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How to make a university history of science museum: Lessons from Leeds

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ABSTRACT

The historic scientific collections of well-established University Museums—the Whipple at Cambridge and the Museum of the History of Science at Oxford, for example—have long served in university teaching and as objects of research for historians. But what is involved in starting such a museum from scratch? This paper offers some reflections based on recent experiences at the University of Leeds. In a relatively short period, the Leeds project has grown from a small volunteer initiative, aimed at salvaging disparate scientific collections from all over the campus, to a centrally supported and long-term scheme to provide collections care, exhibitions, and public events, as well as material for teaching and research within history and philosophy of science. Recent work undertaken on a range of Leeds objects and collections, including a camera reportedly used to take the first X-ray diffraction photographs of DNA in the 1930s and the Mark 1 prototype of the MONIAC (Monetary National Income Automatic Computer), built and designed at Leeds in 1949 to model the flow of money through the economy, highlights the national and international significance of the University's scientific heritage as well as the project's ambition of providing students with on-going collections care responsibilities and object-research experience. Sketching possible futures for the Leeds project, the paper considers challenges confronting the heritage sector more broadly, and how those involved with historic scientific collections can make use of new opportunities for teaching, research, and public engagement.

> "Every Professor of a branch of science requires a museum and a laboratory for his department; and accordingly in all our great universities we have independent museums of botany, palaeontology, geology, mineralogy and zoology, of anatomy, physiology, pathology and material medica, of archaeology—prehistoric and historic, classical and Christian—each subject taught having its own appropriate collection."
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> David Murray (1904, p. 275)

Museums of science have long formed an important part of British universities, yet their role today within their home institution is often radically different from the position they held at the time of their establishment. University museums became almost uniformly central to science teaching and research in the eighteenth, nineteenth, and twentieth centuries as knowledge about the natural world became reclassified. Their extensive collections of specimens and samples were not primarily accumulated for their aesthetic beauty or historical significance but were used to demonstrate contemporary principles and theories in biology or chemistry through comparisons of type and composition. Thus, collections in the sciences were considered "good to think with."[1] Increasingly changing pedagogical methods and new technologies, however, meant that such collections became largely obsolete for these purposes; today these museums and their collections provide new opportunities for teaching and research into the history of these disciplines and are increasingly valued by universities as tools through which to engage the wider public. The longstanding success of well-established

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[1] Were (2010, pp. 291–304).

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University Museums—the Whipple Museum for the History of Science at Cambridge and the Museum of the History of Science at Oxford, for example—in revitalizing their collections of scientific and medical instruments provide models for how other British universities may view and use their collections. Indeed, both the Whipple and Oxford's Museum of the History of Science were integral to the foundation of the history and philosophy of science as an academic discipline following World War II and have played a vital role in shaping the discipline ever since.[2]

Yet, as this paper will chart, there is an alternative to the "top-down" model of scientific heritage revitalization taken by Cambridge and Oxford, one which is driven from the "bottom-up" and one which staff and students from the Centre for the History and Philosophy of Science (HPS) at the University of Leeds embraced when they embarked on a project in 2007 to establish their own University Museum of the History of Science, Technology and Medicine. This paper offers some reflections based on recent experiences at Leeds. Emphasizing the importance of collective effort, it will broadly chart the project members' recent work and will highlight the project's growth from a small volunteer initiative, aimed at salvaging disparate scientific collections from all over the campus, to a centrally supported and long-term scheme to provide collections care, exhibitions, and public events, as well as material for teaching and research within history and philosophy of science. Sketching possible futures for the Leeds project, it considers challenges confronting the heritage and University sectors more broadly, and how those involved with historic scientific collections might make use of new opportunities for teaching, research, and public engagement.

1. Giving new 'life' to old objects: alternative approaches to heritage revitalization

Since its foundation as the Yorkshire College of Science in 1874, the University of Leeds has established itself as a world-class teaching and research institution in experimental physics, medicine, mathematics, geology and mining, chemistry, engineering, and biology. Tools, instruments, machinery, samples, and specimens played a central part in the University achieving this status, but rapid technological development and changing pedagogical techniques have gradually left Leeds with a large number of redundant collections and equipment. Without the necessary will, expertise or funding to document, care for, and interpret them, such collections were left to deteriorate, and are now seen by some as occupying valuable storage space which could be otherwise used.[3] Prior to the establishment of the museum taskforce, these circumstances meant that University departments faced pressure to rationalise and dispose of their historically significant, extensive and diverse collections, of which some 12 out of 30 can be broadly defined as scientific, technological, or medical and each containing between 1000 to 100,000 items.[4] The University's Herbarium, for example, an important collection of 25,000 plant specimens dating from the mid-nineteenth century, and its anaesthetic collection, a small but significant collection of approximately 100 mid-nineteenth century anaesthetic inhalers and masks, have been loaned or donated to other museums, while other items at risk of disposal, such as William Astbury's camera used in the 1930s to take the first images of DNA, have often been salvaged by dedicated members of University staff who remember with fondness the use of the objects in teaching and research and value their importance to the scientific heritage of the University. Other at-risk artefacts of note include colour dye and chemical samples originating from the University's early years as a technical college aiding the local textile industry, electrical generating apparatus and magic lanterns from the University's history of education collection, and a workshop full of nineteenth century printing presses.

Yet while recent trends in the academe suggest that many have turned away from collections relevant to their own discipline, many within the history of science have embraced objects as a way of exploring scientific practice in the past. Through the study of instruments and books used to conduct experimental work and specimens specifically collected for scientific study, researchers in the history of science have thus given new "life" to old collections.[5] The study of an individual artefact has in recent years also been termed an "object biography"; viewing objects in such a way allows us to trace their changing meaning, from useful tool or sample constructed by a manufacturer or collected by a natural philosopher or scientist to "artefact" within a museum collection and subject of study for the historian of science.[6] The earliest aim of the museum taskforce at the University of Leeds was similarly geared towards exploring the history of science through the deteriorating but fascinating collections housed within its own institution.

1.1. The establishment of the museum taskforce

The museum taskforce was established in 2007 following growing concerns about deteriorating university collections among members of the Centre for HPS. Composed of approximately 20 HPS staff and postgraduate students, the taskforce brought together those with experience of working with historic scientific collections at institutions such as the Thackray Museum, the Oxford Museum of the History of Science, and the National Maritime Museum, and those with a variety of skill sets including collections research and database design. With its collective expertise, the taskforce volunteered to provide a vital safeguarding role for the University's scientific heritage by working with departments with relevant collections and by building the collections into their own research and teaching in ways they find interesting and fruitful.

Taskforce research has since uncovered important new research avenues. For example, while existing research has highlighted the importance of Adolf Ziegler's wax models for enabling nineteenth-century researchers across the world to visualise embryological development, little was known about the significance of these models at Leeds until the taskforce began working with those once used in the University's Medical School.[7] It was discovered that the models had been central to University teaching and research prior to digital microscopic imaging, and this has been built into new exhibitions and resources. Moreover, following her own valuable experiences with object-centred learning at Leeds, former MA student and taskforce member, Lisa Hobson, developed scientific object guides for lecturers and students, which invited them to think beyond an object's dimensions, materials, and manufacturer and to think imaginatively about what it may tell us about the nature of a

[2] Bennett (1997, pp. 29–46).

[3] This is an experience faced by most red-brick British Universities. Widespread fear in the UK about university collections disposal and deterioration led to the establishment of the University Museums Group in 1987, http://www.umg.org.uk/about/ (accessed 25 June 2012).

[4] Arnold-Foster (1993, pp. 64–71). Scientific, technological and medical collections can be incredibly wide-ranging and include almost every object, natural and man-made but for our purposes, collections such as archaeology, coins and medals have been excluded. This is more a reflection of the interests of the department and a limitation on resources than an attempt to deny their significance.

[5] For example, see Taub (2011, pp. 689–729). For the materiality of science books, see Topham (2004, pp. 431–442); Warwick (2003) and, in medicine, Jones (in press).

[6] Alberti (2005, pp. 559–571).

[7] Hopwood (2002).