DIGITAL MEDIA REVIEWS

Edited by Anne Shelley

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For information regarding the scope of this column, consult the headnote in the September 2011 issue. The dates of access for each review of an online source indicate the dates during which the reviewer was evaluating the resource. All Web sites were last accessed to verify availability on 1 February 2012.

Variations Digital Music Library System and Variations Audio Timeliner. [Bloomington, IN]: Indiana University, 2005–. http://www.dlib.indiana.edu/projects/variations3/index.html (Accessed December 2011). [Requires a Web browser, Adobe Flash Player, and an Internet connection. Full Variations system requires installation of Linux operating system, MySQL 5 database, Java, Darwin streaming server, DjVuLibre, Apache Web server, and Tomcat Web application server. Variations Audio Timeliner requires a Pentium II 500MHz processer, 256MB RAM (512MB preferred), 2GB hard drive or better, 16-bit audio, 1024x768 resolution, and QuickTime 7.0 or higher. Required operating systems include Windows 2000, XP, or Vista for Windows or Mac OS X for Macintosh. Pricing: free.]

First launched by Indiana University in the mid-1990s, Variations is a digital asset management system uniquely designed to handle music materials. The software became available to other institutions as an open source release in 2009. While there are other systems on the market that institutions have adapted to manage music-related assets (such as DSpace[1] and CONTENTdm[2]), none of these focus specifically on music and none handle music materials as effectively as Variations. In its most current incarnation, Variations offers back-end tools for digitizing audio and print materials as well as front-end interfaces for accessing streamed audio and digital scores. Since Indiana's open source release, many institutions are using Variations as a reserves system, though it has potential for much broader applications. The system could be used for delivering institutional musical performances, rare/special collection recordings, or non-music recordings such as speeches, readings, and broadcasts. In addition to providing mechanisms for digitizing and delivery, Variations also offers tools specifically designed to enrich the user experience. Such tools include customizable bookmarks, playlists, annotation options, and quizzing functions.

Variations is available both as a browser-based interface and as a standalone Java application (see figures 1 and 2). Presently the Web version works only with audio (not scores).[3] The stand-alone version is available for the latest Mac or Windows operating systems (Mac OS X, Windows Vista, and Windows 7) and requires QuickTime software to function.[4] Details for downloading Variations will vary by institution, as will the way in which users launch and use the system. Users who wish to explore either the standalone version or browser-based interface with sample tracks may visit the

1. http://www.dspace.org
2. http://www.contentdm.org
3. To see the browser-based version of Variations, visit: http://bit.ly/varweb.
4. http://www.apple.com/quicktime/download/

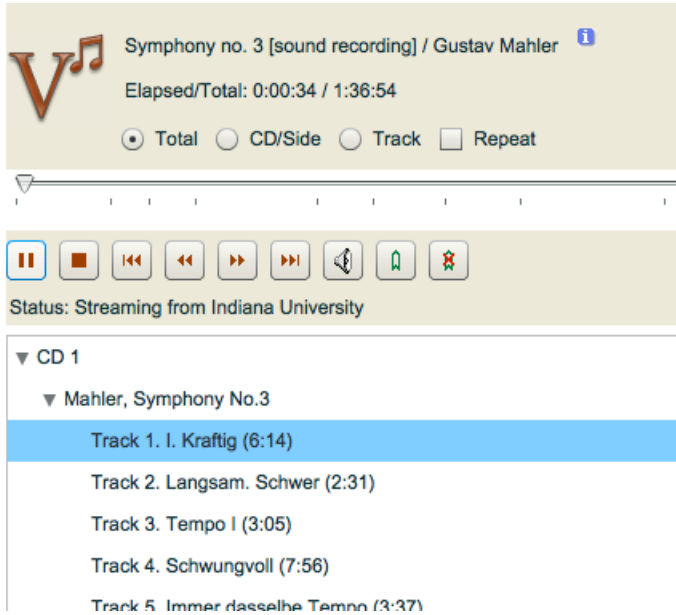


Fig. 1. Browser-based interface for Variations

Variations Web site for more information.[5] The particular process used at Baylor University is discussed later in this review.

AUDIO PLAYER

In addition to the standard playback/control functions one would expect (volume control, play/pause, and navigation), the audio player allows users to create playlists. These playlists are exportable as either HTML files or native Variations files (V2P). Either format results in a small file (approximately 4KB). Opening a playlist file or HTML document launches Variations and loads the playlist. The audio player also has a bookmarking feature that allows users to mark locations within a recording for later use. While the default name for the bookmark is taken from the track listing, users can rename and rearrange bookmarks and can also add comments to each bookmark. From the edit screen, users can manage bookmarks by organizing them into folders, sending bookmarks to a playlist, or exporting them as HTML or Variations (V2B) files.

SCORE VIEWER

The Variations score viewer allows navigation of the entire score through a scrub bar, previous and next buttons, a page number pull-down menu, or by clicking on movements or divisions listed in the side bar. Users can also set the view (one- or two-page views) and sizing ("fit to" height/width/window or zooming from 25% to 200%). The same bookmarking options are available in the score viewer as in the audio player. Users can annotate pages in the score viewer in a variety of ways. General markup tools include functions for drawing lines and shapes, highlighting, and free text. The toolbar includes a range of line and highlighting colors as well as line styles (see fig. 3). The annotation toolbar also provides music-specific tools for marking,

5. http://www.dlib.indiana.edu/projects/variations3/tryout.html

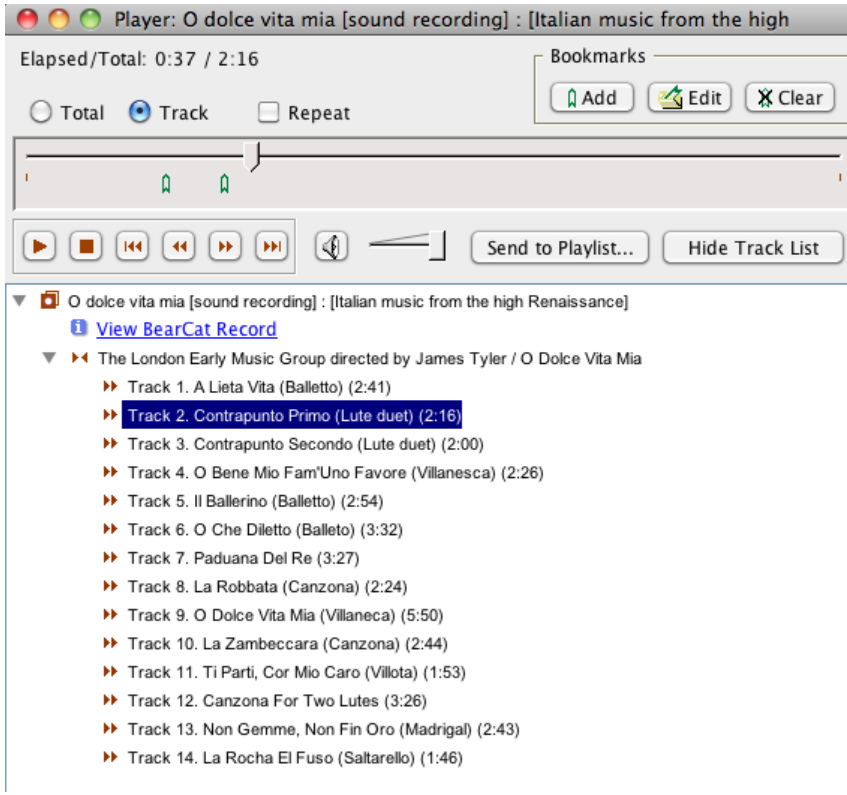


Fig. 2. Variations Audio Player application

including non-chord-tone, cadence, phrase, formal, sonata form, scale degree, key, and roman numeral labels. For musical analysis tools, the user selects the group, inserts the cursor on the page, and is then presented with a pull down-menu of the following options:

- NCT (non-chord-tone labels): Appoggiatura (APP), Anticipation (ANT), Escape Tone (ET), Pedal Tone (PED), Passing Tone (PT), Neighbor Group (N GR), Neighbor Tone (NT) Retardation (RET), and Suspension (SUS).
- PAC (cadence labels): Perfect Authentic Cadence (PAC), Imperfect Authentic Cadence (IAC), Half Cadence (HC), Plagal Cadence (Plagal) and Phrygian Cadence (Phyrgian).
- ab' (phrase labels): a–g (with primes), labels are editable for other options
- AB' (formal labels): A–G (with primes), labels are editable for other options
- ^1 (scale degree labels)
- Bb (key labels) also editable
- IV (Roman numeral labels): editable for adding inversions and figured bass notation

Users can hide or show annotations and can print scores with or without annotations. It is also possible to annotate other score images that originated outside of Variations (or any type of image file for that matter). Accepted image formats include GIF, JPG, BMP, TIF, and PNG. The score viewer can also be used to scan liner notes or visual material.

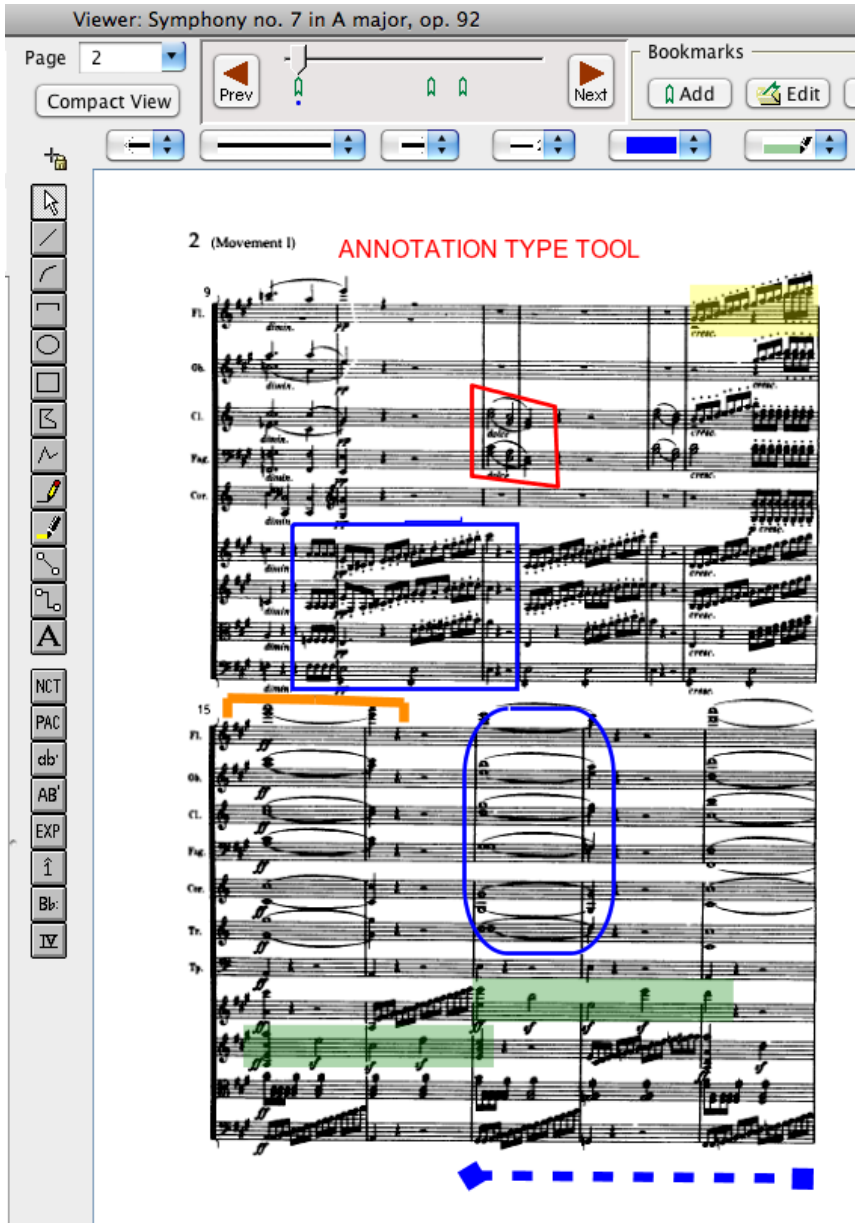


Fig. 3. Score Viewer annotations

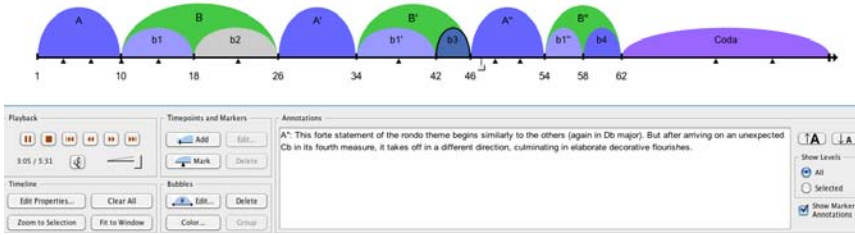


Fig. 4. Variations Timeline analysis created by Brent Yorgason

Variations has the capacity to synchronize scores with recordings; synchronized representations are called "opus works." With this function, users can navigate the score while the audio automatically tracks to whatever is displayed in the score. Likewise, when a user changes locations via audio controls, the score display automatically reloads to the appropriate point in the audio. The "opus works" viewer combines all the features of the separate audio player and score viewer. While one could argue that the user could "manually" turn pages and follow along with the recording, this feature is perhaps most effective when dealing with long tracks or works without segmentation. Creating opus works is extremely time-consuming and requires knowledgeable staff with proficiency in both the Variations ingest process and score reading. Constructing opus works requires audio files to run in real time while the staff member marks locations in the score (by measure) to coincide with the audio. At best, this process takes as long as each recording's run time, but that estimate does not account for any mistakes during the markup process. According to Variations staff at Indiana University, very few institutions are currently using this feature outside of testing and experimentation due to the amount of time involved.

TIMELINER

For institutions that do not feel ready to implement Variations for audio streaming or digital scores, the Variations Audio Timeliner[6]—which allows for visual analysis and annotation of audio files—is an excellent tool. Originally part of Variations, the timeline tool can now be downloaded and used independently. Available for both Mac and Windows operating systems, the Variations Audio Timeliner is a very small application (less than 10MB), that allows users to create bubble diagrams to visually represent the formal structure of a piece of music (see fig. 4 for a completed timeline analysis). The timeline tool accommodates many different audio file formats including MP3, MP4, M4A, AAS, AIFF, WAV, MOV, and MID.

To create a new timeline, users open the audio file from within the timeline tool interface, which allows them to add markers (bubbles or time points) in real time. Bubbles can be used to mark formal structure and notable time points, all of which can be labeled and annotated by selecting the bubble or time point. Both marker types can be adjusted manually in the diagram as needed. Bubbles can be nested by selecting and grouping, effectively creating an overarching bubble. Users can adjust the properties of the timeline in a variety of ways; the title, description, bubble height/shape, colors of bubble hierarchy, and timing display can all be modified. Timelines can be saved as V2T or HTML files. HTML files are static and display all annotations beneath the bubble diagram. Variations files are fully operational, but must be able to access the audio file on which the timeline was based. As the timeline plays, the annotation pane displays whatever labels and annotations match the point in the audio.

6. http://variations.sourceforge.net/vat/

PEDAGOGICAL POSSIBILITIES

In recent years, there have been strides made in providing scores online through resources like the Internet Music Score Library Project, Classical Scores Library, Naxos Music Library: Sheet Music, and the Neue Mozart Ausgabe Online. However, none of these resources were specifically designed to complement a particular institution's course reserve needs and so the results have been, in many ways, hit or miss. For instance, even if a required score is available in one of these online resources, often the particular edition required (especially critical editions) is not, nor are multiple editions for comparison. Variations, on the other hand, is designed to allow an institution to use its own recordings and scores. It has the potential to strengthen users' experiences by making available all of the material together online, thus allowing synthesis and customization that has traditionally only been afforded to users when they visit the physical library. The ability to include other visual materials beyond scores (such as liner notes or supplemental text) offers even greater learning opportunities.

The annotation tools offer a number of pedagogical possibilities. For assignments, students can mark up scores in a variety of ways and deliver the saved annotation file (V2A) to the instructor via e-mail, Blackboard, Dropbox, etc. Instructors can also use annotation files, sent out to students as preparatory work to advance discussions about form and analysis. Because of the way the music-specific label tools were designed, instructors could provide annotations to students with the pull-down menus placed at specific locations in the score and have the students select the appropriate choice from the pull-down menu. Though formal musical analysis might not be appropriate for introductory- or appreciation-level music courses, the drawing tools could allow instructors or students to mark more generalized features of a score, such as identification of instruments, melodies, phrases, or rhythms.

Variations processes complete albums rather than individual tracks. Even though a listening assignment might be for one musical work or movement, the user will have access to the entire recording. This album-based approach affords the user greater context. While a listening assignment might be for a particular aria, with Variations, the student could explore the surrounding sections to gain a better understanding of the overall scene, act, or opera. The benefit would be the same for multimovement instrumental works or concept albums.

Variations bookmarking (available for both recordings and scores) features the ability to mark spots for further study or review. Bookmarks can also be used to mark structural or formal points within a track or piece. Like with annotations, bookmarks can be generated by the instructor to facilitate discussion or to serve as instructional material. Students can create bookmarks for their own reviewing purposes or for an assignment. Regardless of the objective, bookmarks are easily packaged and shared as V2B files.

Playlists, likewise, allow a two-fold approach. Instructors or librarians can create and easily share playlists (V2P files) to help guide or create context for listening. For institutions using Variations to deliver course listening, bookmarks or playlists may be used to create these assignments. Students can also create their own playlists for reviewing and grouping recordings in various ways. Playlists also include the ability to create listening drills (see fig. 5). For each playlist, users can easily generate dynamic drills in various formats, including flash card, fill-in-the-blank, or multiple choice. Each drill can test on track title, work title, composer, date, or optional customizable fields. Note that the user may have to enter and/or edit data in these fields to take full advantage of the drill feature, but this additional work is certainly part of an active learning process. Users can select the duration of drill excerpts (10–60 seconds) and determine whether excerpts start at track beginnings, bookmark points, or random locations. Users can also determine how a drill session will end: when all tracks have been identified correctly, when all tracks have been played, or they can set the drill to be continuous (see fig. 6). Fill-in-the-blank and multiple-choice drills provide an on-screen scoring option, though a screen capture is required to save or print.

The Variations Audio Timeliner allows even more opportunities to enrich teaching

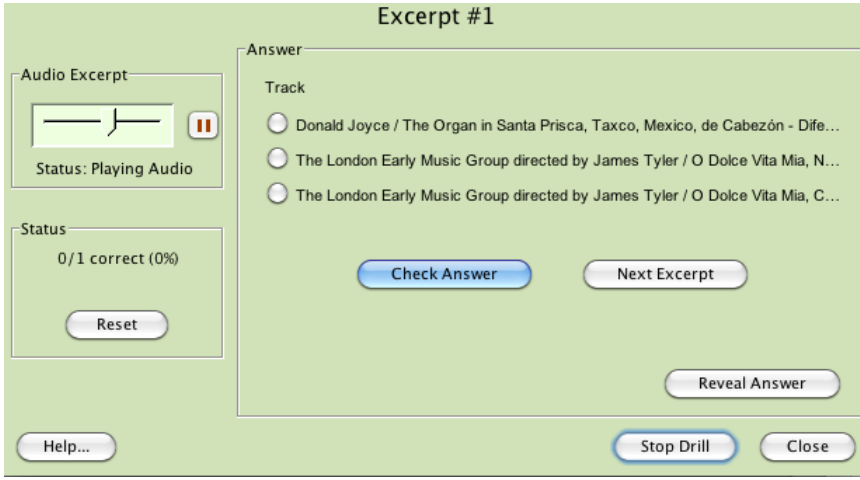


Fig. 5. Playlist drill

Fig. 6. Playlist drill options

and learning experiences. Used separately or in conjunction with the rest of Variations, the Timeliner tool can add a visual learning dimension in addition to directly addressing structural/formal elements of the music. Advanced music students can map out sonata form, for example, in a visually meaningful way, but even beginning music students can use this tool to mark things like tempo, song verses, or changes in timbre or instrument. The annotation tool can also be used for narrative reflection or to record questions or observations about what the student is hearing. Like with the other tools in Variations, students can use the timeline tool to create their own assignment from scratch or as a reinforcement tool for studying. Instructors can also use the Variations Audio Timeliner to create a starting point for class discussion, to help visually depict points in the music to be highlighted, or to create an assignment for students to complete, label, or annotate.

IMPLEMENTATION AND COSTS

An institution considering adopting Variations must put careful thought into the practical issues behind implementing and administering the software, giving special attention to capital and personnel costs. Baylor University has been using Variations for over two years, and the information that follows comes both from our own experiences and from the "Overview and Implementation Planning" document in Indiana University's Variations3 wiki.[7]

While Variations is freely-available, open-source software, do not be fooled by the use of the term "free." The source code, server software, client software, and documentation are included in the open source release of Variations, but there are certainly many more pieces to this puzzle, including an institution's investments in hardware and staffing. The Variations team at Indiana has created a number of resources for institutions using or exploring Variations, including online user guides, a ListServ mailing list, and demonstration files.[8] Though paid support models and hosting options have been discussed, they are not available at this time. A helpful Webinar that provides an overview of Variations is available on the project Web site.[9] Though some of the technical details have changed since the Webinar and PowerPoint slides were produced, these materials still give a good overview of the technical requirements and expertise needed to successfully implement Variations. It is recommended that any institution considering Variations consult this Webinar.

One of the first expenses that an institution will encounter is the hardware cost of the server that will run Variations. This server does not need to be cutting edge, but the machine should have adequate memory and storage, the specifics of which will be determined by how Variations will be used at the institution. If archival copies of the WAV files from ripped CDs are to be kept, then approximately 650 MB per disc—or 1 TB per 1500 discs—should be allocated. Depending on the settings chosen, compressed derivative files will take up approximately 125 MB of space per disc. Indiana University's documentation suggests that a system costing $8,000–10,000 will be adequate for most implementations. Other hardware considerations include a workstation for digitization and inputting recordings and scores into Variations, and a scanner if scores are to be scanned from the collection and uploaded into the system. The cost of both of these will once again vary depending on the scale of the Variations implementation.

All Variations software can be obtained free of cost, but actually setting up and running the system will require a significant investment in human resource hours. The various technologies used by Variations include the Linux operating system, MySQL 5 database, Java, Darwin streaming server, DjVuLibre, Adobe Flash Player, Apache Web server, and Tomcat Web application server. To make all of these technologies

7. The Variations wiki is available at https://wiki.dlib.indiana.edu/display/V3/Variations3+Home; the planning document is available at https://wiki.dlib.indiana.edu/display/V3/Overview+and+Implementation+Planning
8. http://variations.sourceforge.net/
9. http://www.dlib.indiana.edu/projects/variations3/oss-webinar.html

work together, a skilled Linux system administrator proficient in XML is needed. Administering Variations will also require knowledge of local systems in use at the institution, including authentication methods and security policies.

Other staffing considerations deal with ingesting content into the system and delivering that content to users. This process will likely involve at least one full-time staff member who will oversee the content population of Variations, and possibly additional part-time staff or student workers. After a pilot period, if an institution decides to fully adopt Variations, it may be advantageous to utilize temporary employees for the initial mass digitization effort.

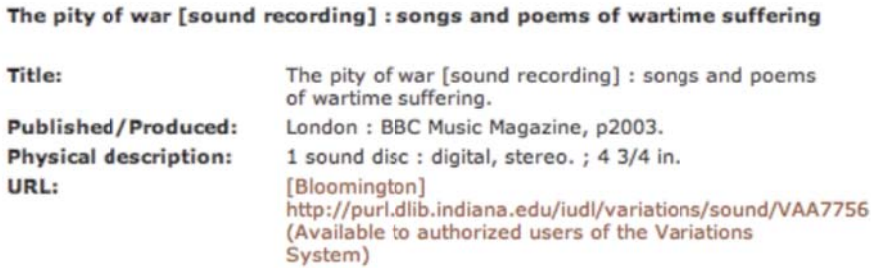
DECISIONS

When implementing Variations, several decisions need to be made that will affect resources required of both the library and information technology support. The very first step in the planning process should be a discussion of exactly how Variations will be used at the institution. What problems will Variations solve? It can be used as a delivery system for course reserve materials, an institutional repository of student and faculty recordings, a digital library of recordings and/or scores that do not circulate, or any combination of those services. Decisions made at the beginning stages of planning will influence all subsequent decisions.

One of the most important library-related decisions that has to be made is that of an access policy. Variations is very flexible in allowing institutions to restrict access to certain users and applying different levels of access to different types of content. For example, if an institution decides to use Variations as a digital repository for recital and concert recordings and also as a course reserves system, it might be desirable to set course-level access to the reserve materials, but make the recital and concert recordings open to everyone affiliated with the institution. Access can be either IP-based, which allows access only to users on campus or those using a VPN client, or it can be based on enrollment (this option requires more time and effort for technology support staff to implement because it requires that Variations be tied in to a student information system). If Variations will be used to deliver course reserves, it might be appropriate to allow only students enrolled in a course to access items on reserve for that course. If, on the other hand, Variations will be used to provide access to recital recordings, a policy that enables all students, faculty, and staff to listen to the recordings might be preferable. There is a multitude of possibilities—if one can conceive of an access policy, there is a good chance that Variations can accommodate it. The more complex the access policy, the more time and effort will be required to configure and maintain it. It may be advantageous to involve an institution's legal counsel when determining an access policy.

The next major consideration will be what kinds of materials to put in Variations. If Variations is being used as a repository of recital and concert recordings, will only new, born-digital recordings be ingested, or will a project be undertaken to digitize past recordings that are potentially stored on legacy formats? If Variations will serve as a course reserves system, an institution will have to decide whether to include only materials held by the library, or also to digitize instructors' personal items. How will anthologies or course packs be handled? There are no one-size-fits-all answers to these questions. Collection policies, of course, depend on how an institution will use Variations and on the institution's copyright policies.

An institution will also have to determine how its users will find content in Variations. Variations provides extensive tools to catalog each item that is put into the system, and its search function allows users to retrieve recordings and/or scores. However, this work is very time-consuming and requires a skilled cataloger. Alternatively, Variations includes tools that enable linking of items with their records in a library's OPAC, providing access to Variations materials through a catalog search interface that users will (hopefully) already be familiar with (see fig. 7). This service also has a potential downside, though, for if a somewhat restrictive access policy has been adopted for Variations, many users will stumble upon links to Variations content that they are not authorized to access. A third option for content discovery is to make custom lists using either bookmarks or links to



The pity of war [sound recording] : songs and poems of wartime suffering

Title:	The pity of war [sound recording] : songs and poems of wartime suffering.
Published/Produced:	London : BBC Music Magazine, p2003.
Physical description:	1 sound disc : digital, stereo. ; 4 3/4 in.
URL:	[Bloomington] http://purl.dlib.indiana.edu/iudl/variations/sound/VAA7756 (Available to authorized users of the Variations System)

Fig. 7. Variations materials displaying in Indiana University's OPAC

Variations

The Indiana University Digital Music Library

Quick Links: **CD 1**

Title:	**The pity of war [sound recording] : songs and poems of wartime suffering**
Published/Produced:	**London: BBC Music Magazine, 2003**
Media:	**1 sound disc : digital, stereo. ; 4 3/4 in**
Source:	**Indiana University Cook Music Library**
Call Number:	**5671797 (Frontlog CDs)**

View IUCAT catalog entry for this item

Listen in browser (Help and more details)

To use the links to audio on this page, you must have Variations installed on your computer, and either be using an authorized computer or be enrolled in a class for which this recording is on reserve. For more information about using Variations, see the User Guide.

CD 1

Track 1. Arthur Somervell, On the idle hill of summer
Track 2. Wilfred Owen, Anthem for Doomed Youth
Track 3. Kurt Weill, Dirge for Two Veterans
Track 4. James MacMillan, The Children
Track 5. Robert Graves, Corporal Stare
Track 6. Gustav Mahler, Wo die schönen Trompeten blasen
Track 7. Charles Ives, He is there!
Track 8. Francis Poulenc, Bleuet
Track 9. Rupert Brooke, The Soldier
Track 10. John Ireland, The Soldier
Track 11. Hanns Eisler, An den kleinen Radioapparat

Fig. 8. Variations Access page

Variations access pages (see fig. 8) that can be pushed out to specific groups of users. This is another time-consuming option, but it is not as difficult as cataloging the items.

A library will also have to develop a process for managing the ingestion of content into Variations. This could be done with anything from simple spreadsheets to a custom-designed database. A decision will also have to be made on the sound quality of the audio that will be streamed to users. Audio is encoded in MP4 format, and Variations uses the QuickTime streaming protocol, which allows audio to be encoded at two different bit rates. When bandwidth is low, the system will automatically fall back to the lower sample rate. Documentation from Indiana University suggests 192 KBPS as a good compromise between sound quality and bandwidth for the higher bit rate. One more decision that has to be made is what to do with the uncompressed files from which the MP4 and DjVu files are derived. These WAV and TIFF files take up large amounts of storage, but it can be advantageous to retain these files, and a library that wishes to do so will need to devise or utilize a preservation strategy.

VARIATIONS AT BAYLOR UNIVERSITY

Baylor University first began exploring Variations three years ago and we have now been using it as our primary course reserves system for two years. Our implementation currently includes approximately 1500 recordings and 200 scores. Baylor already had a successful streaming audio reserves system in place, but we made the decision to adopt Variations so that we could provide our users with online access to scanned scores, a much-requested feature. We intended to test Variations through a one-semester pilot of one course, but due to technology security issues the pilot was not ready until the semester was almost over. Nevertheless, the failed pilot did give us the opportunity to tweak our implementation of Variations.

Our use of Variations as a course reserves system led us to develop an access policy of allowing only students enrolled in a particular course to access items on reserve in that course. A major drawback to this policy was that the method for identifying which students are in which courses is very time-consuming, as each time a course is offered, we create a file that contains a list of the enrolled students' e-mail addresses and a list of the items on reserve (in the form of Variations record numbers). Managing course lists has become a much simpler task in the latest version of Variations, which allows management of access lists through a Web interface. Since our installation, we have since altered our access policy to one that can best be described as "security by obscurity." All items in Variations are accessible to anyone with a Baylor University e-mail address, but since we are not cataloging the items in our OPAC, the only practical way to access an item in Variations is to link to it through a reserve list. These reserve lists are put into Blackboard, our course management system, thereby only allowing students who are enrolled in a course to access them. If we begin using Variations beyond just course reserves, this policy will no longer be feasible, but for now it is working well.

Our collection management policy for Variations also reflects our use of the system as a method for delivering course reserves. We include CDs and scores from our collection, and also selections from LPs if a suitable CD version cannot be found. We do not upload any music history or appreciation anthology collections into Variations, and instead work to find alternative recordings. Discovery is accomplished through the use of bookmark lists exported as HTML files that are then uploaded to courses in Blackboard. We have experimented with cataloging items in Variations. The linking of audio to scores was a very appealing feature of Variations to us and to our faculty, and this can only be done when the items are at least minimally cataloged. In an effort to explore this feature, we cataloged a handful of items and linked the scores to the recordings. It proved much too time-consuming and we have not pursued this any further, but the feature is so compelling that we will likely revisit this at a later time.

Variations content is managed through spreadsheets—one for each course—that list all the pieces requested by the professor, along with each item's call number and its bibliographic record number (which becomes its Variations ID), and check boxes for all of the steps in the work flow. Baylor

University's typical work flow for adding a CD to Variations is as follows:

1. Rip CD as a single WAV file (all tracks joined together), and copy to preservation server.
2. Convert WAV file into MP4 derivatives and copy to the Variations server.
3. Create a new container record in Variations for the item. If Variations has been correctly configured, it can retrieve basic bibliographic information from the Z39.50 server.
4. Add track names. Variations will know the track offsets by reading them from disc in the drive.
5. After all of the items for a course have been added into Variations, the bookmarks list is created and exported as both a Variations bookmark file (V2B) and as HTML.

Indiana University supplies thorough documentation outlining this process, making it possible to utilize student workers for much of the work. At Baylor, all of this work is currently completed by one of two library staff members (one part-time and one full-time), with additional assistance from student employees as needed. Since we wanted to transition quickly from one large audio reserves system to a new one, we also made use of full- and part-time temporary employees over two different summers. This is a good time to point out a major consideration for any institution that already has an audio reserves system in place: it will likely be necessary to re-encode all CDs that will be uploaded to Variations. Variations is unique in its requirement of a single WAV file of the entire disc for ingest, so it is unlikely that a different system that is already in place works this way. If all of the tracks from a disc have been ripped, there are tools like Merge MP3[10] for Windows and MP3 Trimmer[11] for Mac that will allow one to combine them into one file, which can then be exported as a single WAV file. At Baylor, we welcomed this challenge as an opportunity to increase our bit rate for streamed audio and to create files of our CDs that could serve as archival versions. For scanning scores, the Crouch Fine Arts Library has been fortunate to partner with Baylor's Electronic Library,[12] a campus library with state-of-the-art facilities for digital preservation and reformatting who also hosts our archival TIFF and WAV files on their preservation server.

SOME THINGS WE HAVE LEARNED

Over the last three years there have been a few takeaways from our experience using Variations. One of them is that the user interface—both the standalone application and the Web player—while very powerful, is a little outdated. To have to install a Java application in this age of the App Store and widgets is foreign to some of our younger students, and getting the application to work has proven difficult in many cases. The Web player is based on Adobe Flash and requires a plug-in that is otherwise becoming increasingly possible to forego. It also means that the Web player is not compatible with the majority of mobile devices that students use (though an iOS app for Apple devices is currently in testing). Future development of Variations should include the adoption of standards-based technologies like HTTP streaming and HTML5 over proprietary ones like QuickTime streaming and Flash—what better complement to an open-source digital library system?

Variations requires a major investment, mostly in human resources. The planning and operation of the system require collaboration between often disparate departments in an institution, a feat that is much easier said than done. Our pilot course serves as an illustration: because the security review took much longer than expected, opening the necessary ports to allow Variations to function online was not approved in time to successfully run a pilot in the intended semester. We encourage anyone considering Variations to invest a good deal of time in the planning stages. In the end, despite these difficulties, we believe that the benefits of Variations outweigh the costs. The system offers unrivaled potential for music pedagogy. In an age

10. http://www.shchuka.com/software /mergemp3/index.html
11. http://www.deepniner.net/mp3trimmer/
12. http://www.baylor.edu/lib/el/

when students can easily find their listening exam materials on YouTube, Variations is the kind of service that adds tremendous value to the learning experience and continues to make libraries valuable to their users.

Sha Towers and Stephen Bolech
Baylor University

A-R Editions' Online Music Anthology. [Middleton, WI]: A-R Editions, Inc., 2010–. www.armusicanthology.com (Accessed October–November 2011). [Requires a Web browser, Adobe Flash Player, and an Internet connection. Pricing: institutional subscription for $1000 per year with unlimited simultaneous users; individual subscription for $50 per 6-month period.]

A-R Editions' *Online Music Anthology* is a Web-based compilation of scores edited and presented for the express purpose of providing source texts for courses in music history.[13] It is, by no means, a substitute for purchases of individual scores in the music library, but rather a substitute for anthology purchases and a supplement to monument collections. The database currently contains 425 vocal and instrumental works—over 3,000 pages—including titles from the print versions of A-R's *Recent Researches* series and some American Institute of Musicology series, as well as additional titles in similar veins.[14] With a recent move to institutional subscriptions, A-R has geared this resource toward a wider audience and given libraries an opportunity to combat problems of textbook affordability and inflexibility for music students.

The *Anthology* currently contains selected pieces of music from antiquity through the romantic era, with the greatest emphasis on the common practice period. Plans are afoot to add almost 250 additional 18th- and 19th-century works in the near future, and A-R has begun discussing the inclusion of 20th-century titles as well. Pieces are selected with an eye toward replacing print anthologies traditionally used for music survey courses. Feedback from musicologists indicates that this is a practical strategy thus far; a 2010 review of the *Anthology* in the *Journal of Music History Pedagogy* presents Dane Heuchemer's cogent assessment of the benefits and limitations of using the *Anthology* in teaching music history, and includes a positive assessment of the correlation between the scores currently used in the review author's survey on medieval and Renaissance music and the contents of the *Anthology*.[15] The collection has grown since this assessment, so one would expect even higher correlation today.

Each piece in the collection is presented as new editions with modern clefs while editorial changes such as transpositions are noted. Many of these pieces have previously appeared in print versions of A-R series, and while information about the series is on the bottom of each score's first page (when relevant), this information is not available when browsing the database, nor is this searchable information. To music librarians and musicologists, the A-R brand is a familiar and trusted one that has depended on known scholars to serve as editors. Others visiting the site might not find the publisher as familiar, but they can see who edited each piece on the first page of the score. As with the series title, this information could be more helpful if it were included in the metadata about each piece and searchable.

Compositions included in the *Anthology* represent a wide variety of genres that are indexed with impressive granularity. Some works are presented in their entirety while many larger works are represented only by selections. For instance, one may find all of

13. Note: A-R Editions is the publisher of *NOTES* and provides business management services for the Music Library Association.

14. A-R Editions' *Online Music Anthology*, About, https://www1.areditions.com/About.aspx (accessed 22 November 2011).

15. Dane Owen Heuchemer, review of "A-R Editions, *Online Music Anthology*," *Journal of Music History Pedagogy* 1, no. 1 (2010): 67–70.