
Documenting Our Heritage

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INTRODUCTION: THE PROBLEM

IN THE MUSEUM WORLD, the primary manifestation of the information age has been a trend toward increased emphasis on records maintenance. Since the 1970s, documentation of museum objects has emerged as a major concern for museum professionals. In its 1984 report, *Museums for a New Century*, the American Association of Museums (1984) notes that: "The lack of information about the number, location, and condition of objects, artifacts and specimens in the nation's museums is a handicap to adequate care and maintenance of these collections and to scholarly progress in general" (p. 53).

In theory, a museum "should be able to produce any object from its collection when any document from its registration system is picked at random" (Reibel 1978, p. 24). Conversely, the documentation for any object should be readily available to shed further light on any object as required.

Instead, records of the hundreds of thousands of objects in museum collections worldwide are less than adequate, and it is generally recognized that "museums throughout the world have an overwhelming documentation problem" (Andrew 1980, p. 42). Although this deficiency appears to be universal, it is of special significance in the context of the art museum owing to the unique characteristics of art objects each of which is "an irreplaceable, unduplicated, and priceless piece of humanity's cultural history" (Halliday 1987, p. 9). Furthermore, art objects, frequently loaned to other museums for temporary exhibitions and, even within the owner institution, exhibited in a variety of con-

texts, are subject to frequent shifts in location. Were the exact whereabouts of a single object to be in doubt for even a few hours, its custodians could be in a most precarious, uncomfortable position. Thefts from museums and the practice of "deaccessioning" tend to make headlines in the press and provoke unfavorable public comment.

Since the 1960s, the public's involvement with the museum has intensified and has engendered a need for accurate information about museum holdings. Because museums derive their tax-exempt status from their educational functions, museum workers must be prepared to open their storerooms and files to scholars. Furthermore, accurate records of objects are essential not only for scholarly research and for the museum's educational programs but also for the mundane requirements of insurers and auditors in the event of loss or damage. Many museums have initiated documentation projects only after the loss of an important object with concomitant embarrassing publicity.

Museums do, in fact, document their major holdings most carefully, but the objects actually on exhibit in their galleries at any given time comprise but a small percentage of the total collection. A museology text published in 1975 asserts that: "The Field Museum of Natural History exhibits less than one percent of its total collection at any one time" (Burcaw 1975, p. 93). In many museums, information about the bulk of the collection—in storerooms and warehouses—remains largely inaccessible to scholars (Sarasan 1975, pp. 3-4).

The great museums were conceived as educating the public at large, promoting scientific research, and disseminating information about the objects in their care. Eventually the concept of "care" came to include documentation. And, as the most recent development, the obligation of record-keeping has been incorporated in the codes of ethics that museum workers have devised for their own guidance. The most recently published code of ethics for curators places the obligation to maintain records in its very first paragraph: "Curators are authorities concerning the collection under their care. As such, they should develop and preserve thorough, up-to-date, easily comprehensible information about these collections" (Lester 1983, p. 36).

Such records as may have been compiled in the past, often consist of illegible cards with incomplete or obsolete information. Because details relating to museum objects do not remain constant, the records need to be frequently updated to reflect current location, valuation, attribution, condition, exhibition record, and bibliography. To maintain such a multifaceted variety of information manually would require enormous amounts of staff time and expense to which few nonprofit institutions can commit themselves. When Peter Homulos, director of the Canadian National Inventory Programme, surveyed the state of documentation in

Canadian collections in 1972, he discovered huge backlogs of handwritten, illegible cards with obsolete information. He identified a significant problem area in the responses he received to the question: "How frequently does the information on the catalog cards change?" Because he was told that once an object was cataloged the information "hardly ever" changes, he concluded that updated information failed to reach the registrars and thus they assumed that no changes needed to be entered into the records (Homulos 1982, p. 11).

As museum workers began to recognize the need for accurate documentation, they also discovered that the computer offered a solution to the problems they faced. The museum environment, however, has refused to recognize that the technical aspects of gaining control of their collections have already largely been solved by the library community. In fact, within museum circles, there has been a notable failure to share information or to benefit from the experience of others (Stam 1981, p. 15). Each project is perceived as unique, with its own problems, requirements, and solutions. To remedy this situation, a librarian at the Metropolitan Museum has begun to compile a data bank of museum computer literature (Barnett 1987, pp. 1-2). The Getty Trust expects to disseminate information on ongoing museum computer projects, continuing the format of its *Census* published in conjunction with the Second International Conference on Automatic Processing of Art History Data and Documents held in Pisa in 1984.

Current literature on museum records falls into two categories. The majority of published sources consists of descriptions of individual museum projects detailing the hardware and software used to inventory and catalog collections. Conference reports, articles in museum journals, and the sparse information published between hard covers is mostly devoted to descriptions of one museum's, or one department's, efforts at bringing its collection management procedures up-to-date by using computers (Light et al. 1986). An alternate approach, taken by the computer experts, addresses the practical issues of uniform data standards, syntax, and nomenclature for museum databases. Conspicuous by their absence are discussions of the theoretical basis of classification and indexing. Rare is the author in museum publications who touches upon either of the fundamental issues in museum computerization—change management and training in documentation for museum personnel.

DIMENSIONS OF MUSEUM INFORMATION SYSTEMS

In order to create the desirable optimum variety of access points to each object, a great number of files would need to be created, each arranging the same redundant data in a different sequence. For example, to provide adequate finding aids for Jacob Hurd's Silver Loving Cup, the cataloger at the Metropolitan Museum produced at least eight 7.5 x 12.5 cm cards (Dudley et al. 1979, pp. 219-27). A typical entry shows

a "maker entry," three subject entries, a descriptive heading entry (CUP,LOVING), and a photograph filed under the cup's accession number. An additional card would be filed under the classification: WA (for western art)—Metal work—Silver—XVIIIth c.—American—Mass.—Boston—Cup—Loving. The concept of the unit card has not been incorporated so that each card has its own format. These cards, then, are filed in disparate sequences to reflect the name of the artisan who created it, the type of object involved, and, in this case, the heraldic symbols it displays which are labeled subjects. In addition, of course, the loving cup's provenance would need to be registered in a donor file, and its storage place recorded in a location file to show its current whereabouts. It would also need to be included in an inventory list detailing the contents of the storage room or gallery that houses the silver cup. A parallel cataloging sample for a painting by Gauguin consists of ten cards (artist, title, subject cross reference, donor, previous provenance, artist/title, photograph, notes, exhibition record, and bibliography). However, for the Metropolitan Museum's Department of European Paintings, the average number of cards per record is fifteen to twenty; in some cases there may be as many as 100 cards for a single picture (Baetjer 1984, p. 123). Even so, the shortcomings of the card system become evident when additional access points are needed which were not provided for in the original plan.

What if an object of gold is depicted in a painting on a wooden panel? In most formats we might easily miss it when asking for objects made of gold: the material in this case would be entered as "wood" and so the golden object would be found only if we took the trouble of asking for every word "gold" or "golden" wherever occurring.... (Pajmans and Verrijn-Stuart 1982, p. 153)

While the quotation makes the case for a full-text search capability in a computerized system, it also points out a serious flaw of manual documentation. The Metropolitan Museum's silver cup would not be retrieved for an exhibit of silver objects. The entries for the Gauguin illustrate the same problem: the cataloger at the Metropolitan Museum carefully noted that "the fruit at the feet of the Virgin is placed on a 'fata,' an altar of the type once used to make offerings to the Tahitian gods" (Dudley et al., pp. 222-25). Since this item of scholarly research is recorded in a note within the catalog entry, the word "fata" is not an access point (i.e., no card is filed under the subject heading "fata"). A researcher looking for images of Tahitian cult objects would not find this altar through the catalog.

It has been estimated that even small museums may maintain more than twenty-five different files and ledger books (Sarasan and Neuner 1983, p. 17). Few museums can afford the time and personnel required to create such redundant labor-intensive records.

If the file is to reflect the research relating to the object, the amount of data to be entered may become quite overwhelming. Catalog records for art objects have been compared to medical records in respect to the

variety of data formats they contain—i.e., factual, numerical, and descriptive—and above all, to their being open ended and not completed throughout the subject's lifetime (Vance 1984, p. 1). The extent of documentation for museum objects is limited only by the amount of research devoted to the specimen.

MUSEUM RECORDS

Recording of rarities in collections, both of books and of objects, is as old as the art of writing itself. Thousands of clay tablets inscribed with cuneiform characters were found during the excavation of the palace of Assurbani-pal in Nineveh. Archaeologists at the site conjectured that these were "methodically arranged and cataloged" (*Encyclopaedia Britannica*, s.v. "Libraries").

Since the pre-Christian era, the museum and the library have developed along parallel lines, frequently devoted to both books and artifacts. The most famous example would be the Alexandrian Library which was devoted to scholarship and research and which, in addition to manuscripts, gave room to works of art, animals, and curiosities. Under the administration of Callimachus, a catalog of all the principal books in the Alexandrian library was prepared and arranged in 120 classes (Jones 1971). After the Fall of Rome, the repositories of learning were the monasteries and their treasuries. Monastic libraries preserved classical literature and thus provided the impetus for humanistic scholarship and the growth of universities. The *Wunderkammern*, amassed by the princely families of the Renaissance, formed the nuclei of the great national collections of Europe. Both monasteries and private collectors employed librarians to produce inventories of their holdings. In the United States, the forerunners of the modern museum—atheneums and cabinets of curiosities—tended to be connected with libraries and the boundaries between the two institutions were often nebulous until well into the twentieth century (Rawlins 1981, p. 2). An example of this intimate relationship would be the Newark Public Library where, during his tenure, John Cotton Dana succeeded in founding the Newark Museum and operated both library and museum according to his concept of the most up-to-date educational principles.

With the development of modern museums—the great national storehouses of historic, ethnologic, scientific, and art collections—mere handlists of accessions were insufficient. More detailed information is required for managing collections and for assembling objects for special exhibitions.

It was not by accident that major campaigns to gain control of museum records were started in the latter half of the 1970s. In the United States, the great museums had been founded just 100 years earlier, and, preparing for their centennial celebrations, curators found that they could not readily reconstruct even their own history let alone the past of most of their possessions ("Museum Archives" 1980, p. 10). To com-

pound the problem, museum workers who had begun their careers in the depression years were retiring and taking with them a wealth of information that had never been committed to paper (Sarasan 1981, p. 40). Institutions that exercised care to document and catalog their objects found that the records generated to manage their collections had resulted in so much paperwork as to represent an almost impenetrable maze.

Museum documentation is derived from library record-keeping systems. The very terminology of museum systems corresponds to that of the library world. Both types of institutions enter a newly received acquisition into an "accession record" and then proceed to catalog it. When a book leaves the library, a "circulation" record is created corresponding to the museum's loan files. The library's old-fashioned three-card circulation system (now an anachronism) is exactly the kind of information system museums are still constructing today (Dudley et al. 1979, p. 236).

New York's Metropolitan Museum of Art (MMA) serves as a model for museum practice in the United States. Object cataloging at the museum owes its beginnings to Henry Watson Kent, a friend of John Cotton Dana. Dana and Kent frequently collaborated on publications and shared a common philosophy concerning library and museum management. Dana's founding of the Newark Museum while holding the office of librarian of the Newark Public Library is a telling example of the extension of the educational function of the library to the exhibition and study of realia. Dana, whose background was primarily in the area of librarianship, is numbered among the great "museum masters" of America, while Kent, who similarly combined library and museological functions, is not as prominent in the annals of museology.

Kent had attended the first course in Library Economy taught at Columbia College by Melvil Dewey in 1884 (Kent 1949, p. 11). When appointed assistant secretary to the board of trustees of the Metropolitan Museum he introduced the "library economy" methods he had studied to gain control of the MMA's objects (Howe 1948, p. 49). He began by creating an accession record and then started a card catalog. The first manual for museum catalogers, published in 1956 by Metropolitan Museum personnel who were trained by Kent, recommends the *A.L.A. Cataloging Rules for Author and Title Entries* as a guide for establishing name authorities (Dudley et al. 1979, p. 227).

Although heavily dependent on library methodology, museum workers object to comparisons between library cataloging and object cataloging. They point out that the difference between cataloging a booked and cataloging a museum object is that the object does not have a title page which tells the cataloger what it is (David Vance to Samuel, personal communication, 24 May 1983). Nevertheless, the procedures are closely related: besides establishing authorship and title, cataloging

a book involves classification, assignment of subject heading, and physical description. That is, in essence, the information required for cataloging a museum object as well. Like libraries, museums use classification to bring similar objects together and subject indexing to provide alternative access points or finding aids. Understanding the principles of classification and subject indexing is essential for creating coherent documentation. Museum documentalists argue that library theory is not applicable to their problems because the library cataloger deals with a limited number of attributes in comparison to the vast amount of information entailed in cataloging museum objects.

The Islamic manuscript might be cited as the perfect confluence of the art of the book and the book as art. The extent of information required in rare book cataloging far exceeds that needed for the contemporary trade book but the underlying theory is the same. Similar though they may be to library cataloging, the formal and intellectual requirement for the cataloging of museum objects are immensely more complex. However, an understanding of the theoretical aspects of classification and subject indexing is essential in organizing information about museum objects for retrieval. When Chenhall and Homulos (1978) suggest that the dimensions of a painting represent an aspect of classification they are in error (p. 43). Unless a collection classifies by size, dimensions are part of the object's description or the book's collation and not part of its classification. Even when correctly relating museum cataloging to library classification, the acknowledged experts demonstrate a lack of comprehension. In a recent article (Elkins 1985, pp. 6-12), Holman J. Swinney, director of the Margaret Woodbury Strong Museum, is quoted as comparing the Library of Congress classification system to Chenhall's *Nomenclature* (Chenhall 1978): "The library uses names, the titles of books, as the basis for its system and *Nomenclature* either names the object for you, or because it is open-ended, like the Library of Congress' system, you can add other names" (Elkins 1985, p. 9). But names and titles are not the basis of classification. The LC schedules present a logical, hierarchical arrangement of concepts in order that books about the same subject will be grouped together. Names and titles provide additional access points making it possible to locate a book by a variety of approaches. The resulting creation of multiple ways of retrieving information is an instance of the redundancy librarians build into their indexes and catalogs to optimize the rate of success in retrieval for the seeker of information.

HISTORY OF AUTOMATED CATALOGING IN MUSEUMS

In the latter half of the 1960s, the museum world recognized the potential usefulness of the computer for enhancing object documentation. Magnetic tapes, with the limitation of sequential reading of information, had been supplanted by direct access devices which made it possible to index and invert files and select data at will from any part of

an archive (Vance 1986, p. 38). At the National Museum of Natural History, Smithsonian Institution, for example, computers have been used for collection management since the early 1960s (Gautier 1986, p. 48). Other museums also began to enter data using software packages specially designed for museum cataloging applications. Outstanding among these are SELGEM (SELF-Genering Master), used on IBM equipment by the Smithsonian Institution and others, while the Museum Computer Network favored GRIPHOS (General Retrieval and Information Processor for Humanities Oriented Studies).

These early museum computer projects were intended to create databases encompassing "all information on all objects to answer all questions" about the objects in collections (Sarasan and Neuner 1983, p. 7). To accommodate in-depth scholarship, the GRIPHOS system has 420 possible data fields (Vance 1975, p. 2)!

If information about objects were to be expeditiously captured in computerized records, and if these records were to be made accessible to other institutions within a network, then locating objects for exhibition or for research would be vastly simplified. Researchers would be spared long hours of drudgery merely ferreting out the whereabouts of objects, time which they could use for more creative scholarship. The computer seemed to hold the promise that this could indeed be achieved.

Among early projects was one conducted at the University of Oklahoma's ethnological collection. It was hoped that this project would grow into a network inventorying the objects in ethnological collections nationwide, estimated to number about 1 million (Sarasan and Neuner 1983, p. 5).

Equally ambitious were the computer applications envisioned by the art museum registrars. The Museum Computer Network (MCN), founded in 1965 (Vance 1986, p. 38) hoped to create a nationwide data-bank of art museum objects. The Oklahoma project did expand to museums in Missouri but never attained the expected national coverage, and one participant in the Museum Computer Network—the Museum of Modern Art—achieved a complete catalog of its holdings, but the other fourteen members shelved their computer projects within a few years (Vance 1986, p. 41). Still active as an advisory body, the MCN holds annual conferences where museum personnel exchange information but it has, for the present, abandoned the goal of the national art information network.

Although the nonprofit sector has been a low priority for the computer industry, IBM funded a conference on computer applications to art history scholarship sponsored by the Metropolitan Museum of Art as early as 1965. The published proceedings detail a wide variety of projects involving computer applications such as stylistic analysis of archaeological textiles, guidance devices, and cataloging, not omitting the then inevitable plans for the universal data-bank of art objects (Metropolitan Museum of Art 1968).

If one examines the reasons why many projects were abandoned within a few years of their start, and why museum computer projects have taken an entirely different direction during the course of the intervening twenty years, one finds a variety of factors responsible.

Museum employees have little preparation for documentation. Until the present decade, training for museum work concentrated on connoisseurship for art museum curators and on science for those entering museums of natural history or ethnology. Knowledge of constructing and maintaining information systems is a low priority for museum curators and even registrars, yet they are entrusted with the recording of their collections (Hoachlander 1979, p. 5). Serving as automation project managers in addition to handling curatorial functions often so taxed their already overextended schedules that they lost interest in pursuing computerization of records (Sarasan 1981, p. 45).

Museum computer projects, initially at a disadvantage owing to the poor quality of existing manual records, experienced further setbacks due to the excessively ambitious goals envisioned when computers first began to be used in the museum environment. Unforeseen developments in computer technology have also contributed to deflecting the course of museum catalog automation. Given the huge mainframe computers that were the state of the art in the late 1960s, the goals then adopted for documentation do not seem unreasonable. Information had to be keypunched and fed to the system in batch mode, creating new opportunities for error. Printouts, when obtained, turned out to be costly. However, the present-day microcomputer can be made to store as much information as could the awkward giants of those days (Paijmans and Verrijn-Stuart 1982, pp. 145-47).

The problems which in the past impeded the spread of computerization are gradually being dispelled. Advances in computer technology are responsible for the elimination of many of the stumbling blocks that earlier prevented computers from being widely adopted by museums. A startling comparison suggests that: "If the aircraft industry had evolved as spectacularly as the computer industry over the past 25 years, a Boeing 767 would cost \$500 today and it would circle the globe in 20 minutes on five gallons of fuel" (Gupta and Toong 1985).

As personal computers have penetrated into the home and have become increasingly user-friendly, resistance to them is decreasing. Thus the issue of change management may disappear spontaneously as the transition occurs outside the workplace. In fact, the microcomputer has brought automation within reach of most museums. Relatively inexpensive and transportable, the microcomputer takes up little space and can serve several users simultaneously. Since it can be owned for less than \$5,000, it does not require extensive consultation with either boards of directors or computer experts; its purchase is no longer a major decision.

On the basis of a survey conducted for the Association of Systematics Collections, Lenore Sarasan concluded that 95 percent of the projects begun twenty years earlier were failures “when judged by data communication standards” (Sarasan 1983, p. 4). Many projects were abandoned in the data entry stage when it was discovered that the software did not provide the means of sorting and retrieving information as expected (Sarasan and Neuner 1983, p. 7).

For many years Canada’s National Inventory Programme was cited as the most successful national project constructing a nationwide data-bank of museum records which would support research and exhibition throughout the country. Originally using Unesco’s International Species Inventory System software, the project was reconsidered in 1980 (Homulos 1986, pp. 7-8). Eventually, PARIS (Control Data’s Pictorial Artifact Retrieval Information System) was adopted as its software, and the nationwide project was reconstituted as the Canadian Heritage Information Network (CHIN). In September 1986 CHIN was officially “dismantled.” The task force that recommended the dismantling of the National Museums Corporation, and with it the Canadian Heritage Information Network, found that: “The four museums acting independently would be more cost-effective and efficient than present operations under one central corporation” (“News Release/Communique” 1986). Apparently the museums had used the system which was intended as a mutual information network to manage their collections but had not interacted well as an information network (*Report and Recommendations* 1986, p. 33).

Computerization of museum data has moved into a prominent position on an international scale with the support of the J. Paul Getty Foundation especially in relation to art museums and art-related scholarship. Here again, after an ambitious beginning, retrenchment necessarily followed. The Museum Prototype Project, a pilot project for cooperative art museum cataloging, foundered upon the usual rocky grounds. As Katharine Baetjer (1984) pointed out at the 2nd Conference in Pisa:

The group [The Membership of the Museum Prototype Project] will inevitably encounter further difficulties in attempting to establish rules for controlled vocabulary and syntax. I believe that post-coordinated control is the only option, and must once again point out that local precedent will mitigate against substantial change. (p. 123)

Although the excessively ambitious projects of the late sixties and early seventies were abandoned, automation in object cataloging remained a lively issue. As central museum administrations began to utilize computers for the most essential administrative functions—mailing lists, accounting, and climate control—new approaches were devised in the curatorial departments. Often motivated by a move to a new facility, registrars carried out straightforward inventories of their

collections, capturing the data in electronic devices. A limited number of data fields were defined, creating manageable files of finite units within a collection. The Margaret Woodbury Strong Museum began as a collection of objects in a private home in Rochester, New York. While a new museum building was under construction, the objects were given accession numbers and entered into an automated system. Also, the staff of the Dallas Museum of Fine Arts conducted a computerized inventory prior to its move to a new building. In the course of such an inventory, problems were encountered and resolved—i.e., objects without numbers were assigned permanent accession numbers, and numbers (cards) without matching objects were placed into categories for later consideration. Because simple file management software made it possible to print out the information thus gathered in accession number order, or in the form of a location file, after the move to the new facility, it served as the nucleus for further elaboration of computerized catalogs. Forced by the computer to adhere to uniform syntax in entering data, museum workers also began to appreciate the need for thesauri of terms if the information they were accumulating was to be correctly structured for retrieval. They began to think in terms of modules which could be added to enhance the existing databases. An ancillary benefit of beginning with narrowly defined goals which can subsequently be expanded is that not only are results more immediately demonstrable, but also, in the event of a cessation of funding, the original project retains its usefulness. A modest project, such as an inventory of part of a collection, can be brought to completion in a reasonable span of time. It will then serve as a pilot or demonstration project and may attract further funding for automation.

Summing up its deliberations concerning museum records, the Commission on Museums for a New Century concludes that “the complex job of recording information about objects and making it accessible should, in most museums, eventually cease to be a wholly manual operation” (American Association of Museums 1984, p. 48).

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