

From anatomy to zoology: Results on the history of university collections based on trans-disciplinary research

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Abstract

The majority of research projects on the history of university collections are focused on a single collection or on collections of one discipline. Trans-disciplinary studies, however, despite opening up a different and more rewarding view on university collections, remain very rare.

This article, drawing on results from trans-disciplinary research on university collections in Germany, gives new insights into the history of the origin(s) of collections and academic knowledge formation, as well as into the relevance of collections for the development of different disciplines.

Introduction

In recent years, research on material culture and its role in the history of science and knowledge history has received increasing attention (FINDLEN 1996; ZWECKBRONNER 1999; BRENNI 2000; TE HEESSEN & SPARY 2001). Related to this, research on university collections has greatly advanced as well. To provide only one example: Since 2004, the German Research Foundation has been funding *University collections in Germany: Research on their holdings and history*,¹ a project through which the Helmholtz Centre for Kulturtechniken intends to catalogue German universities' collections and compile data on their holdings and history. Now, after almost five years of work, the inventory is more or less complete, so that the material published in the online database makes possible specific investigations into the history of science and historical analyses of collecting.

Comprehensive knowledge on the history of our collections is crucial if we aim to successfully run university collections or museums. Their histories tell us why collections exist; for which particular purposes they were and have been founded; which relations they had and have with other collections and disciplines; and what their value for the university as an institution has been (LOURENÇO 2005). Knowledge of the particular histories and meanings of university collections helps to understand and elaborate the difference between university museums and regular museums. It is only against the background of this understanding that we can become able to confront the challenges the present holds for us.

Therefore, it is necessary to conduct an overarching historical and epistemological analysis of university collections and disciplines. Up to date, however, the majority of research projects on this topic are focused on a single collection or on collections of one discipline. Although trans-disciplinary studies open up a different and more rewarding view on university collections, they remain very rare. Our database, and the material on university collections in Germany it makes accessible, fundamentally widens the possibilities of trans-disciplinary research in this area of study. With its aid, we can more extensively learn about the relevance of the collections for the development of different disciplines and – related to this – the success or failure of different types of collections.

This article presents selected results from my research on university collections – not just in order to provide some basic insights into the history of collections, but also in order to encourage colleagues from other countries to initiate similar trans-disciplinary studies.

¹ See publicus.culture.hu-berlin.de/sammlungen/ (accessed November 25, 2009).

The relevance of collections for the development of different disciplines

In order to study the historical relationship of academic disciplines with university collections and the particular relevance of collections for the development of disciplines from a trans-disciplinary perspective, it is necessary to take a closer look at the various roles filled by research and teaching collections. Only then can their functions for the different fields be determined. For this purpose, I suggest the use of the following classification:

1. The collection as a primary material basis for research and teaching;
2. The collection as laboratory;
3. The collection as a permanent academic teaching facility;
4. The thematic collection established to support teaching;
5. The historical collection as a resource for specific scientific investigations.

These categories are, of course, not mutually exclusive. On the contrary: a collection's particular use is dependent on research methods and research questions and occasionally also on didactic concepts and can thus obviously vary in time. In the following, these five categories will be illustrated with the help of concrete examples.

Collections as primary material bases of teaching and research

The first academic teaching subject to include practical demonstrations into its curriculum was anatomy (RICHTER 1977, 6). Its "modernizer" was Andreas Vesal (1514–1564), a doctor and anatomist based in Padua, who insisted that university teachers personally dissect and use corpses when demonstrating anatomical facts. Thus, course offers in winter terms included anatomical preparations and demonstrations.

In this way, anatomy gradually evolved from a traditional book science into an experimental natural science. Dissections allowed scholars to extract collection objects which then served the students' academic as well as practical education. As a result, anatomical cabinets were gradually established in medical faculties.

Principally, the establishment of extensive collections of demonstration objects was decisive for the direction the development of a discipline took. The specimens, however, served not only as demonstration objects, but were also made available for research and provided, for example, the basis for innumerable dissertations and other works (SCHULTKA & GÖBEL 2007, 46–47). Thus, for anatomy's formation and development, the existence of specimen collections was essential: they provided the working basis for teaching and research activities. The same is valid for many medical and veterinary subjects such as pathology, medical anthropology, surgery, gynecology or orthopedics, and beyond them for all subjects of the natural sciences such as botany, zoology, forestry, paleontology, geology, and mineralogy. While today's collections only play a minor role for teaching and research in medical subjects, their importance for the natural sciences remains marked: they serve as archives uninfluenced by current research agendas and scientific trends.

While it is also established that universities provide the materials necessary for teaching and research, this was not always the case. In earlier times, the collections used at universities were usually privately owned, since for the most part university teachers were personally responsible for acquiring and maintaining their equipment for teaching and research (MÜLLER 2006, 146). This practice, however, shifted during the second half of the 18th century, when the University of Göttingen installed Germany's first Academic Museum in 1773 and provided the most essential instruments for teaching and research. From then on, universities systematically bought private collections in order to ensure that all necessary materials and instruments were made available.

Questions regarding the transition from private to institutional collection practices are important for understanding the conceptualization of collections in the past. For it was only with the decision of German state governments to financially assist academic teaching and research that systematic institutional and material infrastructures were established. They, in turn, were a prerequisite for the development and elaboration of planned collection strategies.

Collections as laboratories

Germany's, possibly even Europe's first 'Royal Academic Museum' was founded in 1773 by the University of Göttingen (LICHTENBERG 1779, 48). It consisted mainly of two sections. The first held natural objects; the second focused on the arts. Until into the 1840s, the individual segments of the collection formed one spatial and organizational unit (PLESKER 2006, 261). Following the expansion and specialization of academic disciplines, however, collections were gradually reaffiliated with their newly institutionalized faculties.

The museum, which was jointly directed by Johann Friedrich Blumenbach (1752–1840) and Christian Gottlob Heyne (1729–1812) (MARINO 1995, 9), held collections from the natural sciences – among them botanical, zoological and geological collections – as well as coins, art and ethnographical objects (LICHTENBERG 1779).

Objects from the collections were not only employed as demonstration material for teaching, but were generally accessible to students and academics of all faculties for personal study (PLESKER 2006, 273). Collections were thus used as 'laboratories' for the study, comparison and analysis of objects.

While we are unable to reconstruct any specific impulses the objects may have inspired, we can surely assume that, as 'laboratories', academic collections played an important role in the emergence and formation of disciplines.

Collections as permanent academic teaching facilities

Especially among the cultural studies, there are disciplines which depend on their teaching collections. Let us take a closer look at archaeology: As an academic teaching subject in Germany it was founded by Christian Gottlob Heyne (see above), who was library director and professor of poetry and eloquence at the Georgia Augusta in Göttingen. From 1767 onwards, he offered regular lectures on archaeology and the fine arts in addition to the canonical lectures on antiquities and the authors of the classical period. For these new lectures, Heyne set out to establish a collection of plaster casts with famous works of classical sculpture (GRAEPLER & MIGL 2007, 7).

Beginning in the late 18th century and following Heyne's example, other universities subsequently also introduced archaeological lectures. When Heyne's successor Friedrich Gottlieb Welcker (1784–1868) left Göttingen to continue his career at the newly founded University of Bonn, his faculty also established an academic teaching collection and institutionalized it as an academic art museum (MIELSCH 2003). Yet in contrast to Göttingen, where the casts were loosely arranged and displayed across the library, Bonn was the first university to found a museal teaching institution for the classical arts.

Even today, all universities continue to ground their teaching in classical archaeology on academic collections. The same goes for other archaeological subjects, where academic teaching is equally dependent on the existence and availability of permanent collections: prehistoric archaeology, Egyptology, the archaeology of the Sudan, the archaeology of the Ancient Near East and Christian archaeology.

Numismatics is another case in point. The presumably first numismatic teaching collection affiliated with a German university was founded in Halle in 1768 by the polyhistor Johann Heinrich Schulze (1687–1744), whose collection of classical coins provided the academic collection's initial material basis. Using his collection, Schulze held a colloquium on the science of coins in 1738, and thus essentially founded numismatics as an academic discipline (KAISER & VÖLKER 1980).

Botanical gardens, too, are important teaching institutions. At the time the first university gardens were founded, botany had not yet become an independent science; it was taught by medical scientists who trained students in the knowledge of medicinal herbs. This explains why early university gardens were founded as a 'hortus medicus' which had the function of supplying medical students with material for study. In recent years, unfortunately, botanical gardens have dramatically lost much of their significance for teaching, not least due to the rise of micro- and molecular biology.

Temporary thematic teaching collections

We know of many teaching collections with specific foci that were established with the foundation of a discipline or an academic chair, and which at least in their initial phase significantly contributed to student education. Their use was determined by the currency of the subject and therefore temporally limited. Among them were many model collections. In some disciplines, the application of models documents the shift away from theoretical and towards practically oriented teaching. This is particularly true for cameralism, a former German science of administration. One of those to methodically integrate model collections into his courses was Johann Beckmann (1739–1811), a professor at the University of Göttingen and founder of the discipline of scientific technology (BECKERT 1983). In 1777, he published the discipline's first textbook (BECKMANN 1777). To illustrate his theories during lectures, he employed three-dimensional models which not only highlighted the spatial arrangement and construction of each component, but also its respective motions. Apart from using his private collection, which counted 87 economic and technical models, Beckmann also made use of the university's model chamber collection for teaching purposes (BEHRE 1999). Its inventory today, unfortunately, only counts a remaining 20 models; numerous other model collections, however, have been permanently lost or have to this date not been retrieved. In this respect, our research has established that models were intensively employed above all in technical subjects, but also play(ed) an important role in the teaching of mathematics and medicine.

Historical collections as sources of specific scientific research

Universities obviously also hold many collections which are no longer perceived relevant for regular teaching and research activities. We consider them historical collections. A suiting example is the collection of physical apparatuses at the University of Göttingen. It was founded in 1783 by Georg Christoph Lichtenberg (1742–1799), who financed its establishment by private means (BEUERMANN & MINNIGERODE 2001, 183).

Lichtenberg's introductory lectures to experimental physics had their very own highlights: the demonstration objects. His collection was sold to the university in 1789 but remained in Lichtenberg's private apartment, where he continued to use it for research and demonstration purposes.

Similar collections documenting the historical development of a discipline are extraordinarily significant, since they provide sources for research on the history of science and thus, in time, themselves become objects of study. There are, of course, cases in which, through new research methods or approaches, a prominent collection is reopened for use within its discipline. Meckel's anatomical collections in Halle, for instance, are currently being put to use for research on historical illnesses – with the aid of DNA analyses.

Final remarks

Trans-disciplinary research, to sum up, illuminates how university collections are generally significant for the emergence and consolidation of scientific disciplines. It is not enough, however, to approach the topic with extensive knowledge on academic collections alone. On the contrary: If observations concerning individual collections are to be integrated and interpreted correctly, a project such as the *University collections in Germany* – a project promising new insights for the histories of science and collecting – demands intense cooperation with scientists and historians.

Taking into overall account the historical development of collections, it becomes clear that new research methods and approaches, or didactic concepts, can revive holdings whose value today is obviously historical, and give them renewed significance for their disciplines.

With this brief overview, I hope to have indicated the turns future research can take. Crossing the established borders of languages and disciplines will enable us to analyze and compare individual situations and issues more thoroughly. Greater insight into the history and nature of our collections will unquestionably create awareness for their unique character. Beyond this, we need to identify the qualities and characteristics that distinguish university museums from regular museums. Only then can we develop independent concepts which enable us to essentially increase academic as well as public recognition for our collections.

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