Preserving Rare Books in Taiwan

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East Asian libraries in the United States have large amounts of vernacular language books bound in the formats traditionally used in the countries of East Asia. These priceless works are deteriorating and eventually will disappear because the special techniques and skills needed to restore and preserve them are not available here. This lack of appropriate skills and techniques was mentioned in the final report of the Steering Committee of the Problems of East Asian Libraries issued under the title: *East Asian Libraries: problems and prospects* (1977), but so far very little has been done to examine how best to resolve this problem. One circumstance that tends to forestall attempts at national cooperation to deal with the issue is that the works in question are the property of individual libraries which alone are responsible for their preservation. This has kept efforts at preservation scattered and fragmentary.

For example, there are at several libraries here in the United States projects for transferring the contents of these books to microfilm. Also, many of the libraries holding East Asian language collections have good physical facilities for preserving these works. However, there is little effort being made to restore the original works to a more durable condition. Most importantly, there is no plan that brings together these various efforts into one comprehensive strategy that will ensure the future existence of all this valuable material and, at the same time, continue to make it easily accessible to scholars.

Just such a complete strategy was suggested to me by what I observed of preservation work being done on Taiwan at four of the larger academic and cultural institutions there. From October 1978 to January 1979, with the assistance of a generous grant from the Pacific Cultural Foundation, I visited the National Palace Museum, the Institute of History and Philosophy of the Academia Sinica, the Libraries of National Taiwan University, and the National Central Library. Together these four institutions hold well over 300,000 volumes of rare and deluxe works in blockprint, manuscript, multi-colored, and movable-type editions. These works are bound in a variety of formats: the traditional styles of stitched, wrapped-back, butterfly, and sutra bindings, and rolls and maps. This rich collection of literature is well worth preserving; these works are valuable both for themselves as cultural artifacts and, because of their contents,
as rich mines of Chinese culture and history.

Control of ambient conditions

Special pains are taken with the rare book collections at these four institutions, in part because of the inherent value of the material and in part because of the inimical climate of Taiwan, which is subtropical. The mean annual precipitation of the island is 102 inches, but in some years during the summer months alone it has exceeded 200 inches. Most frequently in July, August, and September typhoons cross the island or skirt it, bringing weeks of incessant rain. In such a hot, humid climate the problems of preventing chemical modifications like fungal growth, fading of color, and decomposition from attacking these books demand earnest and constant attention.

Air conditioning systems are installed in the depositories to keep the temperature within the range of 15.5° to 24° Celsius (60° to 75° Fahrenheit). Usage among the four institutions varies; at two sites the systems operate constantly; at the other two only intermittently when it is deemed necessary. The relative humidity also is kept stable within the range of 50 to 60 percent. In three of the four places, there are dehumidifying systems that operate within the rare book depositories. At the fourth, there is a dehumidifying system in use in the general book stacks only; in the rare book room there is only an air conditioning system to maintain the proper limits of temperature and humidity. However, the room is situated high above ground on the fourth floor of the library building.

These systems, together with an air filtering arrangement, provide book rooms with excellent protection from the dirt and baneful vapors always present within the air of large cities like Taipei. Dust particles, bacteria, and the sulphurous acid produced by the combination of sulphur dioxide with atmospheric moisture will attack and injure paper articles. At the National Central Library near the downtown area of Taipei, an extensive dust filtering system has been installed in the rare book depository. The air in the depository is filtered continuously through a water screen within which the dust is trapped. The dirty water is then flushed out of the system.

The possibility of damage from fire has brought about the enforcement of stringent safeguards against fire at all four institutions. Within the rare book depositories and the reading rooms adjacent to them, smoking or carrying flammable materials is strictly controlled. The construction of the depositories, especially at the relatively new National Palace Museum and the National Central Library, includes fire-preventative and fire-retardant features. Two of these features are fire walls and close-fitting doors that are wide and high enough to facilitate the quick removal of the rooms' holdings. There are portable dry-chemical fire extinguishers placed in those book rooms that do not have automatic fire extinguishing systems. The use of dry-chemical extinguishers prevents the equally abhorrent damage a liquid extinguisher would inflict upon the books. At some sites the books are guarded from fire by being placed in large closed chests.
The chests used in the Rare Book Room at the National Central Library are especially effective for the job of preserving rare books. They are made of steel and have their inner walls lined with a heatproof material. Mounted on steel racks, they can be removed in an emergency very quickly. Another advantage in using chests like these is that the books are not exposed to the harmful effects of light. Fading, blackening, and the distention of the leaves of a book—the results of exposure to the ultraviolet and infrared rays of sunlight—are minimized if the book is kept in such a tightly sealed container.

Still another advantage these air-tight steel chests provide is that the books they contain, if found to hold bookworms, can be fumigated easily and inexpensively. They make unnecessary the expense and drudgery of using a fumigation chamber. Chests in which insects have been discovered are carried to an area unfrequented by people. Two tablets of a hydrogen phosphide fumigant used chiefly against infestation in stored cereal grains are placed inside the chest, activated by water to emit a colorless, poisonous, and flammable gas, and left inside the closed chest for seven days. Fifty-five per cent of one of these tablets is aluminum phosphide. To this is added ammonium carbamate, paraffin, and ammonia. This poisonous gas is completely effective when used against all insects, either in their maturity or in their pre-adult stages as eggs, larvae, and pupae. At the end of seven days the chest is opened and the remaining fumes are dissipated by sending a stream of air from a fan directly into the chest. The many advantages this steel chest holds over other types of storage containers for books are ample reasons to recommend its use here in the United States.

The utilization of these steel book chests is fairly recent and confined to the National Central Library's Rare Book Room. The other three institutions that I visited employed more traditional equipment and techniques to protect their valuable holdings from polluted air, fire, sunlight, and insects. Some of the books were kept in wooden cases similar to the steel chest, measuring approximately 3 feet wide, 2 feet high, and 2 feet deep. Others are kept in glass-paned book cabinets and still others are stacked on open steel shelves.

Camphor insect repellent in solid balls or rectangles is placed within the chests and cabinets. In the Rare Book Depository at the Fu Ssu-nien Memorial Library, Academia Sinica, camphor balls are placed directly against the paper covers of a work inside a specially made plastic-covered case (han-t'ao). Other procedures at these cultural institutions for preventing insect damage are derived from traditional practices but have been modified by the use of modern materials. For example, periodically a termiticide is sprayed in the book rooms in place of the more antiquated mixture of coal dust and lime spread over the floor and on the tops of the bookcases. Another example is the substitution of a compound of sodium fluoride or boric acid and wheat paste for the older arsenical-based mixture which is smeared on the backs of the book shelves to impede the movement of insects on the outside of the bookcases.
Repair of individual works

These practices and many similar ones are applied to keeping harmful forces away from the books. The books themselves, however, may already have suffered some kind of damage either before being placed in the collection or through deterioration within the collection because of elements inherent in the book itself or of conditions in the depository. Damaged books of this kind require the expert talents and techniques of the book repairers. In this part of preservation work as in the others, traditional ways have given way to more modern means. In traditional repair work, individual worm holes or a group of holes close together were mended with small patches. This patching method was used to keep the amount of new paper and paste at a minimum so that they would not attract insects. The ability to store books in almost absolute security had not yet developed to the level of proficiency it has obtained today. But because that level of proficiency has been attained in Taiwan, a new method has been devised for repairing these precious double-leaved books. This method comprises unbinding the stitches of a fascicle, spreading open the leaf with its printed side face down on the worktable, bringing against its back a sheet of new paper larger than the leaf and pasting it there. Once all the leaves of a fascicle are backed like this, they are collated, trimmed, and bound.

The procedure for backing the leaves of a book is not complicated. Competence is quickly attained in handling the several tasks required in this somewhat streamlined style of book repair work. The sequence of these tasks for repairing a book bound in the traditional format depends on the state of the book's leaves and on the style of binding that will be used to rebind the repaired volume. Despite the variations that occur because of these requirements, the steps in the repair of double-leaved books follow a basic pattern.

Most books brought into the workroom for repair are multi-volumed. Care is used when each volume is taken apart to keep it in order, especially because adding the backing sheet to each leaf of the original volume may increase its thickness to the point where the original volume must be rebound as two volumes. Once the stitching, the paper twists, and the covers have been removed, the leaves are stacked in piles from which each leaf is taken to be worked on separately from the others.

The damage done to each leaf is examined closely after the leaf has been opened and laid out flat on the worktable. Old patches are removed as thoroughly as they can be without removing part of the text with them. Here the judgment of the repairer decides if these patches can be removed with the paper kept dry or if it is advisable to dampen the leaf slightly before attempting to remove the excess paper and paste. Leaves that have areas crumpled or mashed need to be moistened so that the paper fibers in it may expand enough to allow the repairer to open these areas and flatten them out.

One or several leaves, after being opened and flattened as much as possible, are placed text down on a table. Usually the choice of one or many is made by considering the condition of the leaves and the value of
the work. If the work has survived in many copies and several editions, its leaves can be placed four or six together in an area that can be covered by a single sheet of backing paper. If the work is unique, it is more appropriate to back each leaf singly so that more care and attention can be given each precious leaf.

The sheet of backing paper is laid on the table next to the leaves and a very wet paste is applied to it. The wet sheet is picked up and brought down onto the backs of the leaves. A fairly stiff brush is used to press the backing sheet completely against all the leaves. The sheet, now holding the leaves of the volume, is picked up from the table and its sides are fastened to a large drying board of plywood. It is kept on the board for at least twenty-four hours and sometimes for several days if the weather is damp. Once the paste has dried thoroughly, the sheet is removed from the drying board. The leaves, backed with new paper, are collated and gathered into fascicles, ready to be rebound.

The purpose served by pasting the new paper to the original leaf that carries the text would be defeated if the paper used for backing were acidic or if the paste used held an acidic preservative like alum. Therefore, the repairers in the institutions on Taiwan prefer to use long-fibered bast or hsuan papers that are hand-made in the paper factories of P'u-li, Taiwan. The use of alum in paste, however, is so traditional to the work of remounting paintings that book repairers continue to mix small amounts of it into the wheat or rice paste they will use for the backing process. Any plans to adopt this process for the traditionally bound books in East Asian collections in the United States should take into account the degree of acidity contained in the materials used for repairing.

Dissemination of the contents

A book so repaired and then stored at a site where harmful influences are suppressed should last several hundred years. If it is reproduced so that scholars can use copies of it for their investigations of East Asian cultures, the original work can be treated as a valuable artifact. Just like any other kind of precious artifact--paintings, textiles, ceramics, metals, etc.--the book can be stored in its book chest, kept free from excessive handling, and taken out only for exhibitions. Scholars have access to the microform or facsimile copies.

Such reproduction work is being carried on at several libraries in Taiwan. The National Palace Museum, for example, is in the middle of a publishing venture with the Taiwan Commercial Press to reproduce the less common titles in the Wen Yuan Ko set of the Imperial Manuscript Library (Ssu k'u ch'uan shu). To date, over 1,600 titles of this vast collection have been published. The Museum also produces handsome facsimile editions of rare works from its collection, although on a smaller scale. All these works are attractively prepared and provide sinologists with excellent research materials.

Another noteworthy project is the recently completed reproduction on microfilm of the entire Chinese rare book collection of the National Central
Library. The Micrographic Center of the Library began filming the rare book collection in 1974 and completed the project in December 1978. A total of 13,105 titles are now available for purchase at prices close to cost.

The Micrographic Center has four people to handle the microfilm cameras, one to process the negatives, another to produce positive copies, another to maintain quality control over the reels produced, and an eighth person charged with storage and distribution of the microfilms. The microfilm cameras—Kodak MRG-1, MRD-2, MRD-2E, and a Fuji S Planetary microfilm camera—produce 200 to 300 reels of film a month. The microfilming takes place immediately after the books received in the Center from the Rare Book Room have been edited. The negatives are then developed with one of the two Kodak DVR processors in use at the Center. In one of these processors five feet of 35mm microfilm can be developed each minute. The developed master negative is checked as soon as it comes from the processor to ensure a properly contrasted film. Positive copies are made on DVR processors or on Fuji developers for the filling of domestic and foreign orders and for the Rare Book Room. The copy for the Rare Book Room is given to visiting scholars to use in place of the original work, which is kept safely stored within the depository.

Conclusion

All these processes and techniques practiced on Taiwan together form a comprehensive program for preserving the traditionally bound books of East Asia. The books are repaired individually, in many cases being backed with new paper much the way Chinese paintings are backed. The repaired books are put into carefully controlled book rooms and kept inside steel chests. In order to make their contents available for study, they are reproduced in facsimile and on microfilm. These actions taken together go far in promoting both the long-range preservation of the original work and its wider circulation.

The adoption of similar techniques by the East Asian library community in the United States would have the same beneficial effects that are being obtained in the institutions on Taiwan. Some of the work, like putting the rare books into well-controlled depositories and microfilming them for use, has already begun here. The hand repairing of individual works might be undertaken at each library by librarians after they have learned the techniques of traditional binding at a nationally convened workshop. They would learn from one of their number who has brought the techniques here from East Asia. The cost of developing such an integrated program of preservation may be expensive initially, but it is undeniable that the resulting benefits are highly desirable.

Note:

1. The report of my observations required by the Pacific Cultural Foundation was submitted in August, 1979. Anyone desiring an unbound Xerox copy of the 20,000-word report can have one for about $10.00 by writing to me at the following address: 109 Oak Leaf Lane Rt. 3, Chapel Hill, NC 27514. The report is a first draft effort, not a finished work, which deals mostly
with the hand repair techniques I saw practiced in Taiwan. I emphasized these techniques because here in the United States they are the least-known aspect of the all-inclusive program of preservation proposed in this article. A microfilm copy which would show the illustrations in the report more clearly may also become available later but I have not yet found out how much such a microfilm copy would cost.