Fitting a quart into a pint pot at the Sir John Soane's Museum in London: A new library management and conservation survey tool for historic libraries

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Introduction

Reorganising a large number of books in a library with limited available space and important architectural constraints can prove to be a difficult task without a proper management tool. In 2011 the Sir John Soane's Museum in London initiated a renovation project with the aim of restoring the house in which Soane lived, and kept his books, to the state it was in when he died. Work on the library began with a survey of the books and the shelving in order to assess their condition and to facilitate their reorganisation within the original shelving after the removal of more recent shelving. The project was entrusted to the staff of Ligatus Research Centre, who designed and tested a new tool for this specific purpose. This tool, which will be made freely available on the Ligatus website, can be used by any library or book collection having similar restrictions and objectives. In addition to presenting the new tool and the context of its creation and use in Sir John Soane's Library, this paper defines the methodology for collecting data in an efficient way, which has improved in the course of the survey, and the production of the reports.

1. Restoration of the museum and survey of the book collection

The John Soane Museum is the London house of the well-known British architect of the early 19th century, Sir John Soane (1753-1837), who designed the whole house as a setting for his collection of works of arts, antiquities, furniture and library. On his death, he left the house and its contents to the nation as a museum. However, over the years, the transformation of the house into a museum has resulted in some changes and ageing. In 2011, the Museum initiated a renovation project comprising the restoration of the building, refurbishing and improvements for visitors' access, with the global aim of restoring the central house in which Soane lived to the state it was in at his death, which means the reinstatement of some original features.

1.1 The collection of books

During his lifetime, John Soane accumulated an important collection of books, with over 6,000 titles, which has been preserved relatively intact, as no book has been added or removed from it since his death. Today, the great majority of the volumes are directly visible to the public, kept within the numerous bookcases of very diverse designs that are scattered throughout the museum. The renovation project involved the rearrangement of some of the rooms and conservation projects on the various collections. For the library, it meant returning to the way it was organised during Soane's lifetime. As a result, some later bookcases were to

be removed and the books to be re-shelved in the storage space arranged by Soane himself. It was also decided to survey the condition of the whole collection of books and identify the needs in terms of preservation. A management tool was therefore designed to help to assess the condition of the collection and, where necessary, to reorganise the books on the shelving, based on a specific set of constraints.

1.2 A set of constraints specific to historic buildings

A first series of criteria was directed by the architectural constraints found in historical buildings: as is often the case, very few unused spaces were available for re-shelving the books, and this created a vast logistical problem. A significant number of the books had not been shelved at the time of his death and there was no single historical arrangement of books for follow. In addition, the museum also has a complex architectural plan, made of three interconnected adjoining houses, one on each side of his main residence that he bought over the years to accommodate his growing collections (see FIG 1). This complex architecture, together with the wish to return the rooms to Soane's arrangement of them, did not allow for any substantial new storage space to be created. Finally, the historic shelving was of many different sizes and types of construction and distributed all over the museum with variable environmental conditions. The plan of the library dining room on the ground floor (FIG 2) is a good illustration of the arrangement of the bookcases in one of the room (the bookcases are represented by the red stickers). The different construction types include open bookcases, some structures with fitted doors, others with shelves on fixed or adjustable battens, and in some cases with mechanisms of Soane's own ingenious design (FIG 3). Some cases had been turned to other uses, such as display cabinets, or were being used to store non-library material. These constraints limit the available free space for re-shelving the books and prevent new storage from being created. A second set of criteria is created by the collection itself, which is on public view, thus allowing for few aesthetic changes in terms of boxes and re-organisation, and must be assessed book-by-book, without random sampling.

1.3 A need for re-shelving

A significant number of books needed to be re-shelved as a result of the lack of storage due to the room rearrangements, but this was not the only reason. The other reasons resulted from the survey itself and the need to work to strict conservation criteria. While observing the different bookcases, we noticed that some of them had elements which restricted the width, height and depth of the shelves in the form of dust-excluding fillets nailed to the inner sides of some shelves or some obstructions at the ends of the shelves created by the doors when they are opened. These restrictions needed to be considered to allow the safe handling of the books but reduced the safe available storage space.
The second reason for re-shelving was the inappropriate storage of part of the books which were either stored on top of others or landscape formats on their spine. Finally, the last reason is the addition of enclosures which usually accompanies preservation recommendations. Enclosures create a volume increase that need to be accommodate by removing books and placing them somewhere else.
So based on these criteria, what sort of tool could be designed to carry out a conservation survey of the collection and facilitate the reorganisation of the books at the same time?

2. Selecting a Storage Organisation System

2.1 Example of a fully automated solution

By way of comparison, Ligatus had previously developed another completely different model to reorganise the manuscript collection of the Library of St Catherine's Monastery in Sinai, Egypt (see Velios et al., 2011). This model involved various data analysis techniques in order to find an objective solution by removing any manual task. In this specific case, new shelves were to be created specifically on purpose-built racks and all the books were to be re-shelved. Therefore, all the parameters were controlled in advance, which allowed the organisation of the books to be automated. It was then possible to input the dimensions of the books and the measurements of the alcoves were the stacks were to be positioned, and a list of the boxes with their optimised positions on the stacks was created, as you can see on this figure.

2.2 A manual approach

In the case of John Soane, there was no one objective way to organise the books as there were different shelves, different rooms and no control over the organisation. At the time of the survey, there were still some question marks regarding the future of some bookcases (some could still be used or could as well be removed). So any attempt to fully automate the organisation would have been impossible. For this reason, the idea was to go back to a manual approach in order to find subjective solutions by designing a tool that would allow for customisation, a tool in which it is possible to make some choices and then make a calculation that depends on the choice (for example to keep one bookcase or to remove it). This is why a relational database and two main tables were selected to create this adaptable tool.

3. The Survey Tool and its Use

The database used to store the data was built using an open-source software (the MySQL relational database with the phpMyAdmin tool as a frontend) but could work with any relational database. It consists of two different tables. The first table contains data relating to the books themselves, and the second table is dedicated to the shelving.

3.1 Description of the Tables

The first table lists, shelf by shelf, every book of the collection, or every set of books where the bindings and condition were the same (see Fig 4). Each row corresponds to one or several similar books, to which a survey identification number ('id') was given in the first column. A total of 36 columns were filled in for each record with data such as the location (room, press, shelf id), the number of volumes described, the time and date of creation of the record and the binding type and materials. The table also contains the measurements of the volumes. To the usual height and thickness of the books were added a field to record the width when the volume has a landscape format and another one for very large volumes. Then twelve columns specify the need for various types of repair, whether done in a studio or in situ, and another nine columns indicate the type of enclosure required, with the thickness added by them depending on the type of enclosure and the number of volumes to which it is applied. Finally, a 'notes' field was added to record any additional useful information that does not fit in any of the previous columns and the corresponding library catalogue number.[1]

1 The date and place of printing were only filled in for a few records, and the original intention was that this data would be automatically downloaded from the electronic catalogue of the library but given that the catalogue id was already entered into the database, from which the full catalogue entry could be obtained, this was thought unnecessary.

The second table comprises 22 columns giving the specification of each shelf, one row per shelf (see Fig 5). In this table are specified the location of the shelf, the type of adjustment and whether a picture of the bookcase exists or not. Then, you can see the identification of the press and the shelf, and its measurements (height, width and depth). The following columns are dedicated to the calculation of possible restrictions that were observed during the survey. This calculation gives the safe available remaining space for each shelf. In the example shown on the screen, you can see that the width restriction is of 22 mm, which reduce its width from 546 mm to 524mm. Finally the last columns specify the type of doors and the current use of each shelf. A 'notes' field was added at the right end of the table to allow any further comments to be added.

3.2 Calculation and Queries

From these two tables, it was then possible to query the data, in order to calculate the actual safe spaces available for re-shelving the books. The extra space required to accommodate the necessary supports and enclosures was also factored into the calculations. The queries and associated calculations can be run automatically by a script and standard reporting tools can be used to rapidly extract data. This script combines the standard MySQL command line client with arithmetic calculations on a GNU/Linux environment to produce a Comma Separated file which can then be imported on a spreadsheet editing programme.

To re-shelve the books, we used a table that was produced and extracted from the queried tables into a spreadsheet document (see Fig 6). This document lists shelf by shelf the 'remaining shelf width', which is the space available on the shelf after adding the enclosures. In the case of AL10C, there is still 21 mm available, whereas shelf D shows a negative figure. In this case the increased volume of the books after the addition of enclosures has exceeded the total width of the shelf. The "switch" column can be used to quickly test if we need to remove a book as all the books of the shelf are listed there, with their thickness. This table also take into consideration the books that are stored inappropriately, laying flat on top of others for instance. They are listed in the same way as the others here but their thickness is simply added, so the total width will probably be negative and flagged in red. The landscape format can also be highlighted there, in order to give them an appropriate storage. So this table allowed us to identify precisely which books needed to be removed and the shelves which had some space left to relocate them.

3.3 Extracting Standard Reporting Tools

Finally, the tables can also be queried to produce conservation reports including cost estimates of treatments. The collected data includes the level of intervention (in situ or in a studio), the approximate time that should be allocated to them and the type of conservation treatments required. The type of enclosure can also be specified where necessary, and extracted into readable documents. This could be used to easily produce a list of books that would need to be rehoused in the event of a boxing project.

3.4 Surveying the collection and using the tool

Finally, this project has led us to develop and improve our methodology to survey a book collection and the use of the tool itself confronted us to specific problems, regarding the treatment of the data collected and the way this data was recorded, that could therefore be avoided in the future.

The main problem we had while writing the report and trying to reorganise the books concerned the measuring process of each book. This constitutes a critical part of the survey as the whole calculation for the re-shelving is based on these measurements. As trained conservators, we took the books off the shelves to measure them, and provide dimensions that

could be used to make enclosures (if need be). However, we realised with the calculation for reshelving that we should have measured them on the shelf. The reason for this is that when we measure the thickness of a book, we might add an extra one or two millimetre because the book is not compressed on the shelf and measuring a spine is not always as accurate. As a result, although no enclosure has been added, the total thickness calculated is negative and no book is stored horizontally on top of other book which could be a reason for the increase of volume. So while there is actually no need to take a book off the shelf, the calculation spreadsheet suggests it. This problem could have been avoided if the books had been measured on the shelf, under normal shelving compression.

On a more practical matter, the collection of the data in situ followed a few principles which were found useful at the time and later when producing the report. Pictures were taken for each bookcase because of their distribution in the entire museum. These photos proved to be very useful later during the treatment of the data as there can be elements to verify such as the position of an individual book on a shelf. Drawings of every bookcase were also made, with their measurements, location and any information about their construction, therefore providing written records in addition to digital ones. The drawings were accompanied by plans of each room with small tags to locate every bookcase in the museum (see Fig 2). Finally, regarding the data collection itself, one technique was adopted to limit the potential errors or typos that can occur when two people are working together, recording long lists of numbers. Usually the observer on the ladder gives the measurements of the shelving to the surveyor with the computer who is doing the typing who then repeats the numbers out loud, so that the surveyor can hear if it is wrong. Finally, the note field, which is always present at the end of a table because, as much as we can prepare for a survey, it is difficult to anticipate all the different kinds of information we may want to record and this field could therefore be very useful. However, it should be used as little as possible, otherwise the information inputted there will require long hours of treatment to be retrieved and used.

Conclusion

The survey of the Library of Sir John Soane Museum has been a very interesting project, as it comprises the types of issues often encountered in historic buildings, but in some ways, pushed to their extremes. This was the opportunity to design a tool to reorganise a large number of books in a library with limited available space and important architectural constraints. It also allowed us to extract easily standard reporting tools such as cost estimates for conservation treatments or enclosures projects, or even binding information if a more historical report is required. This tool could, however, be used by historic libraries with similar criteria and restrictions as those encountered in Soane’s library and could therefore be made available on the Ligatus website.

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FIGURES

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