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Digital Cultural Heritage:
Collaborating with Students and Discovering Lost Museums

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Abstract

Our paper consists of two parts. First, we review the history of the Royal United Service Institute (RUSI) museum, its collections, its closure and the dispersal of its collections. Our discussion reflects on the challenges of undertaking a collective memory project that represents the rise and fall of empire. To synthesize these two points, we discuss the museum's history and highlight how digital cultural heritage initiatives have catalyzed an interest in digitizing and archiving RUSI's collection records. Following our review of RUSI and its museum collection, we discuss the value of academics forming partnerships with cultural heritage institutions, and we analyze our experiences managing two student projects hosted at RUSI. Our discussion of student work will reflect on methods for designing engaging curriculum that encourages students to practice record keeping for cultural heritage institutions.

Keywords:

Digital cultural heritage; Digital Humanities pedagogy; academic and practitioner partnerships

Introduction

Over the past three years, Author A and Author B have collaborated to develop curricula that blend theories of digital curation, digital archives and research data management with practical, hands-on experiences. This partnership has facilitated a dynamic blend of academic perspectives invested in situating technical areas of digital curation with the Digital Humanities and practitioner interests in pedagogy that prepares students for work in small cultural heritage institutions. Our paper narrates the contexts, goals, interests and practices that catalysed and have sustained collaboration between the authors. Starting with a description of the Royal United Services Institute for Defence and Security Studies (RUSI), and the RUSI ‘lost’ museum project specifically, the authors explore the pedagogical and curricular opportunities for student engagement with digitization and digital curation initiatives that the RUSI library can sustain.

The history of RUSI offers unique insights into the contexts and needs of small cultural heritage collections embedded within a larger organization. This history highlights a once ‘national’ collection’s potential value as a digital exhibit or museum and contextualizes the importance of strategically planning digitization initiatives that juggle and dynamically engage with preservation, curation and public outreach goals for RUSI’s Heritage and Legacy which includes the library, archive, artwork and chattels collections. The use of digitization for wider public engagement aims to overcome, as much as possible, the limited public access to the collections because of the activities of RUSI as a globally influential think tank. This limited public access also places constraints on fundraising from sources that require community engagement, such as the National Heritage Lottery Fund. Understanding RUSI’s institutional contexts and the value of its special collections segues to a discussion of how academic partnerships with cultural heritage institutions supports practice-based learning for the students

and in turn provides the heritage institution with expertise in describing and curating digital collections. This began with the concept of an ‘ideas laboratory’ where theory could be applied in practical experimentation to find solutions to issues experienced during digitization. The obstacles that limited resources provide were met by the first cohort of students in their first practical session at RUSI: there was no scanner and no funding for outsourcing scanning, a fundamental need before addressing issues of description, metadata and curation. This led to experiments with hand-held devices and scanning apps, the effectiveness of which were reviewed as part of the students’ reflective analysis. The authors collaborated to design projects that create opportunities for students to engage in primary source research, develop research questions and design and implement digital humanities projects. Author B’s expertise and knowledge contributed to the creation of prompts that would help students focus on specific aspects of the collection, the drivers for digitization and creative problem solving. This expertise and knowledge included providing examples of problems with sustainability and access, audience. decision-making about physical preservation, project parameters and building relationships with other stakeholders from other digitization projects. Ricardo L. Punzalan in his 2014 article, ‘Understanding virtual reunification’, gives a systematic overview of the types of issues addressed. Author A dovetailed this knowledge with her interest in digital archives and research data management, and how student engagement could help develop strategies for digitization in a small organization with limited resources.

The second half of this paper reviews and discusses work done by students over the course of two academic semesters at RUSI. Student work produced two different outputs based on different strategic needs – digital archives and research data management. Much like Dunn and Hedges (2017) and Ridge’s (2017) description of crowdsourcing, we bring together practical

and academic perspectives to explore how partnerships can support cooperative and collaborative partnerships with cultural heritage institutions. We use their theories of partnerships and collaboration to reflect on student learning based in their project work at RUSI.

RUSI: Accumulating, Collecting and Dispersing a Museum

The history of the Royal United Services Museum, 1831-1962, is part of the institutional legacy of the oldest independent think tank in the world, the Royal United Services Institute for Defence and Security Studies (RUSI). The Oxford English Dictionary defines a ‘think tank’ as:

A research institute or organization providing advice and ideas on national or commercial problems; an interdisciplinary group of specialist consultants...

This has been RUSI’s role from its earliest days: firstly, in developing professional responses to the perceived failures of military strategy in the Napoleonic campaigns, 1803-1815, despite the eventual defeat of Napoleon by Britain and its allies; secondly, in its role in helping establish new scholarly disciplines, such as ethnology and military science.

Arthur Wellesley, 1st Duke of Wellington, expressed concerns about developing new professional responses in military strategy after the Napoleonic Campaigns but his parliamentary duties occupied him leaving a vacuum for reform. In an 1829 article in the *United Service Journal* (Colburn, 1829) Captain, later Admiral, William Henry Smyth, 1788-1865, advocated for a military and naval society that ‘applied the tone of Science’ (Altham, 1931) to the training and education of officers. The ensuing debate in the *United Service Journal* led to the founding of the Naval and Military Museum and Library in 1831. The model, taken from learned societies,

for the institute's first incarnation owed as much to the late Georgian literary, philosophical and scientific interests and the resulting fashion for exhibition of cultural curiosities and relics, as it did to the ongoing debate around the training and education of officers.

Smyth was joined in establishing RUSI by Commander Henry Downes, the institute's first secretary, and General Sir Howard Douglas, 1776-1861, the first chairman. Henry Downes had, significantly, in 1829 commanded the Brazilian ex-slave ship the *Black Joke*, previously *The Henriquetta*, and captured the Spanish slave brig, *El Amirante*. Douglas had a distinguished army career and his public service included being Lieutenant-Governor of New Brunswick, 1823-1831, and the member of parliament for Liverpool, 1842-1847. Douglas was also a founding member of the Royal Geographical Society, 1830, and an elected fellow of the Royal Society, along with Smyth. Smyth was also a fellow of the Royal Astronomical Society and the Society of Antiquaries, serving at one time as Director for the latter. This illustrates the scholarly interests the founding members believed were essential to the success of the fledgling institution. As their wide membership of learned and professional societies indicates, they were also skilled networkers who were able to elicit the support of King William IV and Wellington as founding patrons and elicit donations for the museum.

The institute is in the geographical heart of the military and political establishments and the rise and fall of the museum mirrors that of the British empire. Founded at a meeting held in The Thatched House Tavern, St. James's, with its proximity to royal residences, learned societies, gentlemen's clubs and easy access to Whitehall, it has remained in this nexus of learning and government. It's first home, from 1833, was in Vanbrugh House, Whitehall Yard, built by the eighteenth-century polymath - soldier, diplomat, playwright and architect - Sir John Vanbrugh for himself. In this building a museum and library were established. By 1839 the

Naval and Military Museum and Library had been renamed The United Service Institution, and in 1849 an extension into a neighbouring building added a lecture theatre. In the late nineteenth century Whitehall Yard was redeveloped and RUSI was awarded a 'grace and favour' lease on Banqueting House from the Crown Estates, where the museum reopened in 1895. The institute was also given a plot of land adjacent to Banqueting House on which a building with a lecture hall, library, map room, staff offices and accommodation was constructed; the communicating doors on the ground and first floors remain in situ demonstrating this legacy. The selection of Sir Aston Webb, 1849-1930, and his partner Ingress Bell, 1837-1914, as the architects was a clear statement that the institute had confidence in its influence: Webb and Bell were renowned architects with an established reputation for designing important public buildings such as the façade and private quarters of Buckingham Palace, Admiralty Arch and the Brompton Road building of the Victoria and Albert Museum.

The museum was the heart of the institution from its inception, with the collecting habits of Smyth, Downes and Douglas influencing the development of the collections. Smyth was an astronomer, hydrographer and numismatist. He published widely and had a significant private collection. Downes' interest was in natural history and he collected exotic taxidermy and 'a variety of curiosities' (O'Connor, 2011, p.4). An appeal for donations resulted in the institute receiving objects that reflected the diverse interests of members of the armed services. Some of these objects did not meet the expressed need for a scientific approach to developing the military and naval professions; they did reflect military life more widely by including non-martial activities, for example, sporting activities. O'Connor suggests a two-volume edition of *Lady Morgan's Book of the Boudoir*, published in 1829 (O'Connor, 2011, p.7) was one of the more outlandish gifts. His account of this and similar gifts describes the 'tact' required to deal with

‘articles... not easily described’ and the gratitude for gifts from ‘ladies’ recorded in the Ist Annual Anniversary Meeting in 1832 (Minutes of Meetings, [1829-1836]). This example given by Connor perpetuates the misogyny of the contemporary record and could be the consequence of his not understanding the use of the term ‘boudoir’ in the context of the long-eighteenth century, or not researching this publication. It is not as racy as it sounds, or as inappropriate as implied. Sydney Morgan, a late Georgian Era writer, used the conceit of a group of women friends closeted away in their hostess’s boudoir, or private sitting room, to discuss contemporary topics, such as politics and religion and it was written in the form of a series of anecdotes and essays. Morgan was an Irish catholic who championed the history of Ireland, she was deeply critical of absentee Anglo-Irish landlords and received a pension of £300 a year from William Lamb, Viscount Melbourne, who had been Chief Secretary for Ireland from 1827-1828 and Prime Minister, 1834 and 1835-1841. It’s inclusion in the collections recognised her contribution to social and political debate, O’Connor’s 2011 equation of its female authorship with gifts from ‘ladies’ says more about his biases as a commentator than it does those of Morgan’s contemporaries. During project work by students at King’s (discussed in the next section), anachronistic inferences in resources, such as this, highlighted the need for research in understanding the context of the collections, the polysemic nature of objects, social and cultural biases, as part of the process of designing and describing digital archives.

The museum quickly developed and the collection, with strengths in natural history and ethnology, was ‘swamped with... stuffed animals and geological specimens’ (Strachan, 1984, p.131). O’Connor also writes of ‘lumber rooms’ being cleared out, which implies objects were being dumped on RUSI. To some extent this phenomenon has been corroborated by Simon Quinn, University of York, in his 2018 paper, ‘British Military Antiquarianism and Collecting

During the Campaign in Egypt, 1801', for the Biennial Conference of the Museums and Galleries History Group, 'Museums, Collections and Conflict, 1500-2010'. He discussed military 'souvenir' collecting and that the provenance of British officers' collections donated to museums reveals that in many cases they were donated after the collectors' deaths and often by their wives. There may well be an element of women clearing out old junk but there may be a wider range of factors involved in donating dead relatives' collections to a museum.

Records of the RUSI Museum in the archive reveal the role of women in commemorating 'their fathers, husbands and brothers through donations' (Author B 2019, p.16.) In the early twentieth century this included the collection of Field Marshall Sir Joseph Garnet Wolseley by his wife Lady Louisa Wolseley, now held by the Glenbow Museum, Calgary. This would have been a welcome donation because of Wolseley's national reputation and status. The institute was also responsible for raising the funds to commemorate Wolseley in the form of the statue on Horse Guards Parade and in the creation and decoration of the Wolseley Room in Banqueting House. While some unsolicited donations were politely refused, not all were avoided, for example, in 1853 Captain Ommaney left an anchor outside the institute for it to be found later by staff (O'Connor, 2011). As a consequence of these examples, the students from King's were encouraged to think about museums as repositories of memory, to begin with the object described on each card in the catalogue, question the implied values of that description, then examine it within a network of perspectives from design and manufacture through its lifecycle and afterlife in the archive and beyond as discussed by Susan Pearce (1994).

The lack of space, in 1858, for the rapidly growing collections meant that the collecting parameters were re-focused on four main areas: military, naval, ethnological and natural history. The odd heterogenous specimens and duplicates were cleared out. Then in 1861 a further phase

of reselection took place, the natural history collection was disposed of and at Sotheby's a sale was held of 'Ethnological and Miscellaneous portion of the Museum of the Royal United Service Institution, Whitehall Yard' (Thornton, 2013). This is a significant moment in the museum's history: as a sale of an ethnological collection it was unique as most contemporary sales of collections were of libraries. Several lots from this sale were purchased by Colonel Augustus Henry Lane-Fox, a member of RUSI who sat on its Council from 1860-1861. He subsequently pursued his ethnological study and collecting elsewhere and was elected to the Ethnological Society of London in 1861. Lane-Fox was, in 1880, to inherit the estates of his cousin Horace Pitt-Rivers, 6th Baron Rivers, and adopt the name Pitt-Rivers. Pitt-Rivers later left a collection to the University of Oxford where objects once in the RUSI 'lost' Museum form part of the Founding Collection of the Pitt Rivers Museum. Subsequent dispersals of the collections have resulted in traces of the RUSI collections in other museums, such as: the Horniman Museum, the Scottish United Services Museum, the Victoria and Albert Museum and the British Museum.

The museum was a well-established visitor attraction, first by tickets obtained from members, then after the move in 1895 the museum opened to the wider public for a small fee. It featured in many handbooks and visitor guides to London such as, *Mogg's New Picture of London and Visitor's Guide to its Sights*, 1844 and *Cruchley's London in 1865: A Handbook for Strangers*, 1865. By the time the museum closed in 1962, half of RUSI's income was generated from its ticket sales and the other half from membership fees and sales of the RUSI Journal. Its most popular attractions included the Siborne Model of the Battle of Waterloo, 1815, the skeleton of Napoleon Bonaparte's horse Marengo, which had been captured at the Battle of Waterloo, relics or objects that had once belonged to Vice-Admiral Horatio Nelson famous for

the defeat of the Spanish -French fleet at the Battle of Trafalgar in 1805 and a Florence Nightingale collection on loan from her estate.

To put the popularity of the RUSI Museum as the nationally significant military museum in context, other contemporary museums that attracted visitors in large numbers were the British Museum, arguably the oldest independent museum in the world founded in 1759 (Schubert, 2009, p.16), the East India Museum, later the India Museum, in Leadenhall Street, City of London, founded in 1801, and the National Gallery in 1824. The Victoria and Albert Museum, South Kensington, opened in 1852 and the government moved the India Museum collections there as part of its founding collections. Banqueting House is the only surviving component of the Palace of Whitehall and would have been part of the attraction as well. It was the principal setting for the entertainments of the Tudor and Stuart monarchs. It was built by the seventeenth-century architect Inigo Jones and was the first building in the history of English architecture to be built in the neo-classical style because he was influenced by the Italian architect Andrea Palladio. In 1623 King Charles I was so impressed by the Royal Spanish art collection that he was inspired to find comparable painters for his own court. He commissioned Sir Peter Paul Rubens, 1577-1640, the Flemish diplomat and artist to design and paint the Banqueting House ceiling.

In 1950 the Museum was closed for the restoration of the Rubens ceiling in time for the Festival of Britain in 1951. From that time there were questions in Parliament about RUSI's use of Banqueting House, especially as its claim to be the national military and naval museum was undermined by the Imperial War Museum (IWM), founded in 1918, the National Maritime Museum (NMM), which opened in 1937, and the National Army Museum (NAM), which was to open in its current Chelsea site in 1960. In 1959 the lease on Banqueting House was rescinded.

Between this date and 1962 the fate of the RUSI Museum moved inexorably towards closure: no alternate accommodation was provided for the museum despite Apsley House once being mooted as a possibility; there was no compensation for the Institute's loss of income because the sale of the collection was perceived by government to be adequate for the Institute's needs and it was at this point that the Charity Commission intervened to prevent the sale of the collection at as a whole. It ruled that the collection must be dealt with under three categories: items deemed on trust to the nation were to be distributed to museums and be accessible to the wider public; items RUSI owned outright could be sold or kept by the Institute and objects on loan needed to be returned to the lender or their descendants. The IWM, NMM and NAM received the bulk of the items on trust; Eric Harvie, a Canadian oil magnate, purchased militaria which became part of the founding collections of the Glenbow Museum in Calgary; the consequence of sales by Wallis & Wallis, auctioneers, was that some objects became part of private collections and the heritage and legacy collections of RUSI are the objects it has retained.

The RUSI archive holds considerable records documenting the management of the museum, acquisitions, disposals and exhibition practices. These records include print catalogues from 1920, 1924 and 1932, the card catalogue that was in use at the time the museum closed which was compiled during the late 1940s and the 1950s – importantly the destination of items as they were dispersed in 1962 was recorded on the cards. The students worked with this final iteration of the museum catalogue and sought to locate objects in the inventories of the destination institutions. There are also the proceedings of the Annual Anniversary Meetings and the minutes of the Museum Committee. What remains of the RUSI museum is a treasure trove of primary source documents – records of objects, their owners and a system for organizing and then deaccessioning a collection. Developing a sustainable method for using these records has

been an opportunity to integrate DH practices with cultural heritage collections. In the following section, the authors expand on how a collaborative, practice-based curriculum empowered students to design prototype digital curation, preservation and data management systems for RUSI.

Lost and Found: Student Research and Work at RUSI

RUSI's 'lost' museum isn't quite lost. There are several different records of the collection, and as Author B discussed, research and inquiries continue to be regularly made into the status of objects once held in RUSI's collection. For the past three years, this liminal state has provided a unique opportunity for students in the Department of Digital Humanities at King's College London to engage in a range digital cultural heritage projects. These projects have ranged from establishing a digital archive, developing research data management strategies and curating digital exhibits of past museum exhibits.

Digitization has played a key role in each of these projects – students have designed and implemented digitization strategies and developed sustainable digital curation and preservation strategies. While working with Authors A and B, students experimented with strategies for synthesizing theories and practices relevant to digital humanities and digital cultural heritage projects and research.

In what follows, Author A outlines her pedagogical strategies for working with Author B and the ways student learning have contributed to ongoing discussions about the future of RUSI's 'lost' museum. Striking a balance between digitization and broad public engagement with RUSI's 'lost' museum has been key to these discussions, and ongoing efforts have created a

unique opportunity to engage with the institution's history and integrate academic interests in digital cultural heritage with practitioner needs and local knowledge.

Academic Context: The Department of Digital Humanities (DDH)

First, some context – exploring the research and teaching environment that encourages practice-based teaching will situate the scope and purpose of the ongoing collaboration between RUSI and the Department of Digital Humanities (DDH). DDH is a multidisciplinary department dedicated to exploring the intersections between technology, culture and heritage. Currently, DDH grants three different types of degrees: doctoral, masters and under-graduate. The Masters post graduate taught (PGT) program grants degrees in Digital Humanities, Digital Asset and Media Management, Digital Culture and Society and Big Data: Culture and Society.

Optional PGT modules blend theories from the humanities and social sciences with practical technical case studies to help students engage with academics and practitioners in a variety of disciplines and fields. The goal is to encourage students to develop transferable skills they can use throughout their degree and enhance their future employability.

In what follows, we discuss two optional PGT modules: Digital Archives and Research Data Management, which, which ran during the 2017/2018 and 2018/2019 academic years respectively. These modules experimented with project-based learning with the potential to contribute to digitization and curation projects for the Royal United Services Institute (RUSI). Specifically, the students enrolled in Digital archives and Research Data Management explored and analysed strategies for developing digital collections for dispersed, lost and difficult to identify objects from RUSI's former collection.

Over ten-week terms, the modules introduced theories on data management, knowledge organization and Gallery, Libraries, Archives and Museums (GLAMs) to contextualize practical project work. Digital Archives was a small class (12 students) and RDM was a large class of 32 students, both modules had diverse cohorts of students from all the MA programs offered in DDH. While Digital Archives emphasized the transitional nature of many collections and explored strategies for curating and preserving content following traditional archival principles of provenance and original order, Research Data Management facilitated discussions about strategies for adapting socio-technical good practices for managing data to humanities research projects.

Academic Context: Methods and pedagogy

Author A was interested in developing a scalable and practice-based curriculum, not just to support student learning, but to foster a long term mutually beneficial collaboration with Author B. Tackling this challenge involved exploring pedagogy and methods for facilitating project-based work. In particular, given the type of primary source materials at RUSI, it was important to prioritize identifying strategies and best practices for digitization. This created a context for describing the resources available at RUSI, and for engaging in conversations about goals, barriers and incentives for developing a digital archive and data management strategy. Because these were practical issues familiar to both authors, we recognized an opportunity to develop scaffolded tasks to support student learning. The challenge, however, was finding a way to provide formal feedback students could feed forward into their long-term project goals. To address this challenge, Author A used David Carless' (2007) research on learning oriented

assessment (LOA) and Biggs and Tang's (2015) theories of constructive alignment supported developing ten week modules that balanced skills based learning with theories of DH.

LOA is a pedagogical framework that encourages mapping assessments onto themes, topics and learning outcomes in a module. By mapping assessment briefs onto module content, students gain a clearer purpose for graded work while simultaneously gaining feedback on their progress as academics and practitioners. Constructive alignment is a pedagogical model for reflecting on the correlation between learning outcomes and module content. Biggs and Tang promote engaging students in discussions about the clarity and efficacy of learning outcomes throughout their learning process.

In a practice-based module, LOA and constructive alignment provide frameworks for using project work to assess whether students are gaining key skills, and whether they understand *why* these skills are considered key in the field of DH work and research. This is particularly important given the emergence of research and thought on the future of DH curriculum (see for example Klein, 2011; Alexander & Davis, 2012; Clement et al. 2013 and Pun, 2015). Inquiries into pedagogy for DH is arguably distinct from inquiries into the scope and purpose of DH but, case studies like this one in some ways offer the best of both worlds – a discussion on how to use theory to help students form their own insights and ideas gained through project work.

Digital Archives: Where everything started

Because students in DDH come from a range of academic, disciplinary and professional experiences it was necessary to consider disciplinary perspectives and technical skill development while conceptualizing the scope and goals for Digital Archives. Instead of trying to

present a wide overview of technology in the heritage sector, Author A selectively discussed theories and practices in archives and museum collections. Author A made these choices based on her own academic, disciplinary and work experiences in libraries and archives. Additionally, based on the pedagogical priorities and goals in DDH, the module was conceptualized as a learning space that would apply theories to practice to critically evaluate traditional archival practices in digital contexts. Based on these goals and point of view, the following module description was approved:

Archives provide access to primary source documents, which are invaluable in humanities scholarship. Digitization has increased the availability of primary sources. Similarly, born digital assets are becoming increasingly common objects of study. Together, the availability and format of primary source documents has the potential to change how scholars conduct research. This will require fundamental changes to archival practices.

Over the course of the semester, students will first learn the basic principles of archival practice, and then explore methods for applying these theories to digital assets.

Discussions about archival arrangement and description will contextualize the complexity of archival collections. Applying these concepts and practices to digital collections will offer opportunities for students to conceptualize the changing nature of archival access and use.

Using this description as a starting point, but following learning outcomes were approved:

- Students will be able to critically discuss the core principles and practices of archives management.

- Students will be able to apply current theories and practices relating to archival arrangement and description.
- Students will be able to describe how digital environments affect archival access and use.

These learning outcomes shaped the development of lecture themes, seminar activities and project work. Specifically, they helped contextualize *why* students would learn and practice ‘traditional’ archival methods and *how* they would experiment with strategies and practices for applying them in digital contexts.

Module structure: The academic year at King’s College London is 20 weeks, and semesters are 10 weeks long and students attend weekly hour-long lectures and hour-long seminars. So, in addition to using learning outcomes to balance theory and practice, the even division of 10 weeks to scaffold student project work enabled students to develop scalable and transferable skills they could use across galleries, libraries, archives and museums (GLAMs).

During the first five weeks of term, lectures introduced theories of appraisal, selection, arrangement, description and preservation. While discussing the origin and evolution of these ‘traditional’ theories, discussions about technology enabled critical discussions about users, usability and digital curation. A flipped classroom approach encouraged students to bring their own work experiences, research interests and career goals to bear on assigned readings and technical tasks.

It was important to make the most of limited time without overwhelming students with micro tasks or busy work. Based on student preferences, Author A set up weekly discussion forums for students to post questions about required readings and to share examples of their

seminar practical work. Additionally, based on these preferences, it was possible to align formative writing practices with summative assessment prompts.

The first five weeks of term introduced students to new theories, practices and skills and prepared them to work collaboratively on tasks relevant to the appraisal, selection, digitisation, arrangement and preservation of cultural heritage materials.

During the second half of term, students engaged in a three-week long digitization and digital archives project at the Royal United Services Institute (RUSI). Working with Author B, students learned about RUSI's 'lost' museum and the research value of the remaining museum records and, working in groups they completed three tasks:

1. Digitise 15 records
2. Develop a system for arranging and describing records
3. Develop strategies for curating and preserving the records they digitised.

Students worked in groups of 4 to complete these tasks, and they produced a variety of work, which they presented in short presentations. Work outputs ranged from granular and interoperable metadata templates (Figure 1) wireframes (Figure 2), and interactive online exhibits (Figure 3). Based on these group efforts students completed short reflective essays about their experiences transferring the knowledge and skills they developed during the first half of term to their work at RUSI.

Students in Digital Archives produced diverse projects based on semester long discussions about technical skills, project management strategies and previous work experiences. For instance, the students who created metadata workflows were enrolled in the MA in Digital Asset and Media Management and MA Digital Culture and Society programs. They discussed the

implications of describing cultural heritage content and the roles intelligible and user-friendly metadata could play in engaging RUSI users in future digital collections and digital exhibit projects. Similarly, students who developed the wire frame were enrolled in the MA in Digital Asset and Media Management and MA Digital Humanities programs. Students in both MA programs had learned different database management and web design skills in their core modules, and collaboratively developed reusable mock-ups. Lastly, students who created interactive content were enrolled in MA Digital Curation and MA Digital Asset and Media Management programs. Their project focused on the potential for widening public engagement in interpreting and using RUSI resources to tell stories about the people who contributed to the original museum collection.

Research data management: Humanities data and research infrastructures

The quality of students' work in Digital Archives enabled Author A and Author B to continue discussing additional opportunities for student project work at RUSI. What's more, we considered the importance of developing long term and sustainable projects that would contribute to some of the RUSI library's collection development and public engagement strategies. Considering the value of student work was an important component of discussions about how to design and manage tasks that would meaningfully contribute to learning experiences.

Author A began developing curricula for a new module: Research Data Management. As an optional postgraduate taught module open to students enrolled across all the MA programs offered through DDH, it was important to design module themes that students with different prior experiences and interests could successfully engage. Additionally, it was important to

consider how flexible and scalable definitions and theories of research data management could contribute to practical project work. With these additional goals in mind Author A decided to integrate PARTHENOS¹ training materials into the required readings for the first five weeks of the term. These training materials were selected because they were designed to support a range of practitioner needs and created a framework for selecting more theoretical and conceptual readings about data and the humanities and the cultural heritage sector.

The module description contextualized these questions as a framework for ways to identify and discuss research practices. Additionally, the module description presented to students stated that through a combination of lectures and practical work, “Students [would] gain introductory knowledge to metadata, database management and protocols for data exchange.” Additionally, the module description stated two questions and three learning outcomes:

1. what is data,
 2. what do we mean by research infrastructures?
- Have developed foundational knowledge of terminologies and policies that define data, research infrastructures and data management in cultural heritage institutions and projects.
 - Be prepared to discuss and debate the roles research infrastructures play in the development of research data management workflows/ Interpret and discuss the roles research infrastructures play in cultural heritage data management workflows.

¹ The PARTHENOS Training Materials were developed as part of a European Research Council Grant. Author A contributed to the work package responsible for developing training materials and disseminating these materials. The materials are open access and freely available. For more information about the training materials, please visit: <https://training.parthenos-project.eu/>

- Be able to apply best practice guidelines for engaging with cultural heritage research infrastructures to the evaluation of research data management policies

These questions and learning outcomes created space for or linking theories of data management to research practices in the humanities, and more importantly conceptual models that would support students collaboratively digitizing records at RUSI and developing infrastructures for curating, disseminating and adding to content created by students in Digital Archives. During the first five weeks of class, lectures addressed definitions for data, research infrastructures and presented policies and guidelines for linking the two together. For example, during lectures on structured data and strategies for metadata evaluation, students explored strategies for interpreting and using the FAIR Guiding Principles. Understanding the guidelines are tools for building bridges and structuring conversations that enable discussion amongst students from the different degree programs, and identify areas where data, metadata and technical infrastructures could intersect. This enabled discussions about barriers and incentives for collaborative research data management work within and across cultural heritage institutions.

Students were asked to pay particular attention to theories of research infrastructures and the technical and organizational systems that support the creation and management of institutional repositories. This provided a clearer context for them to identify the materials created by students in Digital Archives and reconceptualize them as types of research data they could maintain while adding additional content to.

For the first five weeks of class, students worked with materials created by students in Digital Archives and became familiar with the resources and goals at RUSI. For the second five weeks of the term, students worked at RUSI to digitize at least 15 new records to add to the original

materials created by students in Digital archives. While adding these materials, students also completed the following tasks:

- Develop strategies for RUSI to use social media
- Design methods for RUSI to contribute to research infrastructures.
- Work together to develop a presentation that summarized and reviewed their work at RUSI.

This combination of tasks enabled students to create research data management strategies and guidelines for the RUSI lost museum project, which they presented during their final class session. Students focused on expanding on the metadata workflows (figure X) and wireframe (Figure 4) from Digital Archives. Students in RDM who expanded on metadata workflows (Figure 5) focused on developing interoperable and granular templates for structuring data contained in RUSI museum records in a machine-readable format. Drawing on lecture themes that addressed the FAIR guiding principles and metadata quality, students identified multiple metadata schema and data content standards they could reasonably expect to find in cultural heritage institutions currently housing objects from the RUSI lost museum. Students who expanded on the wireframe (Figure 4) created a more interactive example mock-up that included a review of how a RUSI portal could function as an institutional repository with the future capability of contributing to cultural heritage research infrastructures (Figure 5).

Outcomes: Collaborative Learning and Critical Engagement.

Overall, project outputs presented opportunities for Authors A and B to reflect on the resources and guidance needed for future project work. For instance, the metadata templates

(figures 1 and 4) have become templates for students ingesting data from RUSI catalogues and archival records into machine readable and interoperable data. Over the course of two semesters, prototyping terms and data values has also contributed to discussions about the best ways to describe and represent RUSI's lost museum. In turn, this work has informed more front-end aspects of digitization initiatives. For instance, the wireframe mock-up (figures 2 and 5) leveraged metadata records to demonstrate different search strategies users might benefit from while exploring digitized records. Likewise, the mock digital exhibit (figure 3) contextualized the cultural relevance of records about the lost museums. These kinds of initial efforts demonstrate the value of RUSI records and artefacts; what's more, the quality of work students accomplished has helped Authors A and B identify necessary technical and financial infrastructures for long term, larger scale initiatives.

While digital archives and RDM seem like quite distinct areas of work, over the course of two terms students identified functional areas of overlap and successfully engaged in interdisciplinary project work. Three areas in particular emerged as important areas for future work: 1) Incorporating additional media into projects; 2) metadata curation and management; 3) website design and user experience. These areas emerged as students developed and implemented digitization workflows and collaboratively worked out strategies for using the contents they digitized. Engaging in collaborative problem-solving activities helped students apply theories and themes discussed during lecture, and by documenting their work, they identified areas of potential future work for students.

What's more, these three areas emerged while teachers and students collaboratively developed frameworks for assessing project work. As students completed the different areas of project briefs, they were able to reflect on and evaluate their accomplishments. While they

received marks for their work, this process of reflection and evaluation also created outputs future students could integrate into their own project planning. Overall, student feedback and project outputs in Digital Archives and Research Data Management presented opportunities to think through future strategies for integrating existing materials into projects that will contribute long-term goals for RUSI's digital collections.

Discussion

Collaboration is an ongoing process, and Author A and Author B have explored and experimented with different strategies for sharing interests, goals, ideas and (on occasion) missteps. This kind of rapport enables open and frank conversations with students that enables their critical and collaborative learning. Currently the co-authors are exploring strategies for engaging students in digital exhibit planning. This involves working with digitized content from RUSI and identifying digital tools and methods students can learn, experiment with and receive regular feedback through. Expanding on the scope and potential impact of projects undertaken by students, involves planning projects, and it also requires discussing past areas of student confusion or dissatisfaction and, based on these discussions, identifying areas of teaching and classroom management that could improve.

Based on student work, Author A and Author B have learned that collaboration requires planning, but beyond planning, involves strategically identifying outcomes and long-term benefits for co-designing and teaching a module. In the case of Author A, this has involved considering strategies for flipped classroom work, and ways for integrating theory with practice that support student experiences learning about cultural heritage. For Author B, it has been essential to frame participation in projects as strategic exercises for testing out digitization,

preservation and curation workflows that could, with more resources, be adapted and adopted by RUSI.

Both authors are equally invested in using experiences with students to develop projects with long term potential for interns, volunteers (including expanding efforts to develop crowdsourcing) and PhD and post-doctoral research. To accomplish this, relies on a continual process of self-reflection and assessment of the pedagogical strategies utilised. For example, the student experience of access to the collections at RUSI varies depending on the competing demands on space for events within the Institute: sometimes it has been possible to hold their seminars at RUSI; at others, student engagement with the physical objects was managed through the library appointments process, with small groups of students researching at different times. The latter approach to enabling access worked better with highly self-motivated research teams. In order to encourage the research process for less extrovert groups an email enquiry system was set up with the Library. The authors plan to continue documenting and sharing their experiences while continuing to design practical coursework that gives the students evidence of applying theory and problem solving within the various constraints that small heritage organisations experience.

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A	B	C	D	E	F	G	H	I	J	K	L	M	N
Institution	Collection	Catalogue	Record Number	Exhibit	Tags	Period or Date	Origin or Donor	Date Received	Initial Insurance Value (British Pounds)	Amended Insurance Value (British Pounds)	Condition When Received	Record Creation Timestamp (YYYYMMDD)	Handwritten Annotations (Center)
Royal United Services Institute	RUSI Museum	1001-2000	1216	A Sea-chest used by John Adams, a midliner of H.M.S. "Bounty". It was landed with other items when the ship was burnt in 1789. Given to the Rev. W.H. Holman, Chaplain, R.N.	Furniture: Sea-chest; John Adams; H.M.S. Bounty	1789	Given by the Rev. W.H. Holman.	Unknown	2	Unknown	Good.	19490518	Blue horizontal line. NAM 35 and Portsmouth Mus 30 written in pencil and crossed out. NAM written and circled in blue and signed with red initials.
Royal United Services Institute	RUSI Museum	1001-2000	1219	The Flag Carried by the Assaulting Column under Brigadier-General Sir William Jones at the Capture of Delhi, 1857, and given by him to H.M. Queen Victoria.	Flags; Sir William Jones; Delhi; The Siege of Delhi; The Capture of Delhi	1857	Given by His Majesty King Edward VII.	Unknown	5	N5	Fair. Torn in one corner.	19520222	Blue horizontal line. NAM from Royal Gills written in pencil. NAM written and circled in blue and signed with red initials.
Royal United Services Institute	RUSI Museum	1001-2000	1228(1)	Bugle used by Trumpet-Major Henry Joy, 17th Lancers to order the Cavalry charge at Balaklava on 25th October, 1854. Trumpet-Major Joy was orderly trumpeter at the time to Major-General the Earl of Lucan commanding the Cavalry Division, and the bugle was presented to him by the Colonel and officers of his regiment, and is engraved. Presented by the Colonel of the 17th Lancers to Trumpet-Major H. Joy. On which the Balaklava Charge was sounded on October 25th 1854. In 1898 this relic was sold by auction at Messrs Debenham, Storr and Son's rooms for 750 guineas to Mr. T. G. Middlebrook and, on 30th January, 1908, it was again under that hammer in the same rooms when it was purchased by Mr. W.W. Astor.	Instruments; Bugle; Trumpet-Major Henry Joy; 17th Lancers; The Crimean War; The Charge of the Light Brigade; Battle of Balaklava;	1854	Given by W.W. Astor Esq.	19080423	100 (including 1228(2))	225	Good.	19490223	Blue horizontal line. NAM written and circled in blue and signed with red initials. Short blue and red horizontal lines beside signature.
Royal United Services Institute	RUSI Museum	1001-2000	1228(2a)	The Crimea Medal, with clasps "Alma", "Balaklava", "Inkermann", and "Sébastopol", awarded to Trumpet-Major Henry Joy, 17th Lancers.	Military Medals; Trumpet-Major Henry Joy; 17th Lancers; The Crimean War; The Charge of the Light Brigade; Battle of Balaklava; Alma;	1856	Given by W.W. Astor Esq.	19080423	100 for all 1228	See 1228(2d)	Good (ribbon poor) name inscribed.	19561005	Blue horizontal line. NAM 2 written in pencil below a short horizontal red line. NAM written and circled in blue. Signed off in red initials.

Figure 1: Digital Archives Metadata Templates

TEXT [TRANSCRIBED]	IMAGE [SCAN]	IMAGE [PHOTO]	NOTES
<p>EXHIBIT A Smooth-bore Muzzle-loading Flintlock Pistol, Maeked Goff, 1804.</p> <p>PERIOD OR DATE 1804.</p> <p>ORIGIN OR DONOR Given by Lieut.-Colonel C. Carmichael.</p> <p>DATE RECEIVED Unknown</p> <p>INSURANCE VALUE S/-</p> <p>CONDITION WHEN RECEIVED Poor. Parts of lock missing trigger motion faulty.</p>		No .2882.	LATER ANNOTATIONS
			IMAGE SIZE

Figure 2: Digital Archives Wireframe

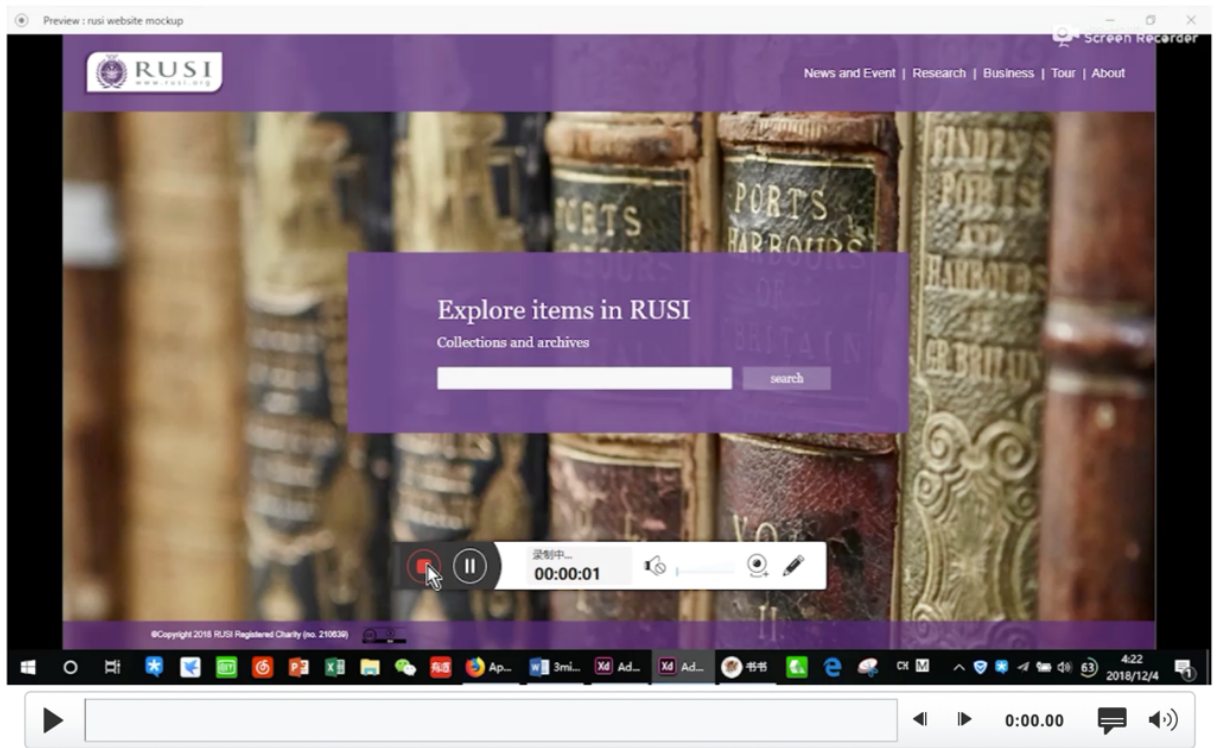


Figure 5: Research Data Management RUSI Portal Mockup