

## How to Keep Score in the Digital Age

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In recent years, a large amount of printed music has been digitized, and it has become more common for new scores to be created, engraved, and published digitally. Musicians are increasingly favoring scores in digital form. Music stands, stand lights, binders, pencils, pins and magnets are giving way to screen readers, wireless pedals, cloud storage, annotation tools, clamps and mounts.

Aside from a few established collections on physical media (for example, the Orchestra Musician's CD-ROM Library), digital scores are readily found online on a variety of Web sites, from free to pay-per-score to subscription.

For classical music, two well established sources are the International Music Score Library Project / Petrucci Music Library<sup>1</sup> and the Choral Public Domain Library,<sup>2</sup> which mainly offer scanned published scores in the public domain (with some geographical caveats), at no cost (with optional, voluntary subscription or donation). The subscription database Music Online: Classical Scores Library<sup>3</sup> offers curated, in-copyright scores from the 17th to the 21st century geared toward teaching and research. The Open Music Library<sup>4</sup> is a free discovery tool powered by a hybrid in-house and community curated index across free and for-fee databases. Many libraries and archives offer their own collections digitized from printed and manuscripts scores. Some libraries go further, curating and collecting digital scores from self-publishing composers.<sup>5</sup>

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<sup>1</sup> <http://imslp.org>

<sup>2</sup> <http://cpdl.org>, reviewed in MRSQ: James Michael Floyd, "The Choral Public Domain Library (CPDL)," *Music Reference Services Quarterly* 19, no. 1 (2016): 71-72, doi: 10.1080/10588167.2016.1129661.

<sup>3</sup> <http://alexanderstreet.com/products/music-online-classical-scores-library>

<sup>4</sup> <http://openmusiclibrary.org/scores/>

<sup>5</sup> See a recent study and a list of 699 self-publishing composers' Web sites in Kent Underwood, "Scores, Libraries, and Web-Based, Self-Publishing Composers," *Notes* 73, no. 2 (2016): 205-40.

In the retail market, publishers and distributors compete to offer scores in digital format. Boosey & Hawkes allows online perusal<sup>6</sup> and time-limited printing after purchase<sup>7</sup>; Schott launched its pilot site Project Schott New York,<sup>8</sup> where solo and small ensemble chamber music are rented and sold in both print and digital formats. While these two traditional music publishers focus their digital operations on individual contemporary classical composers, other online retailers cover a much wider range, including classical music, musical theater and popular music. The dominant players are Sheet Music Direct and Sheet Music Plus, both owned by Hal Leonard and Music Sales, and Online Sheet Music and Music Notes, which are independently owned.

To many users, lyrics, chords and tabs also constitute a score. Ultimate Guitar<sup>9</sup> and Chordie<sup>10</sup> are two large community sourced collections where variant versions, transpositions and tabs for various instruments can be obtained.<sup>11</sup>

Aside from these major sites, online sources of digital scores are too numerous to be covered here. There are, however, excellent subject guides to these resources,<sup>12</sup> as well as insightful discussion on navigating and evaluating these sources. The article published in *MRSQ* Vol. 12 Issue 1 offers an insightful discussion on navigating and evaluating these sources.<sup>13</sup>

The majority of digital scores, while offering portability and convenience for musicians, are static images. From the information point of view, these static scores lack the dynamic

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<sup>6</sup> <http://www.boosey.com/cr/perusals/>

<sup>7</sup> <http://boosey.epartnershub.com>

<sup>8</sup> <http://www.eamdc.com/psny>

<sup>9</sup> <http://www.ultimate-guitar.com>

<sup>10</sup> <https://www.chordie.com>

<sup>11</sup> These dynamic features are made possible by taking advantage of the ChordPro encoding format.

<sup>12</sup> For example, Stanford University Music Library, *Digital Scores* (online subject guide), <http://library.stanford.edu/music/digital-scores>; Kent Underwood and Robin Preiss, Curators, *New York University Collection of Contemporary Composers' Websites* (online database), <http://www.archive-it.org/collections/4049>

<sup>13</sup> Ana Dubnjakovic, "Navigating Digital Sheet Music on the Web: Challenges and Opportunities," *Music Reference Services Quarterly* 12, no. 1-2 (2009): 3-15, doi: 10.1080/10588160902894972.

elements as currently widely available to digital text: musical content is largely inaccessible to search or manipulation, and there are few tools with functionalities to exploit it.

With digital text, software such as Acrobat allows users to select, edit, highlight, annotate and read text aloud because the textual content is stored in a separate layer linked to the static image. Most text files created on a computer already have this built in. Scanned text can be passed through an optical character recognition process which creates the text underlay. More sophisticated software can manipulate text based on a search, such as highlighting a search phrase, and can perform transformations on the content, such as translating sections of text on the fly.

Digital scores have similar potential for these dynamic aspects. Most music notation software allows users to create, edit, play back, and transpose musical notation, symbols and text. Some also include optical music recognition capability, where the program attempts to input score elements by reading a static image of a score, although the technology is still a work in progress.<sup>14</sup> However, despite the availability of more sophisticated editing and engraving functionalities on the production side, there is no standard file format or reader software designed for displaying music for the end user. The Portable Document Format and its corresponding reader Acrobat remain the most commonly used, even though this system was designed for text documents and provides no functionality relevant to music. Various solutions have appeared to fill this gap. For the most part, they fall into one of these two categories.

*Annotation Software.* The “wrapper” software works around the static digital score to replicate what can be done to a printed score. In addition to viewing, users can make text and

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<sup>14</sup> Machine-readable formats for encoding musical content such as MEI, MusicXML, Music21 and ChordPro have long been in development, but retrospectively encoding existing scores is proceeding at a much slower pace than encoding existing books.

graphic annotations on layers superimposed onto the original file. These programs, such as the popular mobile app forScore<sup>15</sup> often also offer additional capabilities, such as document management, file transfer between devices and online storage, and connection to a control device such as a pedal for hands-free operation.

*Dynamic Score Readers.* Some reader software provides truly dynamic functionalities with scores created in the complementary editor. For example, Finale Viewer, Scorch, and MuseScore all work with their own respective file formats. (However, the quality of cross-format import varies.) These score readers provide customizable user controls for adjusting fonts, size, placement of notational elements, pagination and transposition on the screen, as well as the tempo, parts, and instrument/sound during playback. The software can also prevent users from printing and downloading. Retailers, in particular, take advantage of these functionalities so that they can control the reproduction and distribution of their products after the purchase of a limited use license.

Music software is moving to the cloud. Users encounter a single interface for editing and display, because, through a cloud-based interface, modular functionalities are served based on user permission. Operating in the cloud also blurs the differences between editing, storing and publishing, since every save is automatically stored online, which, if permission is set to publicly accessible, equates to instantaneous publishing. For example, Sheet Music Plus has already launched a digital self-publishing platform called SMP Press.<sup>16</sup> The adoption of Noteflight by Sheet Music Direct and Sheet Music Plus signals a shift of music software technology towards

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<sup>15</sup> <http://forscore.co>, reviewed in MRSQ: Patricia R. Kilroy, “Hands-Free Score Reading With forScore and AirTurn,” *Music Reference Services Quarterly* 20, no. 2 (2017): 118–119, doi: 10.1080/10588167.2017.1302732.

<sup>16</sup> <http://smppress.sheetmusicplus.com>. Currently, composers and arrangers upload finished scores to SMP Press for sale. SMP Press also operates the program ArrangeMe where SMP Press obtains licensing from copyright holders (including from its parent company Hal Leonard) in a way that allows program participants to create and sell new arrangements in digital format on the SMP Press platform.

commercial uses. Avid, maker of Sibelius, recently retired Scorch in favor of Sibelius | Cloud Publishing,<sup>17</sup> where online collaboration, publishing and marketing are embedded into a single platform.

The migration to online and mobile platforms transforms traditional approaches to music creation and distribution, which will, in turn, spark innovative music practices. Artists can create new works not only using notation and instruments, but also by way of physical gestures, movements, and live coding. The result can bring together audio, video, lighting, and visual design into a single artistic product. While traditional music making will continue to demand traditional scores, multimodal and multimedia integration will ultimately be reflected in its documentation, which will undoubtedly test our understanding of a “score,” and what roles libraries will play in its collection, preservation, and access.

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<sup>17</sup> <http://www.avid.com/sibelius-cloud-publishing>