Settling Scores: Best Practice for the Maintenance of Sheet Music

By Risa de Rege

Abstract

While music libraries fundamentally face the same preservation concerns as any other library, their collections face unique problems. Sheet music is heavily used in distinct ways, and comes in a wide variety of sizes, shapes, and formats, all of which lead to maintenance issues that apply specifically to these materials. Arguing that genre and use inform the formats and damage we see in sheet music, this paper systematically explores the different features of scores, including bindings, sizes, and uses. I discuss the major preservation issues faced by circulating, printed music collections and suggest possible solutions.

Introduction

Music Libraries

Music libraries serve the needs of musicians and scholars with collections of scores for both study and performance.¹ They are found in public libraries,² academic libraries,³ within music organizations⁴ and performing groups,⁵ and in private collections. Ranging in size from a single shelf to an entire purpose-built library, they offer a variety of music and music-related materials, including circulating and reference books on music history, pedagogy, and culture; academic journals; popular magazines; recording devices and other technology; instruments; audio and video streaming services; digital scores; online reference resources and encyclopedias; DVDs and CDs;

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² See the Toronto Reference Library’s music collection within the Arts Department on the 5th floor: https://www.torontopubliclibrary.ca/books-video-music/specialized-collections/performing-arts-centre-music.jsp
³ See the University of Toronto’s Music Library, and the library of the Royal Conservatory of Music: https://music.library.utoronto.ca/; https://www.rcmusic.com/performance/plan-your-visit/venues/rupert-edwards-library
⁴ See the Canadian Music Centre’s library: https://collections.cmccanada.org/final/Portal/libraryhome.aspx?lang=en-CA
⁵ See the libraries of the Toronto Symphony Orchestra and Toronto Mendelssohn Choir: https://www.tso.ca/orchestra/members-of-the-orchestra/-19/; https://www.tmchoir.org/choral-music-library/
rare or obsolete formats like records or cassettes; special collections of fonds and other archival material; and of course, scores and sheet music. All of these formats have their own special preservation concerns.

Maintaining scores, and thus maintaining music libraries, is difficult. Sheet music faces the same issues as other paper-based library materials like embrittlement, environmental damage, and binding or structural issues. On first look, scores appear identical to books: they are made of paper, adhesive-bound or organized into signatures and bound into covers. But on closer look a myriad of differences appear. They come in unusual sizes, formats, and shapes, and can have many different parts. The average score will be larger than a book, requiring taller library shelving. They may have accompanying media components, or unusual paginations to facilitate page turns, serving both scholars and performers. As Catherine Smith articulates in her literature review for the *Australian Library Journal*, “The art of performing is not a passive one.” Sheet music is actively used far more than other printed materials, leading to use-specific damage that most books never experience.

**Theme**

This specific use of printed music is the primary theme which the reader is encouraged to consider throughout this paper: genre and use inform format and damage. For example, the antiphonaries of the Middle Ages could be quite large so that many people could sing from them at once: the genre, choral singing, influenced the large format. Similarly, a book of violin solos may be at risk of having torn corners due to quick page turns: use-specific damage.

**Scope**

From the perspective of an academic music library, this paper explores the preservation problems that printed, circulating sheet music faces as a result of these themes on a daily basis, excluding major events like floods or a building renovation. (Other music formats, like audio recordings, electronic scores, or special collections face their own preservation issues which are outside the scope of this paper.)

Regarding what is considered sheet music, I use this term loosely to refer to all printed music material intended for performance or, as in the case of miniature scores, study. Sheet music is not

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10 Carli, 16.

11 Carli, 15-16.

12 Gertz and Blaine, 262.

13 Smith, 120.
necessarily notated: a fake book, tablature, or lead sheet would also count, and workbooks are also
briefly discussed. A score is a bound volume of a work, like an opera or symphony, but in the
context of preservation it is a helpful term to refer generally to bound music.

Based on the literature on music and library preservation and my own experience and examples
from working in a music library, I argue that the unique way sheet music is used is responsible for
damage and preservation issues by exploring the challenges prevalent in sheet music collections,
common score formats, and potential solutions that benefit both users and materials.

Literature

This review analyzes the available literature on preservation and conservation issues as they relate
specifically to sheet music. When initially researching this paper, it was assumed that the majority
of sources discussing the preservation of physical library materials would focus on library books;
this indeed proved to be the case. While similar in makeup to scores, music’s unique features, uses,
and users require dedicated studies to fully appreciate and manage these factors. This research
supplemented my academic knowledge and backed up observations made throughout my
experience as both a library technician and a musician.

Music’s special considerations were emphasized throughout the sources consulted for this paper.
Music library staff need to be able to articulate and advocate for the needs of their collections. Also
emphasized was that libraries often must do the best with what they have. Large-scale conservation
efforts are expensive and require skills beyond what the average music librarian possesses. As such,
many suggested remedies took this into account and offered more affordable options which, while
not perfect, would suffice. Several sources broke down the environmental (e.g., humidity), material
(e.g., acidic paper), and human (e.g., tearing a page) factors that contribute to a score’s destruction,
noting in particular how the third category contributes uniquely to music.

The publication dates for many of the sources that were utilized the most for this paper come from
the last forty years. A key reference source on this topic is Eastman School of Music conservator
Alice Carli’s Binding and Care of Printed Music, covering music conservation in-depth with
background information and guides for various types of bindings and repairs. Originally published in
2003, the 2021 second edition includes additional considerations regarding digitization and other
relevant changes in the library world. Many other sources, particularly those involving technology,
were out of date; more recent literature on preservation will doubtless have much to say on current
trends, including digitization, which is only a small part of the argument presented here.

Challenges and Solutions Relating to Library Factors

Every collection needs a healthy home. The ideal music library is well-staffed and has the
appropriate environmental and furniture factors needed for the longevity of the scores.
Staff
All staff should have at least a basic level of music literacy, from the librarians to the staff who mend and repair materials, and everyone must cooperate.\textsuperscript{14} Otherwise there is a risk of music being inappropriately bound or repaired, such as a label covering up important information on the score, or parts for different instruments being interfiled incorrectly or even bound together.

Environment
Environmental concerns like humidity, natural disasters, security, and pests are a challenge for any library. Building conditions are important to the preservation of the collection and should be set to the ideal specifications for the library’s climate context, i.e. a library in a tropical climate will be particularly concerned with humidity.\textsuperscript{15} The temperature, humidity, and lighting of a library can allow mould, dirt, pests, fading, embrittlement, leaks, and other damaging factors (Figure 1).\textsuperscript{16} These conditions do not affect music differently than other books; they are important considerations for the longevity of any collection.

![Figure 1: Water damage has rendered part of this large score unreadable.\textsuperscript{17}](image)

Shelving
Shelves must be appropriately sized for the collection as scores are generally larger than books to improve readability; a music collection could not occupy library shelves intended for books without some adjustment. Oversized or miniature items may need their own dedicated sections, and all shelves should be kept clean of dust and dirt.\textsuperscript{18} Most scores are also thinner than the average

\textsuperscript{14} Smith, 125.
\textsuperscript{16} Turner, 185-6.
\textsuperscript{17} All photos in this paper are taken by the author.
\textsuperscript{18} Smith, 123-4.
book\textsuperscript{19} and call numbers, titles, and other identifying information does not always fit on the spine, so items have to be pulled off the shelf for identification (necessary for shelving, shelf-reading, browsing, and borrowing). Constantly being pulled off the shelf with the improper, but common, technique of pulling from the head damages the head and the rest of the covers (Figure 2).\textsuperscript{20} In face of this unavoidable practice, sturdy, acid-free bindings should be used as they will resist tearing. Scores should not be packed too tightly or too loosely on the shelves: too tight and it is hard for patrons to retrieve them, which may result in damaged headbands, while loosely-shelved items will bend or warp. Scores are easily damaged by neighbouring items of different sizes or thickness: large items cannot be supported by smaller, thinner ones, and small scores may be pushed back and lost.\textsuperscript{21}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.png}
\caption{Pulling a thin score off the shelf by the head; damage to the head as a result of pulling the score, which was bound in a brittle, acidic enclosure.}
\end{figure}

\textbf{Challenges and Solutions Related to Format}

With a variety of size and shape that may be matched only by art books, music comes in many formats based on the intended use of the material, all of which face maintenance issues. Music come in a huge range of sizes, from over a metre in height to pocket-sized miniature scores. Pieces may contain multiple parts for many instruments, or little more than a single song on one page. Experimental outliers can come in any format or material imaginable.

\textsuperscript{19} Gertz and Blaine, 262.
\textsuperscript{21} Caswell-Olson, Lee, and Willer.
General Scores

Most scores for shorter works consist of a single signature in soft covers,\(^2\) pamphlet bound.\(^3\) Music sewn into a binding will open flat and be easier to use.\(^4\) Full scores of large works like operas or symphonies may be case- or adhesive-bound, though they are still often still shorter than the average monograph.\(^5\)

The covers of soft-bound scores are subject to breaking along the hinge, as it is not strong enough to handle constant opening and closing. They may be rebound with harder covers, which will protect the text block and are less likely to break, though will take up more room on a library’s shelves and are more cumbersome for a musician to carry around. Bindings need to be appropriate for performance: light enough to stay open on a stand but sturdy enough to remain in good condition.

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\(^2\) Carli, 2.
\(^3\) Carli, 5.
\(^5\) Carli, 2.
Oversized Items

Music scores come in all sizes, including very large items which do not fit on regular shelves (Figure 3). They may be stored on their sides; for these thick, heavy volumes, spine-up is damaging as it pulls down on the text block, but spine-down makes it harder for users to see identifying information like the call number or title. The Northeast Document Conservation Center suggests storing large items spine-down and putting the call number label somewhere else on the cover, but this is not practical for libraries which have already labeled their items according to convention. A dedicated oversized section is an ideal solution but can become difficult to manage due to the size and weight of the items. If possible, large scores should be stored flat to reduce strain on the spine and text block, ideally in a cabinet or other protective enclosure to avoid damage from water or pests.

Miniature Scores

On the other hand, miniature scores can be tiny and easily lost (Figure 4). Intended for study rather than performance, miniature scores find themselves shoved around by larger items, damaging the covers, or pushing the item off the shelf entirely.

Parts

Music for ensembles comes with multiple parts which face special concerns. They can be difficult to keep together: one lost part and the entire item will need to be replaced (Figure 5). They of course cannot be bound together if intended for performance use. Parts are often published

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26 Caswell-Olson, Lee, and Willer.
27 Caswell-Olson, Lee, and Willer.
29 Provino.
30 Gertz and Blaine, 262.
without additional binding or reinforcement, so should be rebound with covers, and kept in a specially made enclosure or pocket that keeps everything together (Figure 6). They should be handled by multiple musicians leaves parts in rough shape.

Figure 5: Parts for an ensemble which have not been properly bound in one unit and are only tied together; the library must ensure that everything is included when signing this piece in or out to avoid loss.

Figure 6: Parts bound together in one pocket, which keeps everything together and has a list of what is included on the blue label.

31 “Caring for Pamphlets and Sheet Music.”
Single Songs

Single songs may consist of only one or two leaves. These are fragile even if printed on high-quality paper given how thin they are and are therefore highly susceptible to bending. They can be bound in hard covers or kept flat in cabinets or boxes. Sheet music is dense, so if stacked horizontally it should be kept in small piles to keep the music from sticking together or falling over if kept in slippery plastic archival bags.

Unusual Scores

Some scores, especially for contemporary music, utilize unusual formats and materials. While remarkable to the scholar, these features are a challenge for the library and can bring up unexpected preservation needs. Items may only consist of one sheet, which needs a hard binding to keep it from being crumpled (Figure 7).

![Figure 7: An unusual score consisting of only one large sheet.](image)

The performance notes for Christian Diemer’s 2013 composition “Etüdewürfel” for violin and cello instruct the player to cut up the score and rearrange it into a unique order to be played. As photocopying the entire score would violate copyright, there is no legal way for someone to play from a library’s copy of the piece as intended without damaging it.

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The score for John Cage’s 1960 composition “Cartridge Music” contains numbered sheets of paper and transparent plastic sheets, which have yellowed over time (Figure 8). The score is still usable, but no special consideration has been given to the preservation of this unusual material.

Figure 8: The yellowed transparencies of “Cartridge Music.”

Figure 9: The storage of “Postal Pieces (1954-1971).”

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“Postal Pieces (1954-1971)” by James Tenney is written on a series of postcards.\textsuperscript{34} For library storage, the piece has been kept in a labeled plastic envelope within a custom phase box (Figure 9).

**Challenges and Solutions Related to Materiality and Use**

Plenty of damage is determined by the materiality and use of library materials. Scores come in a range of bindings which do not always serve usability or longevity. The acidic paper commonly found in sheet music collections is subject to brittleness if not downright deterioration, and previous attempts to fix broken pages may end up causing more harm than good. In addition to the inherent vice of any paper-based materials is the wear and tear from users; music in particular is affected by markings.

**Bindings and Usability**

Scores have to stay open in order to be playable. Single-signature scores can be bent with ease, but stiff spines need to be broken, and spines, covers, and signatures can all detach after repeated use.\textsuperscript{35} Scores are also carried around more than other library material, going back and forth to rehearsals or carried in a tight instrument case, and therefore benefit from hard covers. Scores printed across the grain of paper, not in parallel with the spine, can also be difficult to hold open.\textsuperscript{36}

**Spiral Bindings**

Spiral bindings are seen frequently on scores, especially for oblong keyboard music\textsuperscript{37} and by smaller music publishers, with the understanding that music must be easily opened.\textsuperscript{38} They are a good format for instrumentalists because they stay open flat on music stands and the pages can be easily turned. They are less ideal for singers who may struggle to hold floppy covers in their hands while singing. And they are certainly a bad choice for libraries, because they are flimsy and pages can easily be ripped out along the perforations.\textsuperscript{39} Plastic bindings become brittle and break, metal ones rust, and both are easily bent out of shape (Figure 10). While practical for music stands, spiral bindings are a poor option for library items.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure10.png}
\caption{A damaged plastic spiral binding.}
\end{figure}

\textsuperscript{35} Carli, 198.
\textsuperscript{36} Smith, 125.
\textsuperscript{37} Smith, 125-6.
\textsuperscript{38} Carli, 9.
\textsuperscript{39} Smith, 125.
Acidic/Brittle Paper

Acidic paper is especially concerning for music because performers handle their pages so much, which can rip off corners or whole pages. The speed of performing does not allow for a reading room’s delicate page turns, and an old score is easily torn in the act of being used. Most music from the last 150 years was printed on cheap, acidic paper. Deacidification is a major undertaking that is unrealistic in many situations and serves only to prevent further damage; in very bad cases of embrittlement, it is best to replace the item if possible, or digitize or restrict access. Brittleness and suitability for repair or deacidification may be examined via the “double fold” test (Figure 11) to see if the paper breaks after a corner is folded over itself (keeping in mind that this may permanently damage the score).

Figure 11: An acidic violin part (withdrawn from the collection) which did not pass the double fold test.

Previous Mending Jobs

While not unique to music, damage can come by previous mending attempts. Tape, rubber bands, or glue can leave behind acid or residue, in some cases needing solvents or heat tools for removal.

40 Smith, 123.
41 Hooper and Force, 53.
42 Gertz and Blaine, 262-3.
43 Carli, 141-144.
Improperly used plastic sleeves, liners, and envelopes can cause creasing or chemical reactions. Metal items like staples and paperclips leave imprints and stain paper with rust. Items may be placed in plastic bags to keep broken parts together, but these can trap moisture which encourages mould and pests, or the plastic can react with the paper (Figure 12). Besides damaging items, the stains and residue from inefficient mending jobs can make materials unappealing to users.

![Figure 12: A score with detached pages held in a plastic bag.](image)

**Score Marking**

Part of good musicianship is writing notes directly onto one’s music, such as bowings, breath marks, fingerings, or staging notes (Figure 13). This is a challenge for music libraries because downright discouragement of writing in scores is less appropriate than with books; in order to preserve a library copy, a user will not get the most out of a score. Photocopies may violate copyright. Pencil markings can be erased, but this can tear paper or go too far and remove the printed notation so must be done carefully. It is hoped, albeit optimistically, that any musician who takes their craft seriously enough to make notes would know better than to use pen.

Teaching materials are often written in by users, who leave answers (correct or otherwise) directly on the page (Figure 14). While the theory workbook below has been used for its intended purpose, 

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44 Hooper and Force, 48-50.
45 Turner, 197.
the act of using it has left it unusable for other users. Ideally, library copies of workbooks should be treated as reference material by patrons.

Figure 13: A heavily marked violin part.

Figure 14: A used theory workbook.
Conclusions
Performance and, to a lesser extent, musicological study put a lot of stress on sheet music. The potential solutions to these formats and issues are generally the same as for non-music materials, but there are some special considerations. All solutions require resources, so multiple factors like staffing, budgets, and time will determine which response is most appropriate and realistic for a given situation: repair/rebinding, replacement, reproduction, or restricting use.

Repair and Rebinding
Determining factors in the repair of damaged items are the extent and type of damage and the cost, financial and labour, of repair versus the cost, and possibility, of replacement. A loose page may be easily taped back in, but a brittle, crumbling one is less salvageable. Rare or expensive scores, obviously, are worth more repair effort when replacement is not an (affordable) option.

Figure 15: Commercially bound scores with hard covers and identifying information printed on the spine.

When the printed music is otherwise in good condition, rebinding is often the best solution for items that are falling apart or inappropriately bound. Any rebinding should not be a permanent change, i.e., bindings must be replaceable if they are damaged. The best binding is acid-free, durable, and opens flat, and ideally any item that needs rebinding has this done as soon as possible. More complicated binding jobs may need to be outsourced beyond the library to a commercial bindery (Figure 15). Binding and mending staff, whether within the library system or

47 Smith, 123.
48 Provino.
49 Carli, 53.
50 Gertz and Blaine, 262.
external, need to be able to read music so that they understand how the material is being used and what information is important. Boxing delicate items that cannot be rebound is practical for low-use items.\textsuperscript{52} Phase boxes can be easily custom-made,\textsuperscript{53} but sheet music in this condition is difficult to use.

**Replacement**

If an item is very damaged, highly used, and not rare, replacing it with a new copy is the best option, assuming the financial and labour cost of repair are higher than the cost of replacement and that the library’s budget will not be primarily spent on replacements. However, if efforts are not made to keep a new copy in good condition, the library will face the same problem again in the future. While no library is perfect and no library item is destined to live forever in good condition, intervening as early as possible gives materials some hope for a long life.\textsuperscript{54}

**Reproduction**

Creating reproductions is a common but labour-intensive preservation technique. While digitization is more popular, photocopying and microfilming are also options.\textsuperscript{55} Scanning scores to create electronic versions enhances access, especially if a digital version is not available (of course, all within copyright).\textsuperscript{56} While it increases accessibility, it can also be a detriment to usability. Anyone wanting to play from a digital score must either have the necessary equipment, like a tablet, or print their own copy. For single songs printing is straightforward, but a full score to a larger work can easily be hundreds of pages. Digitization requires staff time and expertise, equipment, and software, all of which can come at high costs.\textsuperscript{57}

Music on microfilm is not directly usable as, unlike digitized music, it is not easily viewable for performance.\textsuperscript{58} As well, low-quality copies in any format may lose notation marks or piece-specific information (Figure 16). Contemporary composers may create specific markings that only apply to the given piece and cannot therefore be inferred by a reader the way a blurred letter in a common word can.\textsuperscript{59} Since many aspects of music notation are similar in appearance, they can be mistaken for each other: a poorly-copied quarter note (♩) may appear as a half note (♩).\textsuperscript{60} Considering too that music, when performed, is looked at from a few feet away, a poor copy may be illegible.\textsuperscript{61}

\begin{itemize}
  \item \textsuperscript{52} Carli, 119.
  \item \textsuperscript{53} Carli, 121.
  \item \textsuperscript{54} Gertz and Blaine, 262.
  \item \textsuperscript{55} Smith, 131-2.
  \item \textsuperscript{57} Hooper and Force, 75.
  \item \textsuperscript{58} Gertz and Blaine, 262-3.
  \item \textsuperscript{59} Smith, 126.
  \item \textsuperscript{60} Sommer, 258.
  \item \textsuperscript{61} Sommer, 259.
\end{itemize}
Figure 16: The flats (♭) highlighted in this piece of copied music are faint; a low-quality reproduction could serve to make them fainter to the point where a musician may not see them, changing the music.

Restricting Use
Many special collections directly monitor and train users in the safe handling of delicate material, but this is not possible or practical in a larger circulating library.\textsuperscript{62} Restricting the use of fragile materials will protect them, but naturally it limits access. A non-circulating special collection would not carry scores meant for use in performance but may contain the only version of rare materials. Depending on the library’s policy and the item’s condition, photocopying may not be permitted.

Other scores may be in poor physical condition but not meet the requirements of a special collection. A special storage institution like the University of Toronto’s Downsview facility keeps materials in a climate-controlled environment which not directly accessible by patrons, but the books are still loanable.\textsuperscript{63} This solution is not as ideal for the user as discovery and browsing is restricted to using the online catalogue. And of course, given the small size and budget of many libraries, access to a separate storage facility of this scope is simply impossible for many organizations.

Final Thoughts
The preservation issues faced by scores in music libraries are similar to those faced by books, yet scores face unique problems due to their use and it is essential that music libraries articulate and address these issues with climate control, proper shelving, and knowledgeable staff to ensure the

\textsuperscript{62} Turner, 187.
\textsuperscript{63} “Welcome to UTL at Downsview,” University of Toronto Libraries, December 15, 2022, https://onesearch.library.utoronto.ca/downsview.
longevity and health of their collections. Scores have a variety of physical features and formats, including oversized or miniature sizes, multiple parts, single song sheets, and unusual outliers. They face challenges from inappropriate bindings, brittle paper, previous remediation attempts, and patron use. All of these have their own preservation concerns. Repair or rebinding, replacement, reproduction, or restricting use are all options for improving score durability, although all come with costs.

The genre and use of a score inform its format and the damage it sustains, and all of these factors matter to music libraries. Spiral-bound books may lie flat on a music stand, but pages will easily tear out along the perforations, making this format good for musicians but inappropriate for libraries. Sheet music for performance is printed larger than the average book so that the notation can easily be read from a distance (such as from a music stand), so the shelves of music libraries should be taller than those used for books. The balance of maintaining the longevity and usability of a collection is a challenge for any library—especially one with items that face as much “use and abuse” as scores.

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64 Sommer, 256.
65 “Caring for Pamphlets and Sheet Music.”
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