owczarek, Molly Gleeson, and Lynn A Grant (London: Archetype Publications, 2017), 3–18.

O'Grady, Caitlin R. "Waxing Enthusiastic: Transmission and Migration of Consolidation Materials in the Early Twentieth Century," in *Migrants: Art, Artists, Materials, and Ideas Crossing Borders,* ed. Lucy Wrapson, Victoria Sutcliffe, Sally Woodcock, and Spike Bucklow (London: Archetype Publications, 2019), 59–76.

Orchard, William C. "Pottery Repairing and Restoring," *Indian Notes* 2, no. 4 (1925), 297–308.

Parker, Delia and Ione Gedye. *The Treatment of Archaeological Objects in the Field. June 1937*. Unpublished course notes (1937). From University of London, Institute of Archaeology.

Petrie, W. M. Flinders. "The Treatment of Small Antiquities," *The Archaeological Journal,* 45 (1888), 85–9.

Petrie, W. M. Flinders. *Methods and Aims in Archaeology* (London: Macmillan and Co., Limited, 1904).

Pye, Elizabeth. "Ione Gedye and the Development of Conservation Training," *Institute of Archaeology Bulletin,* 27 (1990), 6–15.

Reisner, George Andrew. "Note on the Objects Assigned to the Museum by the Egyptian Government," *Bulletin of the Museum of Fine Arts* 36, no. 214 (1938), 26–32.

Rhousopoulos, O. A. "On the Cleaning and Preservation of Antiquities," *The Museums Journal* 11, no. 5 (1911), 131–44.

Roach Anleu, Sharyn. "The Professionalization of Social Work? A Case Study of Three Organizational Settings," *Sociology* 26, no. 1 (1992), 23–43.

Sana Ullah, Khan Bahadur Mohammed. "Notes on the Preservation of Antiquities in the Field," *Ancient India: Bulletin of the Archaeological Survey of India* 1, no. 1 (1946), 77–82.

Sana Ullah, Khan Bahadur Mohammed. “Science and Conservation,” in *Revealing India’s Past: A Co-Operative Record of Archæological Conservation and Exploration in India and Beyond*, ed. John Cumming (London: The India Society, 1939), 86–90.

Schnapp, Alain. “Between Antiquarians and Archaeologists — Continuities and Ruptures,” *Antiquity*, 76 (2002), 134–40.

Sciulli, David. “Professions before Professionalism,” *European Journal of Sociology* 48, no. 2 (2007), 121–47.

Star, Susan Leigh and James Richard Griesemer. “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907-39,” *Social Studies of Science* 19, no. 3 (1989), 387–420.

Taylor, Brian. “Amateurs, Professionals and the Knowledge of Archaeology,” *The British School of Sociology* 46, no. 3 (1995), 499–508.

Trigger, Bruce G. “Alternative Archaeologies: Nationalist, Colonialist, Imperialist,” *Man* 19, no. 3 (1984), 355–70.

Wheeler, Mortimer. *Archaeology from the Earth* (Oxford: The Clarendon Press, 1954).

Woolley, Charles Leonard. “Letter to G.B. Gordon.” Unpublished letter (22 June 1924). From University of Pennsylvania Museum of Archaeology and Anthropology Archives.

Woolley, Charles Leonard. *Digging up the Past* (London: Ernest Benn Limited, 1930).

---

[1] On provenience, see Daniel, *Origins*, 56; on stratigraphy, see Petrie, *Methods*, 170–2.

[2] On ethics, see Petrie, *Methods*, 88 and Droop, *Archaeological*, vii.

[3] Goodrum, “Creation,” 31.

[4] On core concept defining evolution, see Taylor, “Amateurs,” 499; on evolution of disciplinary lexicons, see Sciulli, “Professions,” 139.

[5] On political statements of colonial empires, see Díaz-Andreu, “Archaeology and Imperialism,” 7; on antiquarian systematisation, see Jackson Williams, “Antiquarianism,” 68.

[6] Schnapp, “Antiquarians,” 136.

[7] On defining professions, see Goldstein, “Foucault,” 185 and Roach Anleu, “Professionalization,” 24; on boundary-work, see Gieryn, “Boundary-Work,” 782; on middle/upper class access to spare time, see Trigger, “Alternate Archaeologies,” 356.

[8] On boundary objects, see Star and Griesemer, “Institutional Ecology,” 388–9; on communication and knowledge transfer, see Fox, “Boundary objects,” 71; on process of professionalisation, see Taylor, “Amateurs,” 504; on preservation actions, see O’Grady, “Waxing,” 60.

[9] Petrie, *Methods*, 169–70.

[10] Badé, *Manual*, 33.

[11] Heizer, *Manual*, 33.

[12] Leechman, *Technical*, 128.

[13] Petrie, *Methods*, 179.

[14] IMO, *Manual*, 154.

[15] On theoretical and practical skills, see Droop, *Archaeological*, 37; on sick anticas, see Droop, *Archaeological*, 35; on work in the field, see Woolley, *Digging*, 95.
[16] On necessary scientific help, see Rhousopoulos, "Cleaning," 132; on Pecos site, see Kidder, *An Introduction*, 24–5.
[17] Lucas, "Appendix," 188
[18] Sana Ullah, "Notes," 77.
[19] On OED's definition of 'preservative', see "Preservative," OED Online; on perishable condition, see Carter and Mace, *Tomb*, 105; on vast stores, see Carter and Mace, *Tomb*, 126, 128; on standardised techniques, see Leechman, *Technical*, 127.
[20] On IMO volume, see Foundoukidis, "Introduction," 16; on safeguarding interests of science, see Foundoukidis, "Introduction," 13.
[21] See Droop, *Archaeological*, 41.
[22] See Orchard, "Pottery," 301.
[23] See Atkinson, *Field*, 214–5.
[24] On OED's definition of 'cement', see "Cement," OED Online; on architectural bricks, see Marshall, *Manual*, 25; on granite, see Petrie, *Methods*, 87; on mosaics, see Mesnil du Buisson, *La Technique*, 196; on plaster wall paintings, see Sana Ullah, "Science," 88; on ceramics, see Petrie, "The Treatment," 89.
[25] On Egyptian workmen, see Fisher, *Armageddon*, 17; on native boy, see Fisher, *Armageddon*, 36.
[26] Reisner, "Note," 32.
[27] Badé, *Manual*, 32.
[28] Badé, *Manual*, 33.
[29] Badé, *Manual*, 28.
[30] Carter and Mace, *Tomb*, xiii.
[31] Woolley, "Letter."
[32] Drower, *Letters*, 83.
[33] On supervise each burden, see "Retrieving Tutankhamen," *The Illustrated London News*; on Imdugud relief, see Hall, "Relief," 87; on Tell al'Ubaid relief, see "Sumerian Treasure," *The Illustrated London News*.
[34] Fisher, *Armageddon*, 23–4.
[35] Carter and Mace, *Tomb*, 128.
[37] IMO, *Manual*, 143.
[38] On comprehensive training, see Wheeler, *Archaeology*, 76; on the Institute of Archaeology, see "Report on Routine Work," 10; on highest skill, see Wheeler, *Archaeology*, 130.
[39] On Gedye and Parker as volunteers, see Pye, "Ione Gedye," 7; on practical training and prepared notes, see Parker and Gedye, *The Treatment*, Institute of Archaeology and Gedye, *Notes*, University College London; on IoA hierarchical organisation, see UoL-IoA, "Report on Routine Work," 10–11; on Lafleur, see Janssen, *First Hundred*, 74; and Lafleur course, see Janssen, *First Hundred*, 35.
[40] On short, concentrated training programmes, see O'Grady, "Gentlewomen," 9–10; on IoA Technical Department, see UoL-IoA, "Departmental Reports" 10; on curriculum, see Gedye, "Training," 1950; on certificate course, see Museums Association, "Technical Certificate."