



Accompaniment in America: A Minimal-Computing Digital Collection for Hybrid Musicological Publication

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Abstract

Despite the increasing digitization of music scholarship, historical musicology has been slow to adopt hybrid or multimodal approaches to research dissemination. This paper presents *Accompaniment in America*, a hybrid digital and print publication that bridges this gap by integrating traditional musicological scholarship with an open-access, minimal computing digital collection. The project – comprising a mini-monograph and a multifaceted digital companion – examines the institutionalization of collaborative piano in North America while demonstrating how lightweight, sustainable digital frameworks can enhance humanities research and publication without alienating traditional scholars or requiring extensive institutional resources. The collection, built by a team of two, leverages open-source tools (GitHub, Zenodo), hosts archival materials, interactive visualizations, and pedagogical resources, and adheres to FAIR principles (Findable, Accessible, Interoperable, Reusable). Designed for longevity and low technical and financial overhead, it serves as both a living archive and a model for minimal computing in musicology, addressing challenges of accessibility, copyright, and resource limitations. By pairing QR codes in the print edition with hyperlinked digital content, the project fosters engagement across analog and digital scholarly ecosystems. We argue that such minimal computing approaches can both enrich traditional musicological dissemination and democratize access to data and digitized archival material while preserving the comfort levels and preferences of traditional music scholars. The paper concludes with reflections on the key technical and legal challenges of small-scale hybrid publishing, including copyright barriers and the need for interdisciplinary collaboration. This small case study, while modest, offers actionable insights for scholars, computer scientists, librarians, and archivists seeking to integrate digital libraries into cultural heritage projects with limited budgets and infrastructure.

CCS Concepts

• **Information systems** → **Multimedia information systems; Digital libraries and archives**; • **Applied computing** → **Arts and humanities**.



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Keywords

Minimal Computing, Hybrid Publication, Historical Musicology, Digital Collections, Collaborative Piano History

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1 Music Scholarship, Historians, and Digital Aversion

Despite the mainstreaming of digital approaches in scholarship over the past two decades and its overwhelming significance for scholarship today, the arts and humanities have been notably resistant to embrace digital or hybrid approaches in research, as well as to explore and pursue alternative or interlinked dissemination options, citing theoretical skepticism [15], institutional neoliberalism critiques [1], and epistemological tensions [21], as well as expressing concern that the needs and methodologies of arts and humanities research often differ from those in human sciences [17].

Within the humanities and arts research, music has exhibited a particular reluctance to wholeheartedly embrace digital approaches [6, 9, 19]. In historical musicology this lacuna appears particularly vast. Although the largest organization of music research in the German-speaking world, the *Gesellschaft für Musikforschung* has thematized both digital and traditional approaches in its past two musicology conferences, there is little cross-pollination between the fields in terms of who attends which keynotes; those who draw on historical versus systematic approaches remain largely siloed institutionally, culturally and generationally [3, 11, 40].

In addition, despite an influx of a available and developing approaches, tools and collections, the emergence of linked data approaches, music information retrieval, the incorporation of the Text- and Music-Encoding Initiatives, and a wealth of novel music analysis and visualization options, music scholars focused on historical studies still overwhelmingly both produce and consume publications in standard, text-focused, print or digitized monographs

and articles.. Additionally, although funding organizations increasingly also require scholars to store their underlying research data in public repositories [12, 24], there is often little engagement with these data afterward, and minimal interconnection with standard dissemination forms.

Important exceptions apply, and recent inroads have been made to improve accessibility by interweaving data; dissemination, and more traditional music scholarship interdisciplinarily within digital musicology [35–37], yet many projects focusing on digital collections foreground data and library science to such an extent that they may – unintentionally – alienate a large part of their potential audience of *music* researchers and non-scholar practitioners [16].

Although healthy criticism of digital methodologies in a broad sense is essential [29], there are also significant, multilateral barriers to engaging with digital collections both in terms of exploring, finding and accessing relevant collections, but also in terms of creating and managing them. While hesitance from traditional humanities scholars often stems, in part, from digital aversion due to a lack of comfort or other hurdles to accessibility [11], there are also significant challenges – aesthetic, practical, and economic [2, 23, 39] – facing small-scale projects and teams interested in leveraging the possibilities of digital and hybrid publication through the creation and integration of mixed-media, heterogenous repositories, within or in dialogue with traditional publication formats.

2 Accompaniment in America

The forthcoming monograph *Accompaniment in America: Contextualizing Collaborative Piano* (Routledge, 2025) [32] and its digital companion (<https://accompanimentinamerica.website/>) [33] exemplify how minimal-computing technologies and existing, openly-accessible infrastructures may support nuanced, multi-modal humanities scholarship and dissemination. In combination, they are an example of an accessible, minimal computing option to not only reach a broad audience of interested users, but also remain cost-effective and manageable for research teams with limited institutional support or robust infrastructures [14].

Accompaniment in America interrogates the historical, institutional, and cultural dimensions of Collaborative Piano in North America, while bridging traditional musicological research with open-access digital tools. The monograph positions collaborative piano as both an artistic practice and an institutionalized professional discipline, tracing its evolution from marginalized accompaniment to a more or less formalized academic field. It frames this field as a dynamic site of cultural labor and interdisciplinary exchange, tracing the marginalization and gradual academic recognition of collaborative piano, beginning with a reassessment of the term “accompanist” and the overlooked significance of early programs like the Curtis Institute’s 1926 accompaniment degree. It highlights Gwendolyn Koldofsky’s foundational work at the University of

Southern California, which set the standard and trained generations, then maps the proliferation of the over 100 degree-granting programs in existence in North America today. The publication profiles influential educators who built degree-granting programs, shaping the field’s academic infrastructure. It interrogates systemic challenges, including gender bias, economic precarity, and institutional undervaluation, ultimately calling for reforms to ensure fair recognition and integration of these pianists within academia.

Situated between music history, sociology, and industry advocacy, *Accompaniment in America*’s data collections, framing, and intersectional approach is typical of numerous current musicological interests. It diverts from musicological publication norms in implicitly advocating for integrative approaches: using multimedia dissemination to augment historical narratives while simultaneously providing ancillary resources which can be both expanded over time, and used as a jumping-off point for further research.

The digital companion supports the book’s arguments through both extended and additional materials. It was initially conceived to be hosted and maintained within an institutional research repository. Weeks before the print monograph was due, it became clear that the ongoing migration of the research repository’s underlying technological infrastructure would make it unfeasible to support the project as planned. Thus, a last-minute solution had to be designed. This resulted in a lightweight, low-cost digital solution, conceived out of the twin concerns of a lack of institutional (and therefore financial) support, and a desire for sustainable, low-barrier access, adopting open standards and eschewing proprietary systems.

The monograph can stand alone, but is designed to be seamlessly engaged with in connection with the digital companion, which is accessible as a standard website and hosts a heterogeneous collection of data and ephemera. The digital companion contains:

- Archival materials: Digitized concert programs, photographs, and extensive audio recordings, many previously inaccessible. These are linked to or embedded within their corresponding pages, depending on their rights status.
- A novel data visualization: An interactive, navigable timeline and map, tracking and visualizing institutional development across North America between 1925 and 2025, and offering contextualizing information about each program and institution.
- Expert interviews: Conducted as a key part of the research, these have been tightly edited and published on the open research data archive Zenodo, with robust metadata, with links and biographies of the interviewees provided.
- Pedagogical and historical resources: a heterogeneous multimedia collection of essays, magazine articles and profiles, historical lesson plans, literature recommendations, and other relevant ephemera.
- Provenance and Rights/Re-Use Information.
- Links to specific digital materials, to external collections, and to archives where copyrighted materials are hosted. All links are accessed in the print monograph using QR codes, and in the digital monograph directly via hyperlinks.

This modular, sustainable design reflects minimal computing principles [27, 34]—prioritizing accessibility over complexity, and providing a robust, low-cost option by working with established,

free, open-source resources such as GitHub and Zenodo. The companion not only opens up the monograph's ancillary materials to a broader public, but by adhering to FAIR principles of Findable, Accessible, Interoperable, and Reusable research data management [38], also models how digital humanities projects can enrich and extend musicological discourse and publication.

Together, the book and website offer a case study in balancing depth and accessibility in musicological publication. The monograph provides rigorous analysis in a traditional format, while the digital companion acts as a living archive, inviting iterative engagement from scholars, performers, and students. It can be updated, unlike a monograph, with comparative ease.

By adhering to minimal computing, the project underscores how digital tools can amplify — rather than overshadow or replace — humanistic inquiry. This is particularly relevant for understudied, marginalized fields with a paucity of heterogeneous source material, like the history of collaborative piano. In this case, narratives are more effectively conveyed and provide evidence to support scholarly argument by using a multimedia blend of data visualization, audio, video, text, and related ephemera than through text alone.

Notably, this project also diverges from broader digital humanities tendencies, which have — for good reason — primarily focused on processing large data corpora [5, 18, 30], with less concern for how digital collections might enhance more niche endeavors.

3 Minimal Computing Approach

Motivated by recent efforts to reimagine scholarly communication in digital musicology [10], we understand the *Accompaniment in America* hybrid project as a minimal computing approach to hypermedia publication. It supports and enriches certain traditional musicological research narratives while inviting engagement from readers who might otherwise shy away from digital publications, in this case particularly traditional historical musicologists, pianists, arts administrators, and university pedagogues. They are invited to engage dynamically and comfortably with the underlying data.

This model not only facilitates scholarly dissemination but also fosters dialogue between digital humanities methods and traditional musicological inquiry. Drawing on experiments in non-linear research presentation, including but not limited to the multimedia expositions of the Research Catalogue [4, 20, 26, 28], we seek to modernize musicological publishing using a comparatively lightweight, minimal-cost set-up. By thoughtfully combining integrated access to public resources and references and links to proprietary ones, adhering to open, transparent, and FAIR principles, we seek to both legal entanglements due to licensing issues while also offering a wealth of data and related ephemera for future scholarship and advocacy.

To provide convenient access to digital materials, we created a website using HTML, CSS and vanilla JavaScript, avoiding more complex web-frameworks whose functionalities extend far beyond the requirements of this use-case. The styling was made with modern CSS functionalities including grid and flexbox, making maintenance straightforward and highly intuitive. It is sustainably and freely hosted using GitHub Pages, and consists of:

- A landing page laying out the philosophy and function of the collection, linking it to the monograph, and explaining

the tiered nature of access to the various ephemera, while warning of the potential pitfalls of unauthorized re-use.

- Eight named digital collections focused on foundational figures in Collaborative Piano history. Each contains ego documents, artifacts and ephemera, links pointing to other collections and sources, and a series of audio interviews.
- A "Programs" page which showcases the appearance and location of Collaborative Piano university programs across North America on an interactive map. A timeline beneath the map is navigable, with the user able to select any year between 1925 and 2025 and see which programs existed at the time, color-coded to depict their status (active, discontinued, or "ghost" programs — i.e. universities or conservatories which at some point demonstrably offered degrees but which currently can provide no records of doing so), and whether or not they have a historical link to field founder Gwendolyn Koldofsky or her legacy. By hovering over any marked point on the map, a sidebar on the right appears and offers details about that program, including the year of founding and founder(s), current head and (public) contact information, degree(s) offered, and links to relevant sources.



Figure 1: Screenshot: "Programs" Page

In implementing the "Programs" page, the most complex of the companion, a decision on how to implement the visualization was required. The most adaptable option would have been to use a service like Google Maps; however, given the project's geographic scope—limited to southern Canada and the continental U.S.—the overhead of relying on an external provider was deemed unnecessary for this use-case. Instead, a static map based on an SVG was implemented, keeping all aspects project-internal, fairly lightweight, and user-friendly. To optimize this solution, it was necessary to overhaul the design repeatedly until it was appropriately intuitive and offered ideal user experience.

4 Limitations and Concerns

While *Accompaniment in America* demonstrates the promise of minimal computing for hybrid scholarly publication, its development also exposed key legal and technical constraints. These includes challenges of managing cross-jurisdictional copyright and limitations of scalability. This section outlines the most pressing issues faced and offers practical considerations for similarly scoped digital humanities projects. Far from unique to this case, these limitations offer a broader cautionary framework for similar initiatives,

especially those operating without extensive institutional or infrastructural support.

The largest concern for small research teams, independent scholars, or institutions employing this type of repository and publication approach involves international copyright disparities, particularly when hosting digitized musicological materials [8]. The *Accompaniment in America* repository exemplifies these challenges, as it aggregates heterogeneous content – expert interviews, printed concert programs, recordings, images, and other ephemera – across jurisdictions with incompatible legal frameworks.

The EU’s non-unified but generally stricter copyright laws differ from the US’s fair-use doctrine, which has no European equivalent [22]. EU materials (e.g., concert programs from archives) are typically protected for 70 years post-author death based on EU Directive 2019/790, while US corporate-owned recordings may extend to 120 years after creation (Copyright Clause Restoration Act). On the other hand, a 1950s USC concert program, for example, had the provenance not been ascertainable, would likely be considered an orphan work in the EU and would clearly fall under public domain in Canada (life+50), yet remain restricted in the EU and US [13]. The companion’s static-site architecture cannot dynamically adjust access by user location, risking inadvertent infringement.

Programs, pedagogical notes, and institutional documents often lack authorship or publication attributions, complicating rights assessments. Some items might qualify as de minimis or factual data (e.g., curriculum lists), but many cannot be clarified. For this reason, we advise similar small-scale repositories to err toward caution, redacting or omitting high-risk materials. In addition, living subjects who are co-participants in providing material for their own digital collections within the companion’s repository, are, understandably, not copyright experts. Thus all contributions (i.e. press clippings, publicity material, proprietary recordings) must be rigorously verified as to their copyright status to avoid infringement.

To mitigate legal risks without implementing costly, proprietary DRM systems, the repository adopts:

- **Tiered Access:** Public: Materials with clear rights waivers (e.g., CC-BY, PD dedications) or factual data (non-copyrightable lists of degree programs). Restricted: Items with unresolved rights are described in metadata but not displayed; users are directed to physical archives.
- **Rights Statements:** Clear labels, based on standards available through e.g., RightsStatements.org, signal reuse conditions (e.g., "In Copyright - Educational Use Permitted") to clarify ambiguities.
- **Geoblocking Alternatives:** Instead of infrastructure-heavy geofencing (impractical for small-scale, static sites) [25], the companion uses rights granularity – hosting only items with global or specific, tailored reuse permissions or simply linking to external platforms (e.g. Juilliard Archives; The New York Times’ *Times Machine*).

The project’s austerity – while supporting longevity – limits its ability to host culturally significant but high-risk materials (e.g., mid-20th century recordings). This reflects a fundamental tension in minimal computing and open-access publication more broadly: sustainability vs. inclusivity. While larger-scale endeavors might

leverage distributed archiving (e.g., IPFS) [31] or partner with rights-clearing initiatives like Europeana [41], such solutions require institutional collaboration beyond a small team’s scope.

Hybrid musicology endeavors urgently need:

- **Standardized Rights Protocols:** Cross-jurisdictional guidelines for orphan works and ephemera in digital libraries.
- **Scholarly Consensus:** Musicological and Digital Humanities organizations could advocate for exceptions akin to §108 (US) [7] or §60a (EU) for non-commercial research repositories; and, should these goal be achieved:
- **Minimal Computing Templates:** Legal and technical frameworks for static repositories (e.g., Jekyll/GitHub plugins to automate rights assessments)

While a minimal-computing paradigm enables low-barrier digital publication, it also imposes technical constraints that directly affect scalability and extensibility. Our digital companion illustrates these tensions particularly in its interactive map and timeline feature. Our design decisions introduce challenges in terms of extensibility: Expanding the geographic scope beyond North America would necessitate the generation of a new base map, a complete recalibration of relative coordinates, and potentially a structural redesign of the interface. Because the visualization logic is tightly coupled to the geometry of the existing map image, no dynamic geospatial scaling or re-projection is possible within the current architecture.

Furthermore, as the number of data points increases, either through broader geographic inclusion or more granular historical documentation, performance of the interface may degrade. Since program data is statically loaded into memory on initial page load, significant scaling (e.g., doubling the number of programs) could result in increased rendering times and reduced responsiveness, especially when interacting with the timeline slider or hover functions. While optimizations such as lazy loading, virtual scrolling, or data chunking, available in external visualization packages, could alleviate these issues, implementing them would contradict the project’s core commitment to simplicity and sustainability via minimal technical dependencies.

To sum up, the current architecture was the best suited to the project’s scale, audience, and resource constraints. The use of plain HTML, CSS, and JavaScript ensures compatibility with a wide array of devices and long-term archival readability without requiring maintenance-intensive server environments or CMS installations. In this sense, *Accompaniment in America* demonstrates both the pragmatic benefits and the practical trade-offs of minimal computing in small, resource-constrained scholarship.

By explicitly articulating these legal technical limitations we aim to provide a transparent account of design trade-offs, and a case study for other scholarly initiatives navigating the same terrain. The need for technical humility in digital humanities infrastructure, particularly in projects that prioritize accessibility, preservation, and control over feature richness or dynamic interactivity is apparent, as is an understanding of the degree to which copyright fragmentation stifles small-scale digital scholarship. Here we demonstrate how minimal computing can pragmatically navigate, if not resolve, these barriers.

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For the purpose of open access, the authors have applied a CC BY public copyright licence to any Author Accepted Manuscript version arising from this submission.

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