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Safeguarding Scotland's Newspapers: A Collaborative Approach to Preservation and Access

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Abstract:

This paper presents a large-scale conservation and digitisation initiative undertaken by the National Library of Scotland (NLS), addressing the difficult conservation of newsprint, and aiming to contribute to the growing body of research on digital preservation of historical documents. This paper discusses the challenges, approach, and impact of this initiative. It aims to foster an approach that empowers local communities to explore their heritage while simultaneously offering a global platform for Scotland's vibrant press by ensuring physical access through local libraries and archives.

Keywords: newspapers, digitisation, libraries, communities, conservation

Introduction

Newspapers serve as invaluable primary sources, offering a unique window into a society's past, chronicling its social, political, and cultural evolution. The National Library of Scotland (NLS) has a vast collection of pre-1925 newspapers, facing degradation due to age and traditional binding methods. The characteristics of their materiality have left them inherently fragile; the increasing brittleness of the paper presents significant challenges for the Library's Collections Care department in ensuring their safety and accessibility. This paper presents a large-scale conservation and digitisation initiative undertaken by the NLS, addressing the difficult conservation of newsprint, and aiming to contribute to the growing body of research on digital preservation of historical documents. This ambitious project recognises the immense public interest, harnessing collaboration between institutions and industries. The project will digitally

preserve and share Scotland's rich history as documented in its local newspapers, promoting accessibility, engagement, and long-term preservation.

The strategy extends beyond borders, striving to make these resources accessible for a global audience. Crucial to this effort is the formation of a "Scottish Newspaper Alliance," uniting the National Library, local cultural institutions, and local libraries. This powerful partnership will unlock a vast collection of local newspapers, providing open access to anyone with an internet connection. However, the initiative goes beyond simple digitisation. It fosters an approach that empowers local communities to explore their heritage while simultaneously offering a global platform for Scotland's vibrant press by ensuring physical access through local libraries and archives. This innovative combination highlights the National Library's commitment to supporting local partners, ensuring all of Scotland benefits from this initiative.

The project's overarching aims centre on three key elements. Firstly, it prioritizes access, ensuring the unrestricted availability of these cultural artefacts for a global audience. This dismantles pre-existing barriers and empowers researchers, students, and the public to delve into Scotland's history through a readily accessible digital archive. Secondly, the initiative emphasizes enhanced user experience. The development of user-friendly interfaces with advanced search functionalities will transform how audiences interact with digitized newspapers. This strengthens deeper community engagement and helps the extraction of valuable historical insights. Finally, the project underscores the criticality of preservation. Efforts will focus on safeguarding the National Library's and its partners newspaper collections, particularly those in fragile condition.

This initiative has garnered significant interest, with four local libraries now contributing their newspaper holdings. The digitised collection is expected to serve a wide range of users, from researchers and genealogists to the public with an interest in local history made clear through audience research. This paper discusses the challenges, approach and impact of a large-scale conservation and digitisation initiative.

Challenges and Significance of Newspaper Conservation

Newspapers pose a significant challenge to conservators due to their inherently fragile nature; the collection at the NLS is no exception. Early 19th-century newspapers, composed of rag paper, have fared better. However, industrial advancements in the 20th century led to cheaper production methods, transitioning from high quality cotton and linen fibres to wood–pulp newsprint, a short-fibred and highly acidic material (Musson, 1958). This inherent acidity, stemming from lignin, cannot be easily removed and agents of deterioration that contribute to this must be prevented (Wachter, 1987). Although the transition to wood-pulp was seen as desirable to the paper industry, it brings a new level of complexity for a conservator (Ludwig & Johnson, 1997). The short fibres characteristic of newsprint poses difficulties due to their limited strength; repair papers must be the lightest of weights to ensure an even distribution of tensile strength. Due to double-sided printing, repairs necessitate careful selection of the side to be repaired. Rag paper often exhibits skinning along the edges of the tears, where newsprint does not; minimal or absent skinning offers no such leeway, making precise tear repairs crucial for maintaining textual legibility in captured images. The presence of adhesive tapes as historical

repairs on newsprint can lead to embrittlement, staining, and text loss. This highlights the ethical considerations of prioritizing textual integrity versus aesthetics when making repairs.

Treatments are further limited by the bound state and large size of the volumes our newspapers are housed in at the NLS. The bindings, created in-house up until the eighties, have been both a blessing and curse by protecting the pages but also contributing the demise of their structural integrity. While the bindings aimed to securely store large quantities of issues (bound annually, bi-annually, or quarterly depending on publication frequency), these volumes can be immense. The bindings are exceptionally tight and place significant strain on an already vulnerable format. Dissociation is also a major concern in the collection, as most of the collection remains unboxed at present. To make these large volumes suitable digitisation candidates, work must be done to create an ethical, considerate approach to digitising bound, fragile newspapers.

Fig.1 – A volume of Northern Chronicle, an example from the collection

The longevity of newsprint is significantly impacted by environmental factors. Improper storage, fluctuating temperatures, and relative humidity all contribute to its degradation. Elevated temperatures can exacerbate chemical reactions within the paper, particularly when coupled with high humidity, leading to increased brittleness and a weakening of the cellulose fibres. High relative humidity directly affects the paper as well, causing the fibres to absorb moisture and swell. Over time, this weakens the structure and contributes to embrittlement; an inevitable risk of ageing newsprint that must be mitigated. Light exposure, especially ultraviolet (UV) radiation, accelerates the degradation process. While sunlight is the most potent source of UV light, even prolonged exposure to fluorescent lighting can contribute to fading inks and weakening fibres over time.

The passage of time is hugely detrimental to the physical integrity of newspapers and its ability to be safely accessed and handled. The paper itself becomes brittle and crumbly, rendering it susceptible to tears, losses, and a disintegration of the edges from mere handling during consultation. While bound newspapers offer a sense of organization and protection for the

reader, can exacerbate this issue. Tight stitching can exert undue stress on the paper, typically tearing along the gutter, resulting in fully detached pages. This inherent fragility necessitates difficult choices by library staff; to ensure the preservation of these historical documents, access to originals is often restricted. Researchers may then be required to rely on microfilm copies, a cumbersome alternative that diminishes the resolution and detail of the original newsprint. This creates a tension between access and preservation, with libraries striving to balance the needs of researchers with the long-term structural integrity of these irreplaceable materials. Preserving the original, even fragile, copies of an item is crucial, as researchers may request access for firsthand examination of the materiality of the artifact, which is impossible with degrading primary copies.

By understanding the unique challenges posed by newsprint and implementing appropriate conservation strategies, these materials can be safeguarded and made accessible for future generations. Addressing these challenges by creating readily accessible digital copies while ensuring the conservation of the primary allows researchers to explore the content without risking damage. It provides them with high-quality digital surrogates for their studies. In doing this, we act as responsible stewards, ensuring the longevity of the materials and facilitating their use for present and future generations.

The NLS Newspaper Project: A Multifaceted Approach

In 2019, initial investigations into the newspaper collection commenced. These investigations revealed that our collection, consisting of 961 local Scottish newspaper titles spanning several centuries with varying degrees of title completeness, was considered at risk. Concurrently, investigations into the conservation of bound newsprint began. By 2021, a conservation plan was written to determine how we conserve and digitise our newspapers with the use of trial captures and test treatments. Once the partners libraries were recruited, the conservation of their material started in October 2022. During this, the library sought to tackle their own collections next; a representative sample survey of nearly 60 titles was completed; although this was a snapshot of our collection, it cemented earlier results of the scoping project that a significant amount of our newspaper titles required immediate attention, and the majority would not be captured unless a methodology was created to prepare the bindings prior to digitisation. With the microfilm we house just as susceptible to physical and chemical degradation, this work was even more pressing (Arlitsch & Herbert, 2004). This approach looked to rebalance the focus of previous digitisation efforts of newspapers by moving away from a reliance on illegible microfilm, putting the emphasis on stabilising the primary copy as much as possible before digitisation (Silverman, Willard & Library, 2019).

To complement the core methodology, decision trees (figures. 2-5) were created to illustrate the decision-making process based on several key factors. These factors are:

- Paper Degradation
- Binding Size
- Binding Condition
- Binding Type

The decision trees separate pages and binding for separate treatment considerations due to their distinct characteristics. Additionally, the complexity arises from the wide variety of binding styles that exist within a single title, not to mention the entire collection. The condition of the

binding can significantly impact the condition of the pages; in some last resort situations, removing a compromised binding may be the most appropriate stabilization strategy. The decision tree focusing on paper degradation does not differentiate based on paper type. While rag paper offers superior structural stability compared to wood pulp newsprint, both are susceptible to tears and other structural damage. Therefore, the decision was made to consider both paper types equally and treat them using similar methods. Dividing the treatment process into these four elements ensure all structural components are evaluated before treatment commences.

Fig. 2- Paper Degradation Decision Tree

Fig. 3 -Type of Binding Decision Tree

Fig.4 – Size of Binding Decision Tree

Fig. 5 – Condition of Binding Decision Tree

Treatment of the Pages

As this is a large-scale project, a targeted approach was needed for the repair of tears, losses, and loose fragments before capture. Priority was given to tears that significantly impact the legibility of the text block, either by directly obscuring it or by threatening to tear further with handling or detach from the page entirely. Loose fragments were reattached, while larger areas of missing paper were infilled with Japanese paper. The purpose of the repairs done in this project act as a first aid measure to ensure enough stability during capture. They provide sorely needed access, but their repair does not rule out the need for careful handling and continued monitoring of their condition.

Repairing newspapers, specifically newsprint, requires a method with minimal water content and high viscosity otherwise the risk of breakage increases. Japanese paper repairs should be

lightweight to ensure even tensile strength with the area surrounding the tear. Additionally, toning of the repair paper is required, to ensure the match to the discolouration and maintain legibility of the text block. The chosen adhesive must be sufficiently strong and flexible to withstand handling during capture and consultation. Trial treatments conducted in 2019 concluded that the most effective adhesive for the conservation of newsprint was Methyl Cellulose. Not only does it apply well at high concentrations (5-7%), but it also dries quickly, streamlining digitisation preparation. Localised, moisture-controlled, and viscous, it maintains the structural integrity of the newsprint whilst offering excellent adhesion. Existing creases and distortions are also addressed to ensure the best possible capture. A Japanese water brush pen or small, hand-held mister can be used along the folds to introduce a controlled amount of moisture. This allows the paper fibres to relax, enabling a gentler flattening process. Minimal materials and a relatively quick process make it ideal for large-scale application. This translates to a cost-effective solution for preserving valuable newsprint collections, allowing for the treatment of a significant number of items within a reasonable timeframe.

Fig. 6 – Newsprint before and after treatment

Treatment of the bindings

The preparation of bindings for this project extends beyond solely addressing condition. Intervention is also necessary when the binding is too tight, causing excessive curvature in the pages and hindering the imaging process. However, for volumes that do not require the following specific methods, the general conservation approach remains consistent with the treatment of bound formats in book conservation.

Preparation before Digitisation

Three trial captures were conducted to see if bound newspapers could be scanned effectively with existing equipment. Mainly using a cantilever system but also including a V-shaped cradle, the tests checked as many variables as possible to see if it could handle the demands of bound newspapers. The focus included size variations (both pages and bindings), general condition, binding flexibility, and the improvements from both partial and full disbinds. The digitization team were particularly interested in challenges associated with handling large and fragile bound newspapers. The test images were assessed for specific issues that might hinder the digitization process (see figures 7 to 9). These included shadows on the scanned pages, text loss near the spine due to the tight binding (which could affect Optical Character Recognition), and pagination problems if the newspapers were too large for the scanning area. Additionally, they assessed what kind of support loose pages and disbound volumes would require during scanning, and how creases in the paper might affect the legibility of the text.

Figs. 7-9 – Issues with the capture of bound newspapers, such as curvature & shadows

The captured images proved that existing systems available at the library can only digitise a small percentage of the titles included in this project due to the complexity and scale of our bound newspaper collection. Issues like curvature, tight sewing, and shadowed text cause

problems for digitisation, reducing the quality of the image and hampering the reader experience as the OCR software struggles to cope with the curvature. To address this, two primary methodologies were chosen:

- **Full Disbind**: Considered a last resort, offers significant improvements in overall condition, handling ease, and capturability.
- **Partial Disbind**: This method is employed for most volumes due to the common occurrence of thick, tightly sewn bindings. It is particularly well-suited for mass digitisation projects due to its reversibility and efficiency.

Full Disbind

A full disbind is required in instances where the binding condition is poor or unusable; issues with the binding include broken sewing, detached and missing boards, and extensive loose pages. The binding is not serving its purpose and instead causes further damage to the contents as its structural instability worsens. What is left of the binding is removed using mechanical or aqueous methods. The contents are removed issue by issue, to keep the original fold and margin intact where possible. The loose issues are divided into manageable sections and placed on a support of archival corrugated board, a lighter weight alternative to a binding that can also be used to aid handling during capture. The issues are placed in folders and rehoused in a bespoke newspaper box.

Fig. 10 – Full Disbind Before and After

The most notable implication is the fact that the volume will not be returned to the shelf in its original state. It is clear in the decision-making process that this method is not chosen lightly. However, one should remember that newspapers were never meant to last, nor meant to be bound. Its binding did provide collation and protection at some point in time but if that is no longer serving its purpose the priority should be to preserve the contents, not its housing. There will be less long-term damage and its rehousing in a loose state will mitigate the risk of dissociation. Extensive conservation paired with a full disbind improves the structural integrity of bound newsprint. Large fragments of newsprint which were once at risk of permanent loss are saved. Boxing the item provides ample protection for the newsprint; should any further physical damage occur, the contained environment ensures the fragments remain within the box, preventing dissociation.

Partial Disbind

A partial disbind is required for bindings where the binding or dimensions are not suitable for capture. This includes bindings with thick spines that are inflexible or volumes with tight sewing that causes significant curvature in the gutter and lack of legibility in capture that does not improve with careful manipulation of the spine. This methodology ensures that the bindings that are stable and in good enough condition are kept; they continue to serve their purpose as they keep them intact (Silverman et al, 2019).

The front joint of the volume is cut open, exposing the spine. The spine lining is then removed with mechanical or aqueous methods dependent on the adhesive present. This helps to improve flexibility and allow the volume to open to almost 180 degrees during capture. The sewing is not touched and remains intact to ensure reversibility of the method and to keep the structure intact. The method is reversed by reattaching a new spine lining and creating a new front joint. The method is both time and cost effective which significantly improves the image captured by digitisation without causing any damage to the volume. After reversal, the volume can be accessed as normal by readers. There are some binding styles which will not benefit from this methodology such as those that are oversewn or single sheets. It does not solve all the answers, but the method will be suitable for a high percentage of thick, tightly bound volumes in the collection.

Fig. 11 – Example of a partial disbind

The implication of this method is mainly related to the scale of the need for this methodology within our collection; a high percentage of our bound newspapers require this treatment as well as the conservation of their pages. However, the benefits of this methodology outweigh the risks; it ensures continued accessibility and is significantly more ethical than removing the contents from good condition bindings unnecessarily.

The partial and full disbind methodologies significantly improve the overall handleability and quality of the image captured. The partial disbind flattens the pages, meaning all text can be captured and no shadows form. The full disbind improves the condition of the pages from unusable to good. It would not be considered ethical to disbind for the sake of capture over condition; for those with binding styles that fall out with the criteria of those eligible for disbind, the spine can be manipulated well when on a cantilever system. The methodology laid out ensures that large fragments of irreplaceable text do not become dissociated from their volumes. That, and robust library policies ensure the surrogate is offered first and the original remains safeguarded for future generations.

Wider Benefits and Impact of the Project

The following section highlights the benefits of prioritizing the digitisation of newspapers. The collaboration between local libraries and national institutions can strengthen library services, enhance heritage appreciation, prioritize conservation efforts, and ensure the inclusion of underrepresented voices. Through these initiatives, local newspapers can continue to serve as a vital resource, building a deeper understanding of Scotland's past and a more vibrant future for its communities.

A national model for newspaper access presents a win-win scenario for both local libraries and the National Library of Scotland. By facilitating broader access to historical newspapers, this initiative strengthens local library services, enriching their information, and supporting wellbeing programs. Additionally, staff utilizing online newspaper resources would empower them to curate more engaging experiences for their communities and streamline their research, ultimately making the user experience more inviting (Bingham, 2010). This collaboration would ultimately create a more welcoming environment for all those interested in exploring Scotland's rich past and would solidify the National Library's position as a leading innovator in the field of Scottish cultural and historical preservation.

By examining local publications, we gain a unique perspective on the political and social fabric that helped shape present-day Scotland. These primary sources offer invaluable tools for heritage education and empower individuals to delve deeper into their ancestral roots or gain a newfound appreciation for places that hold personal significance. Through the lens of historical newspapers, the past comes alive, aiding in a deeper connection to our heritage.

Newspapers also function as a significant facilitator of community wellbeing through their role in strengthening social cohesion and revitalizing libraries as communal spaces. Easy access to both historical archives and current local content can act as a powerful draw for local libraries and increasing their footfall, which is especially important in times of financial constraint (Bremer-Laamanen, 2006). This, in turn, encourages the rediscovery of libraries as vibrant social spaces. Within these spaces, individuals can feel a sense of security and belonging, connect with others who share similar interests, and engage in collective celebration of their community's history and identity. Therefore, newspapers serve as a binding force, promoting social interaction and a strengthened sense of community, ultimately contributing to overall well-being (Neudecker, 2016).

The transient nature of physical newspapers presents a significant hurdle in historical research and accessibility. Previous methods of digital preservation provided quick results, with little appreciation for the long-term safeguarding of the primary copies; this shift in approach for this project where conservation is a key priority ensures the primary copies remain intact for future digitisation efforts (Silverman et al, 2019). Embracing digitisation efforts acts as a safeguard, ensuring the continued discovery and preservation of irreplaceable local collections for future generations. This process not only guarantees the survival of these vital resources but also unlocks their content for wider exploration. Moreover, digitisation sheds light on lesser-known newspaper titles and their contents, enriching the public record with a more comprehensive and multifaceted understanding of the past.

Local newspapers serve not only as chroniclers of events but also as platforms for a broad range of hidden voices. These publications have historically provided a space for diverse communities to express themselves, reflecting a spectrum of political and social viewpoints often missing from mainstream media. By acting as a voice for marginalized groups, local newspapers offer invaluable insights into the experiences and perspectives that have shaped society. Through conservation and digitisation efforts, these voices are not only preserved but made readily accessible, cultivating a more nuanced understanding of Scotland's past.

Conclusion

The National Library of Scotland's large-scale conservation and digitization initiative for newspapers is a crucial step in preserving and sharing Scotland's rich history. By addressing the challenges of conserving newsprint and promoting digital preservation, this ambitious project aims to make these invaluable primary sources accessible to a global audience while ensuring their long-term preservation. The collaboration between local partner libraries and national institutions demonstrates a commitment to unlocking a vast collection of local newspapers and providing open access. This initiative not only focuses on digitization but also emphasizes physical access through local libraries and archives, empowering local communities to explore their heritage. The project’s overarching aims prioritize access, enhanced user experience, and preservation, ensuring the unrestricted availability of cultural artifacts, transforming how audiences interact with digitized newspapers, and safeguarding fragile collections. With significant interest from local libraries and expected wide-ranging user engagement, this initiative is set to have a profound impact on researchers, genealogists, and the public interested in local history. It guarantees that these invaluable resources can continue to inform and educate future generations.

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