Publish, Then Perish: The Reclamation of a Collection of Scientific Illustrations

by DIANNE VAN DER REYDEN, HEATHER TENNISON & FEI WEN TSAI

INTRODUCTION: PAST AND PRESENT

The current struggle between access and preservation, which seems to plague some museum and archive collections, has ancient precedence. When reviewed, such historic examples may enlighten individuals as to the possible consequences that may be incurred by this struggle. For example, to scholars of Icelandic history and culture the Sturlunga sagas, written from approximately 1120 to 1260, provide rich insight into the social and economic forces that were present in medieval Iceland. A large compilation of sagas named after an influential Icelandic family in the thirteenth century, the Sturlunga sagas are often called “contemporary sagas” since the events described took place at about the same time as the sagas were written. Although the original thirteenth-century Sturlunga compilation was lost, two vellum copies from the second half of the fourteenth century are known to have survived as late as the seventeenth century. It was at this time that the sagas were again transcribed into books made from inexpensive imported paper. After the contents of the older manuscripts had been transferred to the more accessible and easily read paper substrates, the seemingly outdated vellum codices were considered relatively valueless by the contemporary population and were allowed to go to ruin. One of them was, for instance, cut up into patterns for making clothes. Although it is fortunate that the stories detailed on those vellum folios were preserved for future use, it is highly unfortunate that all of the information inherent to the bound vellum volumes, such as the chemical and physical makeup, can no longer be accessed.

The seventeenth-century Icelanders viewed access as a viable means of preserv-
ing the information that was important to their cultural heritage. Over two hundred years later this view is echoed by some archivists and collection managers who occasionally invoke a "sensible" rule for ranking collections during processing in order to cope with the enormous amount of material in their holdings. The rule holds that original materials that have been published may be considered of less value to a repository than those that have not. Unfortunately, there may have been times when the logic of this guideline has been supported for the sake of storage or perceived cost-benefit to the point that published materials have been allowed to perish.

The preservation of scientific illustrations appears not to have been the subject of great debate. The very nature of their production, for the purpose of publication, makes them an ideal example of this rule: what is published soon will perish. Just as the Icelanders forever lost information that was inherent to the vellum manuscripts, so some scientific illustrations and all of the information that they might carry have been doomed to suffer a similar fate.

But the weary pattern of history continually repeating itself may soon be broken through the efforts of current scientific illustrators and other museum professionals. Our present case involves one of the most famous collections of drawings produced in the late nineteenth century: the dinosaur type specimen illustrations of the O. C. Marsh Collection, portions of which are now at the Smithsonian Institution (SI). The bulk of the collection can be found at Yale University, one of the institutions that funded the expeditions. This paper will chronicle the collaborative efforts taken to ensure the continued preservation of this historic collection; outline the integrated approach to preservation that was utilized; and discuss how the seemingly contradictory needs of access and preservation may be resolved through interdisciplinary dialogues.

THE COLLECTION

Paleontologist Othniel Charles Marsh, under the auspices of the U.S. Geological Survey and Yale University, was responsible for discovering and naming many of the dinosaurs that are household names today, such as triceratops. The immense collection that he amassed in the late nineteenth century now forms the core of the dinosaur collection in the Division of Vertebrate Paleobiology at the National Museum of Natural History (NMNH), SI. In the 1980s, the original drawings of the specimens, prepared under the direction of Marsh, were moved by a museum specialist who was investigating water-damaged objects that were stored on the tops of cabinets in the department's type specimen room. The illustrations were commissioned for use in a series of important monographs that were to provide
the first details as to the orders and families of vertebrates while “illustrating them in the most artistic manner”. This desire for artistic excellence can be seen in the monograph *The Ceratopsia*, for which Marsh commissioned over 200 lithographic plates to be made from both drawings (Fig. 1) and wood engravings, as well as pencil and pen-and-ink drawings for the textual portions of the volume. In all, five artists are noted as having contributed to this volume. The lithographic plates were executed by Mr. E. Crisand from drawings by Mr. Frederick Berger. Mr. Berger was also commissioned to produce the pencil drawings that are seen in the plates and text. Important pen-and-ink drawings in the text are by Mr. Sydney Prentice. Drawings representing materials not seen in the American Museum of Natural History are by Mr. Rudolph Weber. Mrs. Lull, the wife of R. Lull upon whose shoulders the completion of the monograph fell, completed the remaining 12 plates that were needed before publication. The Smithsonian's collection holds approximately 1,700 of these drawings, preparatory sketches on kraft paper, and tracings. They were found organized in folders (45×30.5 cm = 17½“×12”) that identified both the specimen and the view that was depicted in the drawing, as well as each drawing as having been either a wood-cut or wood engraving respectively, or a lithograph. There are approximately 160 folders in the collection.
THE COLLABORATION

Without the efforts of individual collection managers or other departmental staff motivated to save the collections, the preservation process will never begin, let alone be sustained or completed. Collaboration is the vital first step. When the Marsh illustration collection was located by the museum specialist, its continuing historic and scientific value was assessed as being extremely high despite its published status. The drawings were offered to an archive that, due to its policies, was unable to accept them. Indeed, the archive managers reiterated the early principal of attributing a low value to published materials.

As the years went by, the museum specialist, Dr. Mike Brett-Surman, found individuals who could sympathize with his understanding of the importance of the collection and aid him in his efforts to preserve them. For instance, Dr. Brett-Surman sought out the advice of Ms. Mary Parrish, the departmental scientific illustrator. She had discussions with other Smithsonian illustrators who had begun to take steps to preserve illustration collections in their own departments, and was given information on conservators who could aid in surveying and rehousing the collection.

The collaborating professionals included scientific illustrators, conservators, archivists, collections managers, museum specialists, curators, scientists, and exhibition designers. Each was able to appreciate and enhance the diverse values of the collection, and in the end their insights and enthusiasm made the preservation of this collection possible.

THE ANGEL PROJECT

The drawings had been moved from the cabinet tops into drawers by Dr. Brett-Surman in his off-work hours (Fig. 2). In July of 1995, the Conservation Analytical Laboratory’s (CAL) Paper Conservation Lab, SI, was notified about the collection, its current housing, and its relative condition. CAL organized an Angel Project in collaboration with the Society of American Archivists (SAA), the Office of the Smithsonian Institution Archives (OSIA) and the Division of Vertebrate Paleobiology (NMMNH), and with supporting materials and advice from the Library of Congress (LC) and the National Archives and Records Administration (NARA).

Angel Projects were originally conceived and organized in 1988 by Lisa Mibach (a conservator in private practice). They have been traditionally held in conjunction with the American Institute for Conservation (AIC) annual meetings. They provide local collections in need of conservation assistance with contact to conservators interested in contributing their expertise. The idea of sponsoring an
Angel Project has been used by other individuals. For example, Elizabeth Morse, Paper Conservator at the Harvard University Library, organized one to aid the execution of a large survey. This version of an Angel Project (a modified form of the AIC project organized to coincide with SAA's annual meeting) served as a pilot to work out and demonstrate an ideal procedure for the processing, rehousing, and reformatting of this important illustration collection.

An integrated approach to the preservation of the collection was devised so that there would be minimal physical contact with the illustrations and other supports found in the collection. The process began with the completion of a Preservation Priority Worksheet (Fig. 4) that was originally developed by the SAA in October, 1993.4 This survey tool utilizes a numerical ranking system and easily-followed matrices to plot the overall risk, exposure, and value of a collection, allowing for unbiased comparison among many different types of collections. The Worksheet is accompanied by a form for entering the information into the Preservation Priority Data Base with reference to the following headings: Collection; Housing Need; Poor Housing; Poor Positioning; Difficult Formats; Damaging Attachments; Holdings Maint. Need (Sum); Use; Exposure; Amount of Damage; Amount of Unstable Material; Overall Condition; Risk; Value; Preservation Priority Score.

Besides the Marsh Collection, there were three additional collections of ilustrations and ology: the G and photogra together with prints and di Worksheet al values of each be ranked in case, the sur working toge alone, if nec Preservation 1 and compare chosen (Fig. 3)

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trations and other related materials housed in the Division of Vertebrate Paleobiology; the Gilmore Archives (14 envelopes housing approximately 470 drawings and photographs); the Marsh Archives (approximately 300 prints, grouped together with metal fasteners); and the U.S. Geological Survey (approximately 640 prints and drawings). The quick survey on the basis of the Preservation Priority Worksheet allowed the staff an opportunity to compare the problems and overall values of each of the collections. Based on the comparisons, the collections could be ranked in order to determine which project should be targeted first. In this case, the survey was completed by a conservator and the Collections Manager working together. However, in other cases surveyors may be trained to work alone, if necessary. The data generated by the survey is then entered onto a Preservation Priority Data Base so that the collection needs can be easily read and compared. Based on resources available, a priority collection can then be chosen (Fig. 3).

Once a collection is targeted as being a preservation priority, staff time and energy can be allocated to prepare for future preventive conservation initiatives. One such preparatory step is the execution of a Random Sampling Survey. For instance, by surveying ten percent of the collection (noting size, condition, me-

Fig. 3. Wei Wen Tsai leads a discussion on survey techniques for a group of visiting archivists at an Angel Project. (Tennison, Heather, D. van der Reyden, F. Tsai and M. Parrish, "An 'Angel Project' of Dinosaur Proportions," to be published in 1997 by the American Institute for Conservation's Book and Paper Group Annual.)
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Preservation Priority Worksheet

**Preservation Priority Worksheet**

**Institution:**

**Priority Score (1-10, 9-low):**

**Division:**

**Report #:**

**Serial/Collection Name:**

**Location:**

**Number of linear feet:**

**Survey:**

**Bulk Date:**

**Number of cubic feet:**

**Survey Date:**

**Current Housing:** Appropriate materials, techniques and orientation? (Circle all that apply and indicate present state of collection):

- Containers:
  - Inter
  - Legal
  - Oversee

**Furniture:**

- Stacks (open/closed)
- Drawers (vertical/flat)
- Stacks (vertical/horizontal/roll)

**Part I of Preservation Selection – Value Assessment of the Records**

1. Do the records relate to:
   - Mission Statement of the institution in terms of:
     - Who the records are being documented? (i.e., what are the topics?)
     - Who the custodians are? (i.e., what is the purpose?)
     - What is the purpose?
     - Yes No
   - The organization's mission?
     - Yes No
   - Collection Policy of the institution in terms of:
     - The general and specific functions of the organization?
     - Yes No
     - The relationship of the organization to the goals of other repositories?
     - Yes No
     - The relationship of the organization to other organizations?
     - Yes No

   If the answer to the above is Yes, proceed to question #2 below;
   - If the answer to the above is No, then choose one of the following four options.
     - a. Do not accept the records.
     - b. Refer the records to another institution.
     - c. Deactivate the records.
     - d. If the records are retained, do not take preservation action.

2. Does the institution have legal records of the records or the expectation of obtaining legal custody?
   - Yes No
   - Are there measures to preserve and maintain the records for the expectation of obtaining these records (records policy, environmental control & space, storage furniture & supplies, staff, training, time & funds)?
   - Yes No

   If the answers to all of the above are Yes, proceed to question #3 below;
   - If the answer to any of the above is No, defer preservation action until remedied.

3. Are the records of importance to the institution primarily:
   - Yes No
   - Informational value or on Matrix 3 below:
     - Yes No
     - Informational value or informational value on Matrix 1 below:
     - Yes No

   In using the matrices below, keep in mind that:
   - Informational value pertains to the administrative, legal, or institutional significance of the records.
   - Informational value pertains to research value for historical, educational, genealogical records, or use in public programs.
   - Informational value pertains to the artifact, heritage, symbolic, or sentimental value.

   Determine whether the evidential and informational value as defined above in High, Moderate, or Low.
   - Plot the evidential vs. informational value on the appropriate matrix to determine the overall value.

   Overall Value:
   - A-High
   - B-Med
   - C-Low

   If the Overall Value is High proceed to Part II; if Low stop further analysis - take no action.

**Matrix 1**

<table>
<thead>
<tr>
<th>Evidential Value</th>
<th>A-High</th>
<th>B-Med</th>
<th>C-Low</th>
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<tbody>
<tr>
<td>A-High</td>
<td>A</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>B-Med</td>
<td>B</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>C-Low</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

**Matrix 2**

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<th>B</th>
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<tr>
<td>A-High</td>
<td>A</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>B-Med</td>
<td>B</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>C-Low</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

**Matrix 3**

<table>
<thead>
<tr>
<th>Evidential Value</th>
<th>A-High</th>
<th>B-Med</th>
<th>C-Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-High</td>
<td>A</td>
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<tr>
<td>B-Med</td>
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<td>B</td>
<td>C</td>
</tr>
<tr>
<td>C-Low</td>
<td>C</td>
<td>C</td>
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</tr>
</tbody>
</table>

Fig. 4. Preservation Priority Worksheet (Part I).
**Preservation Priority Worksheet**

### Part II of Preservation Selection — Risk Assessment

1. **Holdings Maintenance Need**
   - Use Score: A + B, C = Low
   - Use Score: A – High, B = Moderate, C = Low
   - Use Score: A – High, B = Moderate, C = Low

2. **Level of Use**
   - Use Matrix
   - Use Score: A – High, B = Moderate, C = Low

3. **Level of Exposure**
   - Exposure Matrix
   - Exposure Score: A – High (expected), B = Moderate, C = Low

4. **Physical Condition**
   - Condition Matrix
   - Condition Score: A – High (expected), B = Moderate, C = Good

5. **Level of Risk**
   - Risk Matrix
   - Risk Score: A – High (time, time, delay), B = Moderate, C = Low

### Part III of Preservation Selection — Preservation Priority

1. **Overall Value Score**
   - Overall Value Score: A – High, B = Moderate, C = Low

2. **Preservation Priority Score**
   - Preservation Matrix
   - Priority Score: A – High (1-5), B = Moderate (6-10), C = Low (11-15)

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**Note:** The following information influences treatment, housing, and duplication needs; please note in figures where applicable:

- **Format:** large, small, sheets
- **Media:** paper, board, film, microfilm
- **Condition:** good, poor, deteriorated

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**Fig. 4. Preservation Priority Worksheet (Parts II and III).**
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dium, etc.) using a randomly generated numerical system to designate specific objects within the collection, the housing and possible treatment needs of the collection can be quantified and necessary supplies determined and ordered. If done correctly, this technique allows a detailed and statistically accurate assessment of extremely large collections in a very short space of time (i.e. a collection of 5,000 objects in one week by one surveyor).

After the collection has been appropriately surveyed, one can begin to take intellectual control over the collection. For this Angel Project an OSIA archivist outlined the procedures involved in this important step. Using information that was derived from the collection, folder lists were created that would aid in the future retrieval of objects by providing specific information as to the contents of each individual folder. Since the illustrations are used at an item level, a system is necessary by which a drawing can be replaced into its original group in proper sequence.

Devising a system for designating series within the collection was the next task to be undertaken. Knowledge pertaining to the history of the collection, and the technology that was used in the production of the published images, was useful for this step. Curators from the Division of Graphic Arts, National Museum of American History (NMAH) were asked to assess the collection and give advice as to the order in which the illustrations could have been produced. It was verified at this time that the collection held a relatively complete series detailing the lithographic transfer process, beginning with preparatory sketches of the fossils and finishing with the tracings that were utilized in the transfer of the drawing to the lithographic stone. The tracing paper exhibits a whitish outline that follows the contours of the corresponding drawing, characteristic of the scoring that would be seen in the engraving process of the lithographic transfer.

Proper housing and reformatting, two integral components in the preservation of a collection, are the next steps in this systematic approach. Two actions that aid in the continued care of the collection are: providing a protective barrier between the illustrations and the environment (or researchers who may be studying the collection); and providing access to the images without involving the original object (which could remain in storage).

In devising the prototype housing for the collection, decisions were based on the sensitivity of the media and the fragility of the substrate. For example, customized polyester L-welds (for thin tracings) and flush folders (for the friable graphite illustrations) were used for this project. The Table, which illustrates housing options for various paper-based items, can be utilized in this step. It was recommended that the collection be relocated from its current housing in wooden drawers to museum quality storage, like map cases of fused powder-coated chromium-plated steel or anodized aluminum, to further protect the illustrations from fluctuating environmental levels and other unplanned disasters.

The reforms stabilized through digital, microfilm, in advance, based on technology and were recommended copies of...
The reformatting of the collection takes place after the illustrations have been stabilized through the rehousing efforts. Considerations as to reformatting options (digital, microfilm, transparencies or preservation photocopies) should be made in advance, based on the needs of the collection, any financial limitations, the technology and time available, as well as staff training. Two different options were recommended for the reformatting of this collection. To ascertain permanent copies of the oversized illustrations and sketches, large format color transparencies were recommended. Digital imaging, while not a medium of preservation, was also suggested to allow for fast and easy access to researchers.
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Access Versus Preservation

Once the collection has been processed, rehoused and reformatted, the accessibility (and consequently the value) of the collection will logically increase. This fact, in light of the previous status of the collection, seems to be a great irony. The notion that easier access to a collection leads to its increased value as a holding should have dictated in the beginning that the preservation of this collection, and others like it, should never have been considered inconsequential. Access to the information found on original documents or illustrations is, in actuality, only a small part of the greater ideal of preservation of the original. Increased efforts must be made to ensure that original materials are stabilized by proper care and storage, rather than allowed to languish into oblivion. This is especially critical since the original materials contain chemical and physical information that can in no way be fully reproduced, and that can be diminished or lost if allowed to deteriorate. Through collaborative efforts like this Angel Project, solutions can be advocated and implemented to save the original materials and the artifactual evidence that can only be preserved in those original. Although society has been grappling with the seemingly contradictory needs of preservation and access for hundreds of years, it is surprising that we, as modern-day scholars and caretakers, have only recently begun to implement plans to facilitate both.

Acknowledgements

The authors would like to give their thanks to all of the collaborators mentioned in this paper, as well as Paul Theerman, Elaine Hodges; the staff of the Department of Paleobiology, NMNH, SI; the staff of OSIA, SI; Andrew Robb; Holly Anderson; the SAA “Angels”; and Alice Tangerini. The project would not have begun without all of their efforts. Also, we would like to thank Lisa Mibach for inspiring the Angels Project, and the staff and supervisors at the Conservation Analytical Laboratory, SI.

Summaries

Publish, Then Perish: The Reclamation of a Collection of Scientific Illustrations

The need to cope with enormous amounts of material has occasionally resulted in the sacrifice of original materials that have been published, based on the “rule of thumb” that once published, these materials are of less value to a repository than those materials that are not published. One of the most famous collections of drawings produced in the late 1860s, the dinosaur type specimen illustrations of the O. C. Marsh Collection, almost fell victim to this practice. This paper chronicles the collaborative efforts taken to preserve the materials and storage, of access and preservation.

"Publié ensuite deux années plus tard, le besoin de venir à la rencontre de ces besoins de réévaluer les tendances de conservation de l'art de la gravure et de la gravure..."

Veröffentlicht zum Lustrum der Illustrationen


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2. Helgason, J.: Hands
4. Commission on Pre-Washington, DC: T
5. Van der Reyden, D.: 15,000 Photographs, T
efforts taken to preserve this historic collection; outlines the integrated approach to preservation that was used (including a discussion of the various types of surveys, folder lists, prototypical housing materials and storage, and duplication procedures); and discusses how the seemingly contradictory needs of access and preservation may be resolved through interdisciplinary dialogue.

"Publié ensuite détruit", la récupération d'illustration scientifique

Le besoin de venir à bout d'enormes quantités de documents a parfois eu pour résultat le sacrifice de documents originaux qui avaient été publiés, se fiant, à vue de nez, qu'aux côtés publiés ces documents ont moins de valeur pour un dépôt que ceux qui ne sont pas publiés. Une des plus célèbres collections de dessins réalisées à la fin du XIXe siècle, les illustrations de spécimens de dinosaures de la collection O.C. Marsh a été le sujet de cette pratique. Cet article relate les efforts communs réalisés afin de sauver cette collection historique, expose l'approche intégrée qui a été suivie pour la conservation (comprenant la discussion des différents types d'inventaires, listes de tâches, prototypes de matériaux d'archivage et de rangement et systèmes de duplication) et montre comment des nécessités d'accès et de conservation apparemment contradictoires peuvent être résolus par un dialogue disciplinaire.

Veröffentlicht zum Untergang: die Erschließung einer Sammlung von wissenschaftlichen Illustrationen


REFERENCES

Reclamation of a Collection of Scientific Illustrations


INTRODUCTION

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RESTAURATOR

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