

Institution: University College London		
Unit of Assessment: 34 Communications, Cultural & Media Studies, Library & Information Studies		
Title of case study: Improving cultural heritage institutions' understanding of Sir Hans Sloane's catalogues and collections and facilitating better understanding of the potential of digital humanities research and collaboration in heritage settings		
Period when the underpinning research was undertaken: 2013-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Julianne Nyhan	Role(s) (e.g. job title): Associate Professor of Digital Information Studies	Period(s) employed by submitting HEI: 2010-present
Period when the claimed impact occurred: 2017-20		
Is this case study continued from a case study submitted in 2014? No		
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>Dr Julianne Nyhan's collaborative research on the Enlightenment Architectures project, undertaken primarily with the British Museum (BM), resulted in better access to, and understandings of, the globally significant catalogues of Sir Hans Sloane (1660-1753), which form the basis of the UK's national cultural heritage collection. Nyhan's research has: enabled major cultural institutions to better understand their founding collections in order to understand knowledge formation and exchange in the early modern world and to explore the challenging histories that have resulted from this; enabled major heritage organisations to democratise public access to historical catalogues and better understand and demonstrate the research value of historical catalogues and collections; and enabled critical reflection on curatorial practice through research-led understanding of the application of digital humanities approaches. It also informed institutional approaches to collaborations between major heritage organisations and university-based digital humanities researchers.</p>		
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>Dr. Nyhan's research seeks to understand how digital technologies allow new questions to be asked of information-bearing cultural heritage resources such as historical museum catalogues. It also seeks to understand and foster the trans-institutional partnerships necessary for this research. Semantic markup languages play an important role in the computational remediation of analogue sources by making them machine-readable. Nyhan's expertise in this was testified by her election (2009-11) to the council of the Text Encoding Initiative (TEI), the internationally-recognised standard for making Humanities textual documents machine-readable. Her research has advanced the design of markup languages like TEI and she has successfully argued for, and devised extensions to TEI so it can better represent historically-sensitive readings of cultural heritage information-bearing texts such as museum catalogues, rather than imposing modern encoding and interpretative frameworks on heritage texts (R1, R2). Nyhan fostered collaboration between the university, information and heritage sectors by identifying and contextualizing the new knowledge that can be created via the application of TEI to heritage texts and by providing concrete examples of good practice in pursuing trans-institutional collaboration. Her research has demonstrated that the complementary skills of information professionals and digital humanities researchers can be utilised to secure richer digital cultural heritage remediations. This is exemplified, first, by the innovative enhancement of the <i>Webbs on the Web</i> digital resource, achieved through her research-led collaborations with library professionals at LSE and with companies supplying digitisation, transcription and information architecture/user experience (IA/UX) (R3). Extrapolating the rationale and desiderata for such collaborations on a wider canvas, Nyhan was a lead author of the European Science Foundation Policy Briefing on Digital Cultural Heritage Infrastructures, which set out the future strategic directions and desiderata for Digital Research Infrastructures and data in the Humanities across Europe (R4).</p> <p>In 2010, the BM established the Reconstructing Sloane research consortium as an umbrella project for research into Sir Hans Sloane (1660-1753) and his collections, and thus, the history of the national collection. Sloane's collection was acquired for the nation in 1753 as the foundation of the original British Museum, the world's first public museum. The collection that Sloane gathered includes some 50,000 books, manuscripts, prints and drawings and over</p>		

70,000 objects and natural history specimens from across the globe. About 40 manuscript catalogues document the acquisition and development of his vast collection. Sloane's Catalogues are among the oldest and most significant in the English-speaking world and represent an Enlightenment world-view and scholarly practice as it emerged from the Early Modern period. They have been actively used by generations of curators in the centuries since his death. Yet the collection has become disconnected from the original manuscript catalogues and is dispersed between the three national institutions that have since grown from the original British Museum: the present-day British Museum (**BM**), British Library (**BL**) and Natural History Museum (**NHM**).

The Reconstructing Sloane consortium is a partnership of colleagues from the BM, BL and NHM. Sloane's collection is catalogued in those institutions in present-day databases that cannot talk to one another. To further the work of the consortium, and as a result of her expertise and track record of successful heritage sector collaborations, the BM invited Nyhan to conceptualise and lead the digital humanities research needed to unlock the manuscript catalogues of Sloane. A successful application for a Leverhulme Trust research grant "Enlightenment Architectures: Sir Hans Sloane's catalogues of his collections" (2016-21) was jointly written by Nyhan and Dr Kim Sloan, Curator of British Drawings and Watercolours before 1880 and the Francis Finlay Curator of the Enlightenment Gallery at the BM (i). Digital methods were a core pillar of this project because the interrelationships that exist between Sloane's now dispersed physical collection and the complex manuscript catalogues that describe it, could only be unlocked through a pioneering combination of traditional Humanities and Digital Humanities research.

Nyhan's Enlightenment Architectures research uses digital humanities approaches and technologies to digitise, transcribe, computationally model, analyse and transform the rich and detailed information recorded in Sloane's highly complex catalogues. Her research methods transformed Sloane's Catalogues from manuscript-bound sources (c.2,000 highly intricate and heavily annotated handwritten pages) into a dynamic and scalable open data set (**R5**). The unlocked data can now be integrated into the ecosystem of digital cultural heritage collections at the BM and beyond. The Enlightenment Architectures research made visible information previously obscured from curators and scholars. For example, the research overcame the difficulties of consistently locating and extracting textual references which are scattered across tens of thousands of manuscript pages, spelled with all the vagaries of the early-modern period, expressed in multiple languages and recorded in multiple hands. The resulting project website and corresponding TEI-XML files have made images and enriched, semantically annotated text available, through the freely available, open access digital editions and TEI-encoded versions of Sloane's manuscripts (**R5**). This representation newly facilitates the comparison, referencing and discovery of the text of Sloane's Catalogues for curators, researchers and other users. The research outputs underpinned new findings about the difficulties of modelling early-modern catalogues with TEI, and the extensions to TEI subsequently necessary (**R1**); and reassembled significant information about the original organisation of Sloane's collection that had previously been lost (**R6**). This has resulted in a reconstruction of the contents of the cabinets that originally contained the objects listed in Sloane's Miscellanies catalogue (**R1**); and significantly advanced a cultural heritage approach to modelling data, which we are calling "bifocalism" (**R1**).

3. References to the research (indicative maximum of six references)

Journal articles (all articles in peer reviewed journals; Policy Briefing also peer reviewed):

- R1.** Ortolja-Baird, A., Pickering, V., Nyhan, J., Sloan, K., & Fleming, M. (2019). Digital Humanities in the Memory Institution: the challenges of encoding Sir Hans Sloane's catalogues of his collections. *Open Library of Humanities*, 5 (1). doi:10.16995/olh.409
- R2.** Nyhan, J. The problem of date and context in electronic editions of Irish historical dictionaries. (2008). In *Yesterday's words: Contemporary, Current and Future Lexicography*, ed. Marijke and Van der Val, 319-332. Cambridge Scholar's Publishing: UK.
- R3.** Fay, E. and Nyhan, J. (2015). Webbs on the Web: Libraries, Digital Humanities and collaboration. *Library Review* 64:1/2, 118 - 134. "Highly Commended" by the Emerald Literati Network Awards for Excellence

- R4.** Moulin, C., Nyhan, J, Ciula, A. et al. (2011). ESF Science Policy Briefing 43: Research Infrastructures in the Humanities. European Science Foundation.
- R5.** Digital editions: <https://bit.ly/3e1oeYt>; TEI-encoded versions of Sloane's manuscripts: <https://bit.ly/3sLKTMk>
- R6.** Sloan, K. and Nyhan, J. (2020). Enlightenment Architectures and the reconstruction of Sir Hans Sloane's Cabinets of Miscellanies. Journal of the History of Collections, fhaa034. <https://doi.org/10.1093/jhc/fhaa034>

Grant Details

- i. Kim Sloan (PI) and Julianne Nyhan (Co-I), "Enlightenment architectures: Sir Hans Sloane's catalogues of his collections", Leverhulme Research Grant (2016–19, extended until 2021), GBP332,552
- ii. Kim Sloan and Julianne Nyhan, "Early Modern Collection Catalogues: Open Questions, Digital Approaches, Future Directions". 2018. Funded by the British Museum Research fund. GBP10,000

4. Details of the impact (indicative maximum 750 words)

Nyhan's Digital Humanities research on Enlightenment architectures (**R1, R5, R6**), as part of the wider Reconstructing Sloane consortium, improved understandings of the content of Sloane's founding collection. It deepened knowledge of how and from where it came, how it was classified and used by Sloane, his contemporaries and generations of curators and publics ever since, enhancing understanding and practice for museum professionals and for a public audience. Signalling the importance of this research to the institutional strategy of the British Museum (BM), the Head of Research described Enlightenment Architectures as "the flagship research project in our focus on histories of collecting and the institution" (BM [A]).

Enabling major cultural institutions to better understand their founding collections and explore challenging histories

The Head of Research at the BM explains "Better understanding of Sloane's collections has been sought by all three 'Sloane institutions' for last twenty years"; Nyhan's research (**R1, R5, R6**) enhanced knowledge of Sloane's founding collection for those institutions. Each contributed two catalogues for transcription and digitisation. "Better understanding our original collection, where it came from, how it was collected, how it was classified, even where it was stored in Sloane's home, [which are of] more than historic interest", the BM Head of Research explains, transforms the way curators and researchers "work with the surviving collections" [A]. The BM curator and project PI explain that the project "had a profound impact on my understanding of the three national institutions then and now and the way I research and catalogue the objects within them" [B]. For example, even when historical catalogues and physical collections were inaccessible due to the COVID-19 pandemic, staff were able to "provide quick and accurate answers to questions about what objects, now lost, Sloane once owned that were associated with slavery and his work on plantations in Jamaica [...] in preparation for a new case on Sloane, Slavery and Abolition in the Enlightenment Gallery in response to Black Lives Matter, available to all visitors to the Museum when it reopened" in August 2020 [B].

With new access and analysis of the digital Catalogues enabled by Nyhan's research (**R1, R5, R6**), the Natural History Museum (NHM) is now able to understand Sloane's specimens in their collection not just as "biological specimens" but also as "significant historical and cultural artefacts" (Principal Curator, NHM) [C]. For instance, the NHM explicitly recognized from the Enlightenment Architectures research (**R6**) that "integrating data from the Sloane herbarium not only with other biodiversity data but also with records from Sloane's other collections would provide a far richer context for understanding those collections, benefitting a broad range of users" and now plan to implement this cross-disciplinary approach in their practice [C].

Enabling major heritage organisations to democratise public access to historical catalogues and better understand and demonstrate the research value of historical catalogues and collections

Nyhan's research (**R1, R5, R6**) has enabled national heritage organisations to advance their open access resources and to inform museum-going publics and researchers about Sloane's

collection, now held by the BM, NHM and British Library (BL). The NHM Principal Curator of Life Sciences confirmed that “the catalogues were made freely available, in an open access format, advanced the Natural History Museum’s ‘open by default’ data policy ... [and] made an important contribution to this endeavour, extending the open access offerings of the NHM with historically important sources that are relevant to the public and researchers” [C]. It encouraged curators at three institutions (BM, BL, and NHM) to explore the benefits of “finding a common way of sharing datasets” [B].

A key project objective for the BM was to make Sloane’s catalogues “accessible [...] to the general public who could thus discover the original contents of Sloane’s cabinets and thus learn more about the ways objects can be used to convey knowledge about the world, as it was understood and shared, then and now” [B]. This “immediate public impact” was realised in 2020 when the curator was contacted by “a group working on an EU Northern Irish peace initiative project involving the local communities of Downpatrick and Killyleagh where Sloane was born”. They “wanted to explore what was known of Sloane’s original collections, especially items related to Ireland, to slavery and to early British imperialism. Using the information from the digitised catalogues, they held seminars and discussion groups with local people and published leaflets for local schools” [B]. The BM exhibition “A Physician’s Cabinet: Sir Hans Sloane’s Practices of Collecting and Cataloguing” (24 November 2017–11 January 2018) informed its 56,372 visitors of the ways in which “researchers are involved in making historic texts machine readable” and invited them to “compare cataloguing methods in museums then and now” [B]. Introductory panels explained the Reconstructing Sloane project, informing audiences of TEI, how it was being used in the British Museum and could potentially be used in their own work. This made accessible the role of specialist Digital Humanities research “in reconnecting objects and reconstructing our understanding of the past and the present of the institutions” [B]. Social media engagement extended the discussion on TEI to a global audience, with Nyhan’s tweet of Dec 11, 2017 viewed 18,322 times and engaged with (i.e. interacted with through clicking, liking, embedding etc) 351 times, as evidenced by Twitter’s analytics data [D].

Enabling critical reflection on curatorial practice through research-led understanding of the application of Digital Humanities approaches

Nyhan’s research in Enlightenment Architectures (R1, R6) has informed curatorial understanding of professional practice, prompting critical reflection on “how ‘cataloguing’ has fundamentally shaped how we and others think about our collection” at the BM [A], and how the research “made clear that modern cataloguing techniques erect barriers to our research on the original meaning of these collections – their provenance, original cultures, use of their original maker or gatherer and their use and meaning for their collectors” [B]. Nyhan’s research (R1, R6) also demonstrates how the particular use of semantic markup languages in digitised catalogues allows curators and researchers to access and understand institutional holdings in far greater depth and detail than with standard image digitisation of textual sources. This opened up new possibilities to understand collections, to prioritize future strategic developments and enabled critical reflection on curatorial practice. The BM curator explains that “The TEI highlighted the links which could no longer be made between modern specialist departments and institutions, but which need to be re-bridged or cross-walked in order to fully understand the original meaning and context in which they were acquired and used [...] it also made it clear that the three institutions were going to have to invest more effort into finding a common way if not of producing data, then of sharing datasets” [B].

A series of cross-disciplinary knowledge exchange events (including symposia, teaching sessions, and one-to-one meetings) supported heritage professionals to develop new understandings about the role of digital semantic markup languages in unlocking the wealth of information that is contained in early-modern catalogues. Feedback on the two-day project research symposium held in the BM in February 2018 entitled “Early Modern Collection Catalogues: Open Questions, Digital Approaches, Future Directions” convened by Nyhan and PI Sloan and attended by c.30 members of the wider heritage sector commented that it provided “a valuable insight into the approaches, questions and challenges of research” [E]. A Metadata Analyst, described how the workshop “highlighted our shared challenges [and] provided several avenues of discussion to come to grips with these” [E]. This understanding of the benefits of research-led approaches resulted in direct changes to institutional knowledge and practice, with

the NHM recognising that, “semantic text encoding, ontologies and text analytic methods can be used to extract and analyse Sloane's handwritten catalogues in a way that maximises their potential value to researchers across both the sciences and the humanities” [C], while heritage workers at the Royal Society used Enlightenment Architectures “openly accessible raw data to prepare guidelines to transcribe an 18th century inventory of the Royal Society collections this very week” and plan to reuse some of their specialist TEI extensions (Digital Resource Manager, The Royal Society) [F].

The wider implications of this conceptual and practical shift can be seen in the influence of the research in the text technologies commercial field, with an expert for Black Mesa Technologies noting how exposure to the Enlightenment Architectures project (R1, R6), has repeatedly proven useful in transforming thinking about both the digitization of cultural artefacts and document production in legislative, judicial, and regulatory contexts. For example, Nyhan's methodology explains “why and how a design focused only on the information in the document and not also attentive to its history of changes (and often enough also its presentation details, like pagination) will fail to meet requirements”. They have applied this learning in current projects such as “digitizing Uyghur manuscripts from central Asia, where the markup needs to make it possible to focus on the content of the texts, on their linguistic and orthographic form, and on the physical characteristics of the manuscript” [G].

Informing institutional approaches to collaborations between major heritage organisations and Digital Humanities researchers

Nyhan's research for Enlightenment Architectures (R1, R6) has transformed how heritage organisations see the value of Digital Humanities approaches and their understanding of the benefit of collaboration with university-based researchers. The BM confirmed that the project demonstrated the “value of digital humanities approaches to addressing museum challenges, and highlighted the skills sets it would need to integrate this thinking into future working practices”, informing the view that the BM “can clearly see how working with the right digital humanities experts can really impact future work [including] core museum business such as cataloguing” [A]. Its success meant that “Enlightenment Architectures has been one of the very few research projects to be formally presented and discussed with the Museum's Trustees at their research committee in 2018” [A]. The NHM acknowledged that the research illustrated the value of “a greater exchange of data across disciplines and through closer integration of our approaches [and] demonstrated the importance and value of knowledge exchange across disciplines” [C]. The Royal Society confirm their view of collaborations bringing mutual benefit, through incentivising “scholars to consider GLAMs as producers of digital resources”, and giving cultural institutions a unique chance to benefit from the expertise of digital humanists” [F]. Enlightenment Architectures (R1, R6) also opened “avenues of research, for instance on how digital tools can help interrogate the origins of our national collections and where they fit within colonial networks” [F]. In addition, the project provided a precedent for effective collaboration between BM, NHM, the BL and Digital Humanities researchers, showing that “it is possible to digitize and transcribe all the surviving catalogues from the original British Museum, providing renewed enthusiasm and confidence that this seemingly huge task is achievable in the near future” [A]. Moreover, this project identified pressing new research questions about the propensity of digital technologies to perpetuate the subjectivities of the archive, which will be furthered through a future collaboration with the BM and NHM, a funding bid for which was submitted and is under review at the time of writing and has been invited to submit a stage 2 bid.

5. Sources to corroborate the impact (indicative maximum of 10 references)

- A. Testimonial: Head of Research, British Museum
- B. Testimonial: Curator, British Museum
- C. Testimonial: Principal Curator, Life Sciences, Natural History Museum
- D. Responses to TEI label (twitter)
- E. Early Modern Collection Catalogues: Open Questions, Digital Approaches, Future Directions workshop (15-16 February 2018): Survey responses and blog post <https://bit.ly/3e5XUMz>
- F. Testimonial: Digital Resources Manager, The Royal Society
- G. Testimonial: Black Mesa Technologies